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Flood and Water Management Act 2010

Local Flood Risk Management Strategy and Action Plan

Appendix A

March 2024

RHONDDA CYNON TAF

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CONTENTS

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TABLES AND FIGURES

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INTRODUCTION

The Flood Action Plans sets out the actions that Rhondda Cynon Taf County Borough Council (RCTCBC) are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources and deliver against the strategic objectives and flood measures outlined in Section 6 and 7 of the Local Flood Risk Management Strategy (Local Strategy).

The Flood Action Plan provides information at two scales. The Rhondda Cynon Taf (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 Strategic Flood Risk Areas (SFRAs), where more detailed information and actions have been presented at the local catchment scale.

The actions presented within the RCT and SFRA Flood Action Plans have been categorised according to three action types which are shown below.

1. **Alleviate** the risk of flooding in specific locations by developing and delivering schemes and approaches to reduce the risk and likelihood against flooding. This includes efforts to make catchments more resilient, and efforts to reduce the risk of flooding to people and properties.

2. **Preparedness** of communities and emergency responders to act in the event that flooding should occur, which can reduce the impacts of flooding and make communities more resilient.

3. **Review** to make improvements in our understanding of flood risk to better inform and consider potential future action.

All of the above types of actions seek to reduce the likelihood of flooding or the impacts it has on people and properties.

Each flood action has also been provided with a timescale and cost for delivery. The timescales 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 timescales are shown below:

- **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+)

The indicative cost ranges are shown below:

- **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

Each flood action has also been assigned an implementation status:

- **Not Started**: work has not yet begun
- **Ongoing**: work has begun

The RCT and SFRA Flood Action Plans will be reviewed and updated every 2 years to reflect the Lead Local Flood Authority's (LLFA) continued delivery against the Local Strategy's objectives and measures to manage the risk of flooding from local sources.

RCT Flood Action Plan

The following Flood Action Plan in Table 1 sets out on a RCT wide basis, the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources.

Table 1 C… Flood…

Ref	Action Name	Locat…	Action Type	L… to …MS M…ure	Timesca…	Cost	Funding Option(s)	Status
A1	Develop a Surface Water Policy t… will be applied to all future planning applications	RC…	Alle…e	…1	Short	ER	Revenue	Ongoing
A2	Produce an advisory document for the production of Drainage Statements which will be required for future planning applications subject to the requirement of SAB approval.	RCT	Review	M1, M2 & M23	Short	ER	Revenue	Ongoing
A3	Produce and maintain a Pluvial Areas Benefitting Layer which will identify areas benefitting from assets and FAS.	RCT	Review	M1 & M29	Short	ER	Revenue	Ongoing
A4	Review the pre-application services provided by the SAB on a 2 year cycle to ensure efficiency and effectiveness of the service is maintained.	RCT	Review	M2 & M23	Short	ER	Revenue	Ongoing
A5	Develop local guidance on how to submit an application for voluntary adoption to the SAB.	RCT	Alleviate	M2	Short	ER	Revenue	Ongoing
A6	Develop an effective communication strategy which will provide the framework for RCTCBC to deliver clear, consistent and coordinated communication on flood risk and flood risk management.	RCT	Preparedness	M3, M4, M6 & M8	Short	ER	Revenue	Ongoing
A7	Produce communication plans which will delivered and maintained by the Council.	RCT	Preparedness	M3, M4, M6 & M8	Medium	ER	Revenue	Ongoing
A8	Establish and deliver public engagement events and campaigns to raise awareness of flooding and share best practice.	RCT	Preparedness	M3, M4, M5, M6 & M8	Medium	ER	Revenue	Not Started
A9	Improve and maintain the Council's dedicated online flood risk webpage	RCT	Preparedness	M3, M4, M5, M6 & M8	Short	ER	Revenue	Ongoing

Ref	Action Name	Locat	Action Type	Link to LFRMS Measure	Timesca	Cost	Funding Option(s)	Status
A10	Preparation of warning and inform resources such as information on NRW's mappin warning and informing services, personal flood ans and kit li will be published on RCTCBC's o management webpage.	RC	Prepar ness	M3 , M5, M8	Short	ER	Revenue	Ongoing
A11	Preparation of advisory resources and information in respect of measures to take before, during and after a flood event will be published on RCTCBC's online flood risk management webpage.	RCT	Preparedness	M3, M4, M5, M6 & M8	Short	ER	Revenue	Ongoing
A12	Preparation of advisory resources in respect of property-level flood resilience and resistance measures will be published on RCTCBC's online flood risk management webpage.	RCT	Preparedness	M3, M4, M5, M6 & M8	Short	ER	Revenue	Ongoing
A13	Review and enhance RCTCBC's emergency response plan and procedures to ensure lessons learnt are reflected.	RCT	Preparedness	M4, M5 & M6	Short	ER	Revenue	Ongoing
A14	RCTCBC will test the effectiveness of our emergency response plan by carrying out emergency exercises utilising the Council's CCTV Command Room, and ensuring that staff involved in the planning for or response to an emergency receive appropriate training.	RCT	Preparedness	M4 & M5	Short	ER	Revenue	Ongoing
A15	Establish and maintain a long-term capital pipeline of FAS in accordance with Welsh Government's FCERM Business Case Guidance.	RCT	Alleviate	M9, M10, M11, M12, M13, M14 & M24	Short	ER	Revenue	Ongoing

Ref	Action Name	Locat	Action Type	Link to MS Measure	Timesca	Cost	Funding Option(s)	Status
A16	Establish a standard set of invest nt objectives for FAS business case development ch will conside the use of NFM measures, the id fication of wi environmental benefits and prope resilience and resistance.	RC	Alle e	M 10, M1 M14, 30 & M31	Short	ER	Revenue	Ongoing
A17	The LLFA will cooperate with NRW as the RMA for main river flooding who are leading on the development of an integrated catchment approach to flood risk management for the River Taf catchment and its tributaries, referred to as the River Taf Catchment Masterplan.	RCT	Alleviate	M7 & M11	Medium	ER	Revenue	Ongoing
A18	Review RCTCBC's Flood Investigation and Reporting procedures and provide appropriate training to staff involved in flood incident investigation and reporting functions.	RCT	Review	M9	Short	ER	Revenue	Ongoing
A19	Implement any best practice developed for the delivery of flood investigation reports and Section 19 reports.	RCT	Review	M9	Short	ER	Revenue	Ongoing
A20	RCTCBC as the LLFA and Highway Authority will assist the Council's Highway Infrastructure team by providing relevant information to feed into the production of Highway Asset Annual Status Reports	RCT	Review	M17, M18 & M19	Short	ER	Revenue	Ongoing
A21	Establish a procedure and policy for the identification, condition, and spatial mapping of assets to ensure consistency across the Authority.	RCT	Review	M17	Short	ER	Revenue	Ongoing
A22	Establish a fixed methodology for assessing flood risk and hazard, which will be used across a range of	RCT	Alleviate	M5, M10, M12, M18,	Short	ER	Revenue	Ongoing

Ref	Action Name	Locat	Action Type	Link to LFRMS Measure	Timesca	Cost	Funding Option(s)	Status
	flood risk management functions uding the response and coordination of res ces during extreme weather events, the dev ment of a lo term capital pipeline of FAS, the RCTCBC's Asset Register and Record, and facilitating the coordination of the LDA's enforcement powers.			122 & 9				
A23	Establish a policy for flood hazard thresholds to determine whether an asset is classified as 'significant' for the purpose of developing the Asset Register and Record as required under Section 21 of the FWMA 2010.	RCT	Alleviate	M12 & M19	Short	ER	Revenue	Ongoing
A24	Update RCTCBC's Culverting Policy to align with best practice.	RCT	Alleviate	M15 & M21	Short	ER	Revenue	Ongoing
A25	Update RCTCBC's Ordinary Watercourse Consent guidance to align with best practice and to consider and support the enactment of the Land Drainage Byelaws.	RCT	Alleviate	M15, M21 & M22	Short	ER	Revenue	Ongoing
A26	Establish an Enforcement Policy encompassing all of RCTCBC's statutory functions and permissive powers under the LDA, including the powers afforded by the Land Drainage Bylaws, and Schedule 3 of the FWMA.	RCT	Alleviate	M22, M23, M25, M26, M27 & M28	Short	ER	Revenue	Ongoing
A27	Enactment of the Land Drainage Byelaws	RCT	Alleviate	M21 & M22	Short	ER	Revenue	Ongoing
A28	Improve and maintain RCTCBC's network of telemetry stations across RCT to capture and monitor rainfall and water level information.	RCT	Review	M30	Short	ER Low	Revenue & Capital	Ongoing

Ref	Action Name	Locat	Action Type	Link to LMS Measure	Timesca	Cost	Funding Option(s)	Status
A29	Review RCTCBC's network of tel etry systems an alerting procedures to provide ea warning notifications for internal response ctions	RC	Prepar ess	M4 5, M6 30	Short	ER	Revenue & Capital	Ongoing
A30	Produce an annual hydrology rep the hydrological conditions and extreme weather events over the 12-month period.	RCT	Review	M30	Short	ER	Revenue	Ongoing
A31	Review and update RCTCBC's Flood Action Plan and the 12 individual SFRA Flood Action Plans every 2 years.	RCT	Review	M13	Short	ER	Revenue	Ongoing

Strategic Flood Risk Area (SFRA) Flood Action Plans

The following Flood Action Plans are specific to each SFRA in RCT. They set out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within each SFRA.

Further details relating to the development of SFRA in RCT is included in Section 3 of the Local Strategy.

1. Upper Rhondda Fawr SFRA Flood Action Plan

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Upper Rhondda Fawr SFRA. Figure 1 shows where in RCT the Upper Rhondda Fawr SFRA is located.

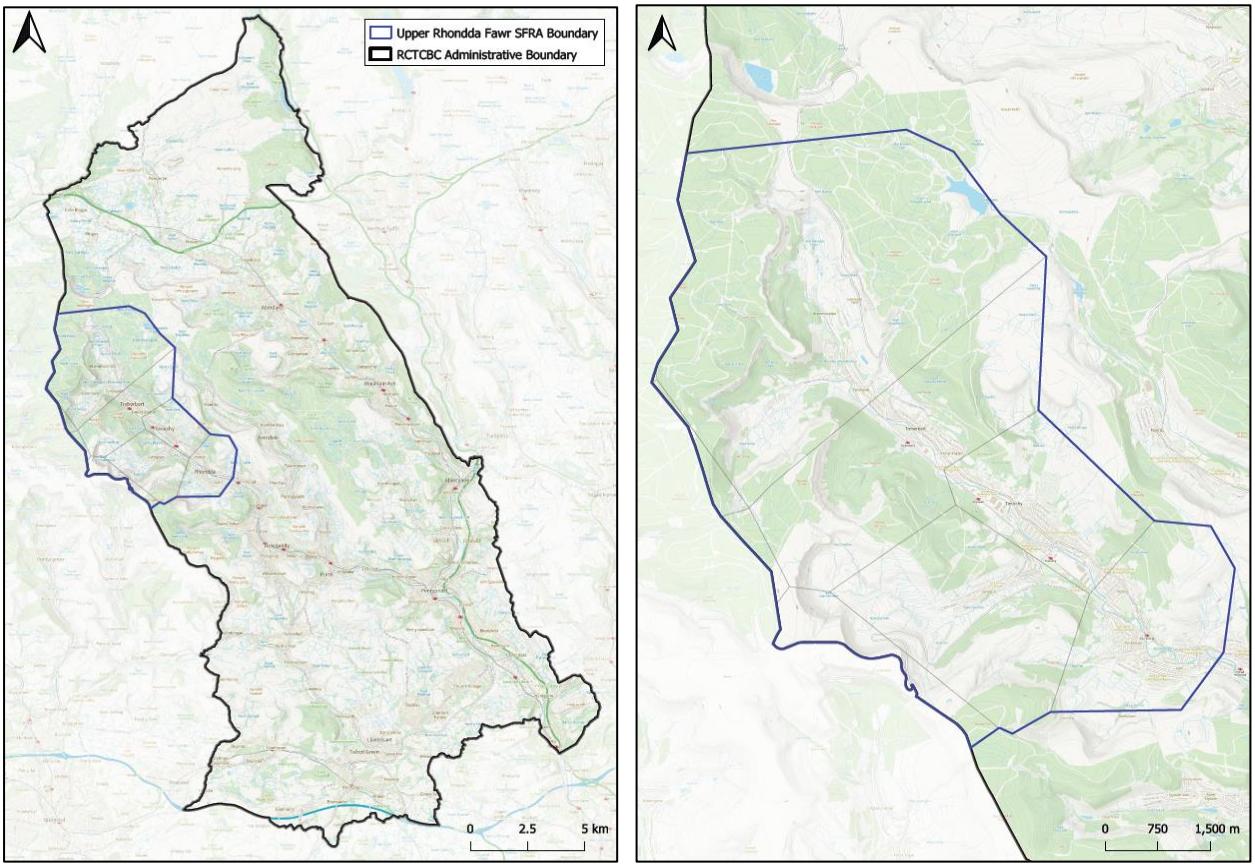

Figure 1: Upper Rhondda Fawr SFRA Location Plan

1.1 Area Description

The Upper Rhondda Fawr SFRA is located in the western sector of RCTCBC and covers an area of approximately 4445.56Ha. The SFRA falls within the catchment of the Rhondda Fawr River which is sourced from the highlands in the north and west of Treherbert and drains through the settlements of Treorchy, Pentre and Gelli before merging with the Rhondda Fach River further downstream at Porth, located to the southeast of the SFRA.

The Upper Rhondda Fawr SFRA comprises of 5 community areas located in the upper Rhondda Fawr valley: Blaenrhondda; Cwmparc; Rhondda; Treherbert and Treorchy. Table 2 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the Communities at Risk Register (CaRR)) relative to the rest of Wales, according to the CaRR.

Table 2: Pluvial ranking for the communities within Upper Rhondda Fawr SFRA according to the CaRR (2019)

Community Name	Pluvial Ranking
Blaenrhondda	20
Cwmparc	89
Rhondda	1
Treherbert	6
Treorchy	3

As shown in Table 2, all 5 communities fall within the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales, with the Rhondda community ranked as the highest risk community in Wales, Treorchy 3rd and Treherbert 6th.

The Rhondda, Treorchy and Treherbert communities are designated Flood Risk Areas as identified in the Severn Preliminary Flood Risk Assessment[1], produced by NRW and the Environment Agency in 2018. Designated Flood Risk Areas require the production of a Flood Risk Management Plan (FRMP), as per the Flood Risk Regulations 2009 (FRR). This Flood Action Plan is intended the meet the requirements of the FRR.

The Upper Rhondda Fawr SFRA catchment is characterised by having steep-sided valleys above the urban areas located on the valley floor. These key settlements include the towns and villages of Blaenrhondda, Blaencwm, Treherbert, Treorchy, Pentre, Ton Pentre and Gelli, which are all heavily urbanised. The surrounding area land use is predominately forestry with some hill grazing.

The geology in the area is mostly compromised of Coal measures, Mudstone, siltstone, and sandstone, which forms part of the South Wales Coalfield basin. The Sedimentary bedrock likely formed between 315.2 and 308 million years ago during the Carboniferous period.

[1] Severn preliminary flood risk assessment (cyfoethnaturiol.cymru)

1.2 Overview of Flood Risk

The extent and degree of local flood risk in the Upper Rhondda Fawr SFRA is significant. Figure 2, extracted from NRW's FRAW map, illustrates the areas at risk of flooding from both surface water and ordinary watercourses, and main river sources across the Upper Rhondda Fawr SFRA.

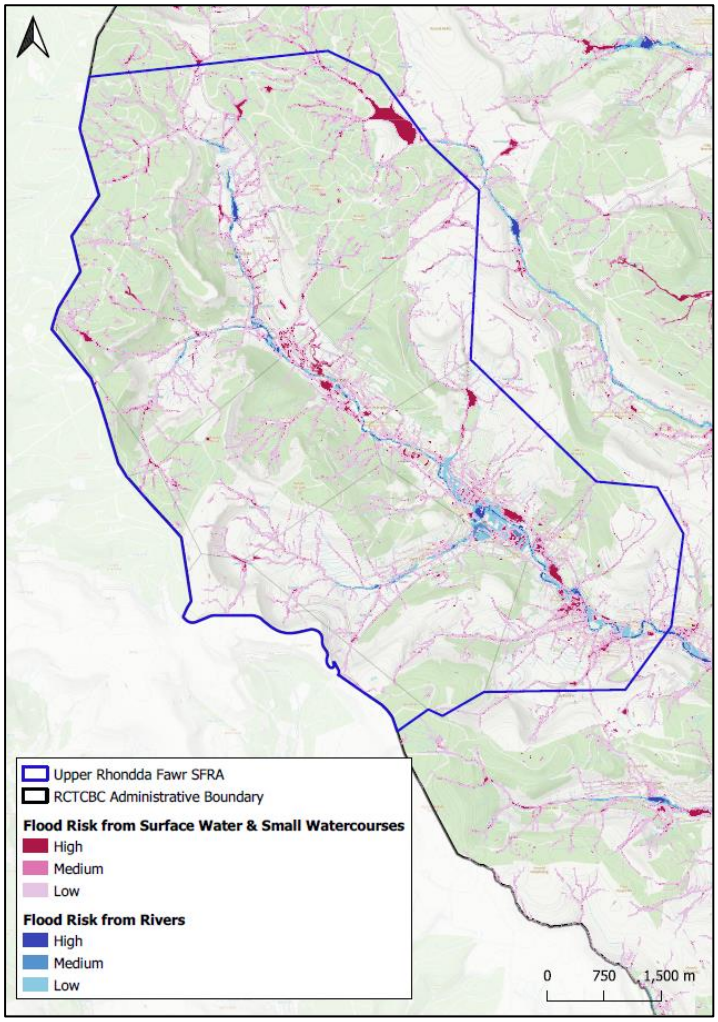

Figure 2: NRW FRAW map for rivers and ordinary watercourse and surface water flood risk within the Upper Rhondda Fawr SFRA

The highest risk posed to people and properties within the SFRA is broadly associated with the network of named and unnamed ordinary watercourses which drain from the steep hillsides in the north, east and west of the SFRA. Whilst the headwaters have

generally remained in a ‘natural’ condition, the watercourses have been modified on the hillsides in relation to the industrial legacy such as coal spoil tips and in later decades for forestry activities. These watercourses have also been heavily modified and culverted beneath urban development on the valley floor before discharging into the Rhondda Fawr River which flows northwest to southeast through the SFRA. Flooding is primarily sourced from culvert inlets and bank breaches associated to the network of ordinary watercourses.

The primary ordinary watercourses flowing through the Upper Rhonnda Fawr SFRA include:

- Nant Ystradffernol
- Nant Saebren
- Nant Lan
- Nant Pentre
- Nant Gelli

Figure 2 also notes a high to low risk of flooding along the length of the main rivers which flow through the SFRA; namely the Rhondda Fawr River but also associated to the Nant Orci, Nant Selsig and Nant Cwm Parc which are designated main rivers.

All ordinary watercourses and designated main river flowing through the Upper Rhondda Fawr SFRA have been depicted in Figure 3.

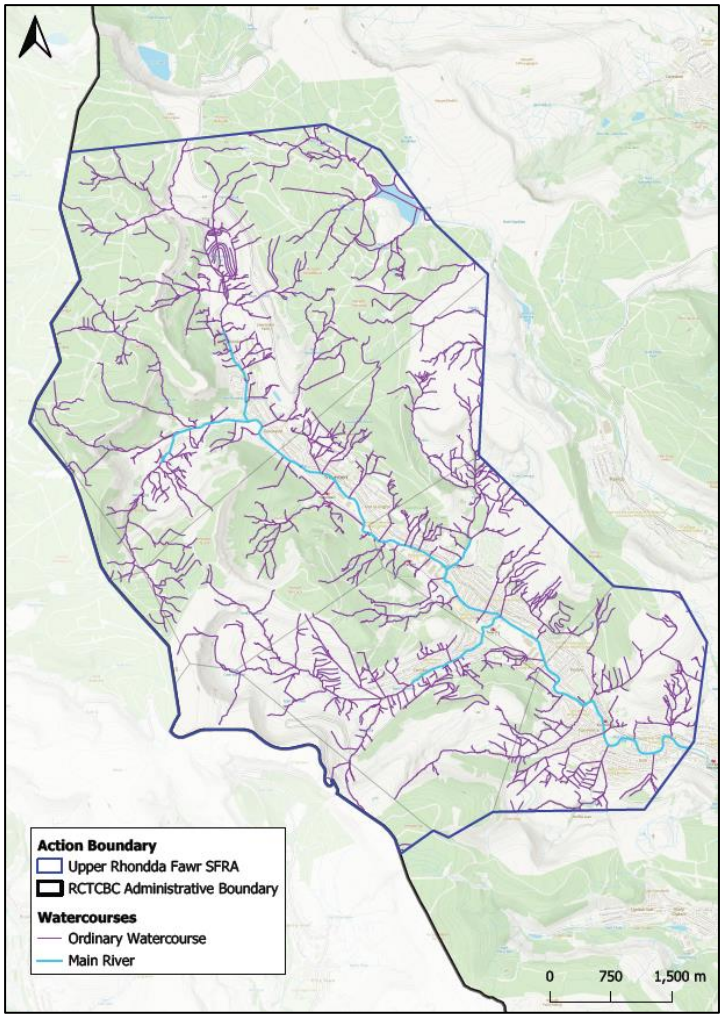

Figure 3: Ordinary watercourses and main rivers flowing through the Upper Rhondda Fawr SFRA

1.3 History of Flooding

The Upper Rhondda SFRA area has experienced several flood events over the past twenty years, often in relation to the network of ordinary watercourses and culverted infrastructure which convey a substantial volume of water through the urban settlements.

The most recent and significant flood event that occurred in the SFRA was the February 2020 flood events. Heavy rainfall as a result of Storms Dennis, Ciara and Jorge resulted in significant repeated flooding, with extensive flooding of residential and commercial properties occurring within the communities of Blaenrhondda, Pentre,

Treherbert and Treorchy. Since Storm Dennis in February 2020, communities including Pentre has experienced flooding on a further four occasions.

Further records of historical flooding prior to Storm Dennis in the SFRA is limited however, notable flooding occurred in 2018 as a result of Storm Bronagh on 20-21st September and Storm Callum on 12-13th October 2018 which impacted Treorchy and Treherbert.

1.4 Assessment of Flood Risk

To meet the requirements of the Flood Risk Regulations 2009 (FRR), RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 3. The data shows the number of receptors at high, medium and low local flood risk in the Upper Rhondda Fawr SFRA.

Table 3: Receptors at high, medium and low risk of flooding from local sources in the Upper Rhondda Fawr SFRA

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)	3202	461	1099
Commercial Properties (n)	202	11	41
Essential Services (n)	31	2	7
Primary/Trunk Roads (km)	4.17	1.14	2.85
Main Line Railways (km)	1.55	0.19	0.37
Agricultural Land - Grades 1, 2 and 3 (ha)	0	0	0
SAC (ha)	0	0	0
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	6.55	2.07	7.02
SINC (Ha)	98.62	24.23	85.42
NNR (ha)	0	0	0
LNR (ha)	0	0	0
Ancient Woodland (ha)	4.33	0.74	2.66
Registered Parks and Gardens (ha)	0	0	0
Country Parks (ha)	0	0	0
Scheduled Ancient Monuments (ha)	0	0	0.16
Listed Buildings (n)	8	1	2

1.5 The Flood Action Plan

The actions presented within the Upper Rhondda Fawr SFRA Flood Action Plan are listed in Table 4 and illustrated in Figure 4.

Table Upper R[illegible]wr SF[illegible]tion Pl[illegible]

Ref	Action Name & De[illegible]ription	Locati[illegible]ommu[illegible]y)	Actio[illegible]	[illegible]k to [illegible] MS Measure	Timesca[illegible]	Cost	Funding Option(s)	Status
SFRA1 A1	**Treorchy FAS** Produce a Full Business Case carrying out detailed design and development of the preferred option for managing the risk of flooding from local sources	Treorchy	Alleviate	M8, M10, M11, M14 & M24	Short Term	High	WG FCERM Capital	Ongoing
SFRA1 A2	**Treorchy FAS** Construction phase of FAS	Treorchy	Alleviate	M24	Medium Term	Very High	WG FCERM Capital	Not Started
SFRA1 A3	**Pentre FAS** Produce a Full Business Case carrying out detailed design and development of the preferred option for managing the risk of flooding from local sources	Rhondda	Alleviate	M8, M11, M12, M14 & M24	Short Term	High	WG FCERM Capital	Ongoing
SFRA A4	**Pentre FAS** Construction phase of FAS	Rhondda	Alleviate	M24	Medium Term	Very High	WG FCERM Capital	Not Started
SFRA1 A5	**Abertonllwyd Road FAS** Produce a Full Business Case carrying out detailed design and development of the preferred option for managing the risk of flooding from local sources	Treherbert	Alleviate	M10, M11, M14 & M24	Short Term	Medium	WG FCERM Capital	Ongoing
SFRA1 A6	**Abertonllwyd Road FAS** Construction phase of FAS	Treherbert	Alleviate	M24	Medium Term	High	WG FCERM Capital	Not Started
SFRA1 A7	**Brook Street – Culvert Repair** Relining and rehabilitation of the ordinary watercourse culvert network to improve its	Blaenrhondda	Alleviate	M6, M10 & M24	Short Term	Medium	WG FCERM Small-scale Works	Ongoing

Ref	Action Name & De ription	ocati mmu)	Actio ype	nk to RMS M sure	imesca	Cost	Funding Option(s)	Status
	structural condition to redu the risk of asset failure							
SFRA1 A8	**Tynewydd – Culvert Rep** Relining and rehabilitation watercourse culvert network to improve its structural condition to reduce the risk of asset failure	Treherbert	Alleviate	M6, M10 & M24	Short Term	Medium	WG FCERM Small-scale Works	Ongoing
SFRA1 A9	**Column Street – Inlet Upgrade** Design and construction works to improve the resilience of the culvert inlet structure and ordinary watercourse channel	Treorchy	Alleviate	M6, M10 & M24	Short Term	Medium	WG FCERM Small-scale Works	Not Started

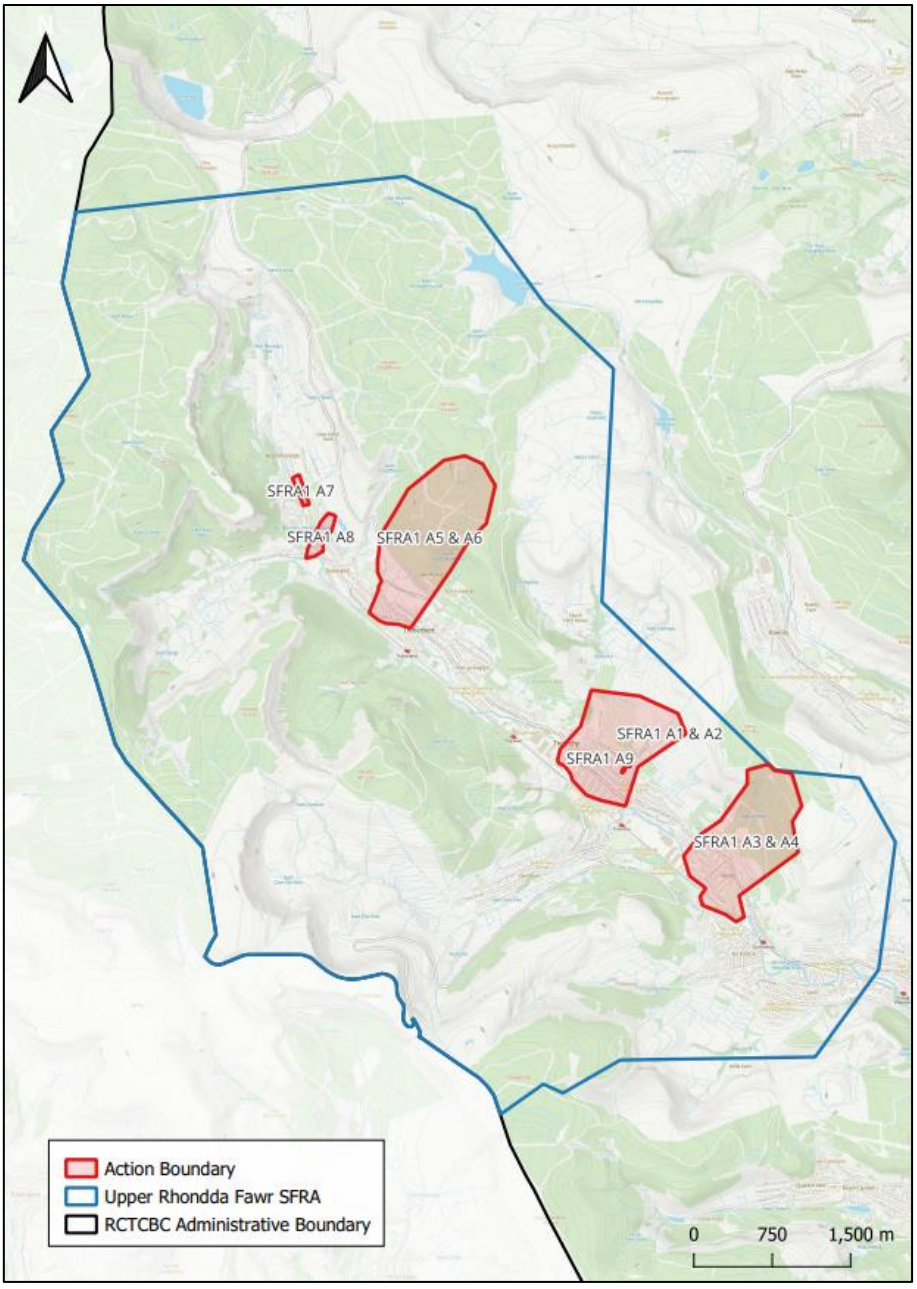

Figure 4: Location plan of the Upper Rhondda Fawr SFRA flood actions

2. Lower Rhondda Fawr SFRA Flood Action Plan

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Lower Rhondda Fawr SFRA. Figure 5 shows where in RCT the Lower Rhondda Fawr SFRA is located.

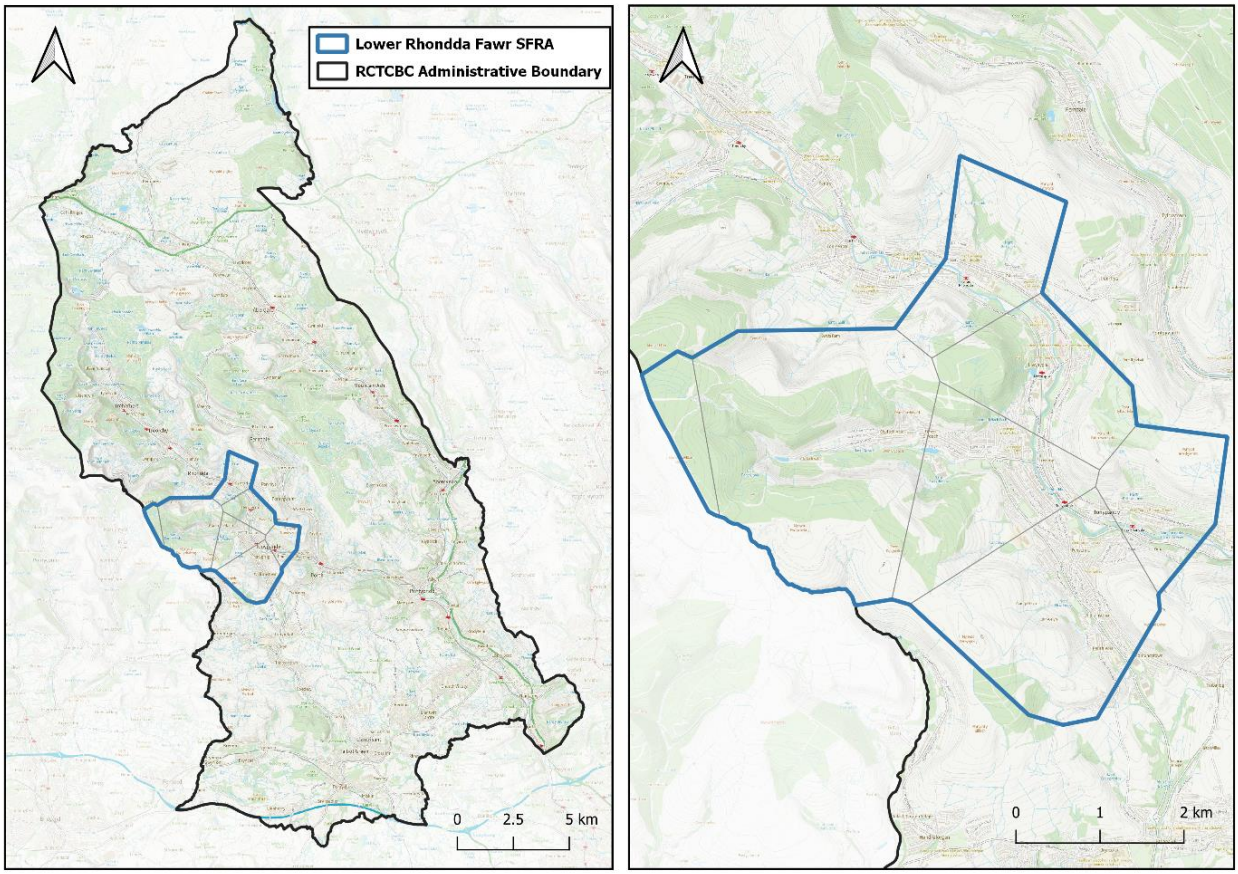

Figure 5: Lower Rhondda Fawr SFRA Location Plan

2.1 Area Description

The Lower Rhondda Fawr SFRA is located in the western sector of RCTCBC and covers an area of approximately 2284.47 Ha. The SFRA falls within the catchment of the Rhondda Fawr River which is sourced from the highlands in the north and west of the Upper Rhondda Fawr SFRA and drains through the settlements Ystrad, Llwynypia, Trealow and Tonypandy before merging with the Rhondda Fach River further downstream at Porth, located southeast of the SFRA.

The Lower Rhondda Fawr SFRA comprises of 6 community areas located in the Lower Rhondda Fawr valley: Clydach Vale, Ystrad, Llwynypia, Tonypandy, Penygraig and Trealaw. Table 5 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the CaRR) relative to the rest of Wales, according to the CaRR.

Table 5: Pluvial ranking for the communities within Lower Rhondda Fawr SFRA according to the CaRR 2019 data

Community Name	Pluvial Ranking
Clydach Vale	87
Ystrad	63
Llwynypia	57
Tonypandy	18
Penygraig	13
Trealaw	135

As shown in Table 5, 5 out of the 6 communities fall within the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales, with Penygraig and Tonypandy communities ranking as the highest in the SFRA at 13th and 18th in Wales, respectively.

The Lower Rhondda Fawr SFRA catchment is characterized by having steep-sided valleys above the urban areas located on the valley floor. These key settlements include the towns and villages of Blaen Clydach, Ystrad, Llwynypia, Trealaw, Tonypandy, Penygraig, Williamstown, Penrhiwfer and Dinas, which are all heavily urbanised. The surrounding area land use is predominantly forestry with some hill grazing.

The geology in the area is mostly compromised of Coal measures, Mudstone, siltstone, and sandstone, which forms part of the South Wales Coalfield basin. The Sedimentary bedrock likely formed between 315.2 and 308 million years ago during the Carboniferous period.

2.2 Overview of Flood Risk

The extent and degree of local flood risk in the Lower Rhondda Fawr SFRA is significant. Figure 6, extracted from NRW's FRAW map, illustrates the areas at risk of

flooding from both surface water and ordinary watercourses and main river sources across the Lower Rhondda Fawr SFRA.

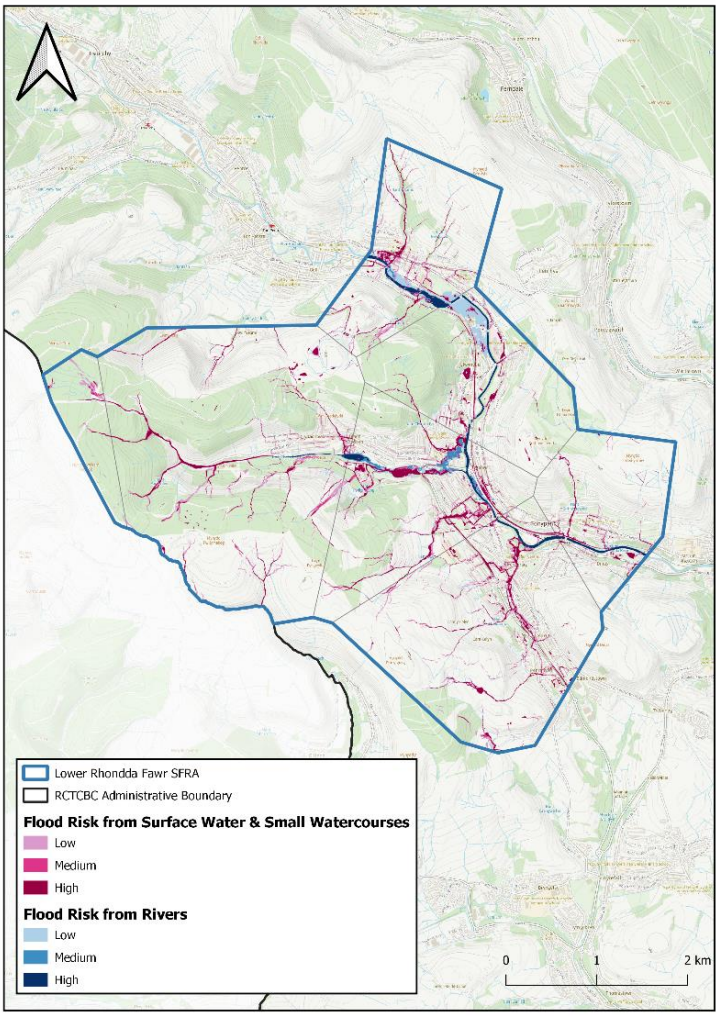

Figure 6: NRW's FRAW map for rivers and ordinary watercourses and surface water flood risk within the Lower Rhondda Fawr SFRA

The highest risk posed to people and properties within the SFRA is broadly associated with the network of named and unnamed ordinary watercourses which drain from the steep hillsides in the west and south of the SFRA. Whilst the headwaters have generally remained in a 'natural' condition, the watercourses have been modified on the hillsides in relation to the industrial legacy such as coal spoil tips and in later decades for forestry activities. These watercourses have also been heavily modified and culverted beneath urban development on the valley floor before discharging into

the Rhondda Fawr River which flows northwest to southeast through the SFRA. Flooding is primarily sourced from culvert inlets and bank breaches associated to the network of ordinary watercourses.

The primary ordinary watercourses flowing through the Lower Rhonnda Fawr SFRA include:

- Nant Y Lamb
- Nant Y Gwyddon
- Nant Clydach
- Nant Graig - Ddu
- Nant Gwyn
- Nant Ffrwdamws

Figure 6 also notes a high to low risk of flooding along the length of the main rivers which flow through the SFRA; namely the Rhondda Fawr River but also associated to the Nant Clydach which is a designated main river.

All ordinary watercourses and designated main rivers flowing through the Lower Rhondda Fawr SFRA have been depicted in Figure 7.

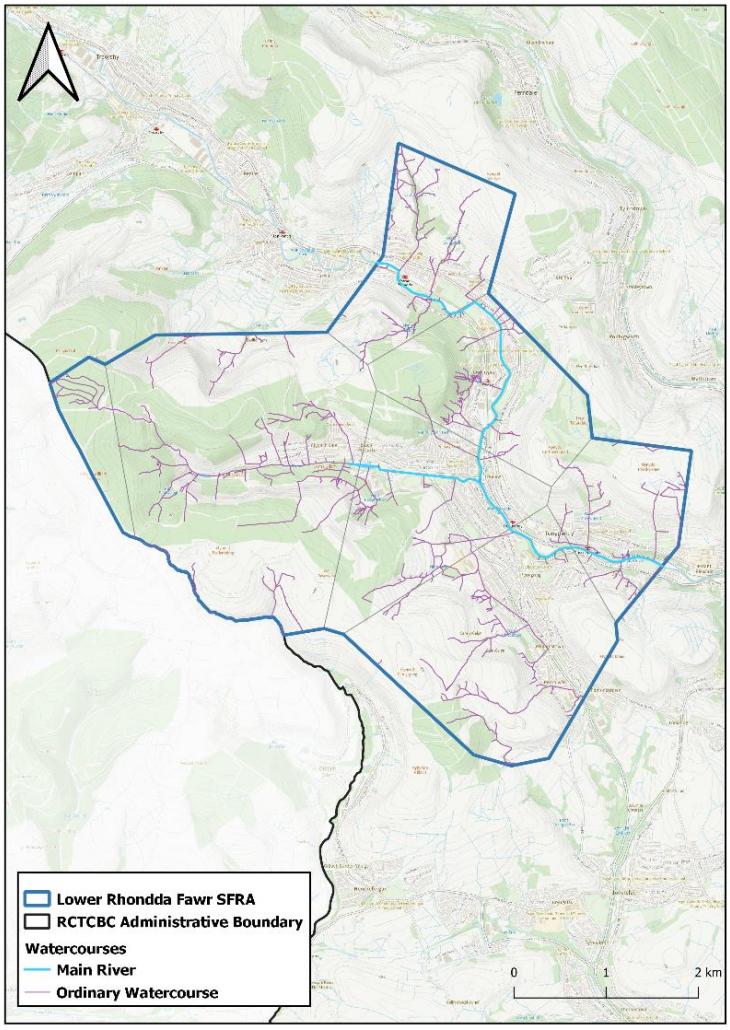

Figure 7: Ordinary watercourses and main rivers flowing through the Lower Rhondda Fawr SFRA

2.3 History of Flooding

The Lower Rhondda Fawr SFRA has experienced several flood events over the past twenty years, often in relation to the network of ordinary watercourses and culverted infrastructure which convey a substantial volume of water through the urban settlements.

The most recent and significant flood event that occurred in the SFRA was the February 2020 flood events. Heavy rainfall as a result of Storms Dennis, Ciara and

Jorge resulted in significant repeated flooding, with extensive flooding of residential and commercial properties occurring within the communities of Tonypandy, Llwynypia, Dinas, Penrhiwfer, Williamstown and Ystrad. Since Storm Dennis in February 2020, communities including Llwynypia has experienced flooding on a further four occasions.

Further records of historical flooding prior to Storm Dennis in the SFRA is limited however, notable flooding occurred in 2018 as a result of Storm Bronagh on 20-21st September which impacted Ystrad.

2.4 Assessment of Flood Risk

To meet the requirements of the FRR, RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 6. The data shows the number of receptors at high, medium and low local flood risk in the Lower Rhondda Fawr SFRA.

Table 6: Receptors at high, medium and low risk of flooding from local sources in the Lower Rhondda Fawr SFRA

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)	1345	407	917
Commercial Properties (n)	164	26	38
Essential Services (n)	19	1	9
Primary/Trunk Roads (km)	5.87	1.66	4.58
Main Line Railways (km)	2.67	0.42	0.83
Agricultural Land - Grades 1, 2 and 3 (ha)	0.70	0.15	0.30
SAC (ha)	0	0	0
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	0.21	0.04	0.20
SINC (Ha)	21.28	6.97	25.51
NNR (ha)	0	0	0
LNR (ha)	0.99	0.12	0.47
Ancient Woodland (ha)	3.75	0.68	2.22
Registered Parks and Gardens (ha)	0	0	0
Country Parks (ha)	0	0	0
Scheduled Ancient Monuments (ha)	0	0	0
Listed Buildings (n)	2	2	1

2.5 The Flood Action Plan

The actions presented within the Lower Rhondda Fawr SFRA Flood Action Plan are listed in Table 7 and illustrated in Figure 8.

Table ower R n wr SF tion Pl

Ref	Action Name & De ription	ocati ommu y)	Actio	k to MS M sure	imesca	Cost	Funding Option(s)	Status
SFRA2 A1	**Penrhys Road - Inlet Upg de** Construction work to impr ve the resilience of the culvert inlet structure	Ystra	Allevi	M24	Short Term	Medium	WG FCERM Capital	Ongoing
SFRA2 A2	**B4223 - Nant y Gwyddion Road** Repairs and improvements to the highway drainage and ordinary watercourse culvert network conveying along the B4223	Llwynypia	Alleviate	M6, M10, M17 & M18	Short Term	Medium	WG Resilient Road Fund	Ongoing
SFRA2 A3	**Programme Business Case** Develop a Programme Business Case, assessing the risk of local flooding utilising a catchment-based approach, considering a range of FRM measures inclusive of wider catchment and nature based solutions, and encouraging collaboration between RMAs, other organisations and the public	Lower Rhondda SFRA	Alleviate	M6, M7, M8, M10, M11, M14, M15, M29 & M31	Short Term	Medium	WG FCERM Capital	Not Started
SFRA2 A4	**King George Field – Culvert Repair** Rehabilitation of the ordinary watercourse culvert network to improve its structural condition to reduce the risk of asset failure	Tonypandy	Alleviate	M6, M10 & M24	Short Term	Medium	WG Small-scale Works	Not Started
SFRA2 A5	**Rosedale Terrace – Inlet Upgrade** Design and construction works to improve the resilience of the culvert inlet structure and ordinary watercourse channel	Llwynypia	Alleviate	M6, M10 & M24	Short Term	Medium	WG Small-scale Works	Not Started

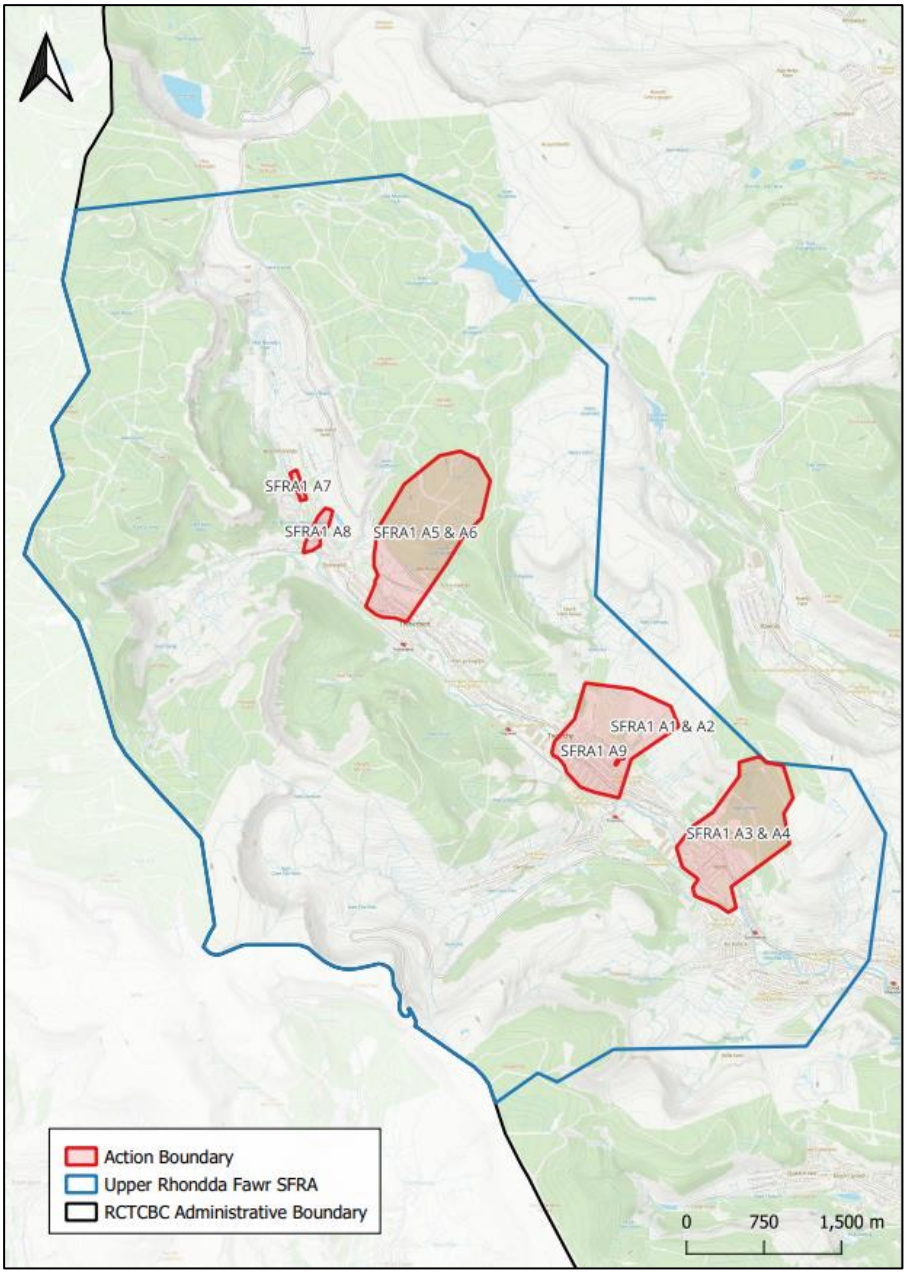

Figure 8: Location plan of the Lower Rhondda Fawr SFRA flood actions

3. Upper Rhondda Fach SFRA Flood Action Plan

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Upper Rhondda Fach SFRA. Figure 9 shows where in RCT the Upper Rhondda Fach SFRA is located.

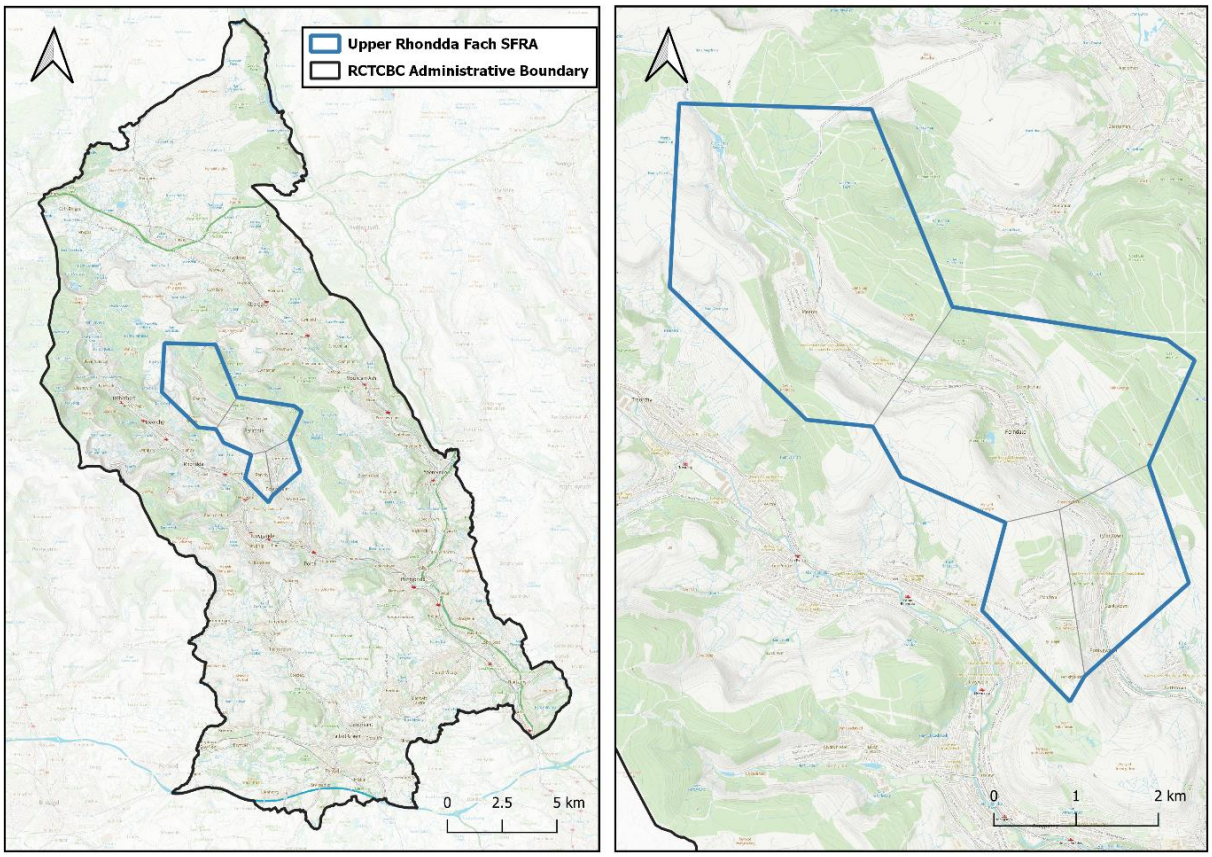

Figure 9: Upper Rhondda Fach SFRA Location Plan

3.1 Area Description

The Upper Rhondda Fach SFRA is located in the northern-central sector of RCTCBC and covers an area of approximately 2110.328 Ha. The SFRA falls within the catchment of the Rhondda Fach River which is sourced from the highlands to the north and west of the SFRA and drains through the settlements of Maerdy, Ferndale, Tylorstown, Stanleytown and Pontygwaith before merging with the Rhondda Fawr River further downstream at Porth, located to the southeast of the SFRA.

The Upper Rhondda Fawr SFRA comprises of 4 community areas located in the upper Rhondda Fach valley: Maerdy, Ferndale, Penrhys and Tylorstown. Table 8 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the CaRR) relative to the rest of Wales, according to the CaRR.

Table 8: Pluvial ranking for the communities within Upper Rhondda Fawr SFRA according to the CaRR 2019 data

Community Name	Pluvial Ranking
Maerdy	50
Ferndale	56
Penrhys	302
Tylorstown	83

As shown in Table 8, 3 out of the 4 communities fall within the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales, with the Maerdy community ranked as the highest risk community in the SFRA at 50th, Ferndale 56th and Tylorstown 83rd.

The Upper Rhondda Fach SFRA catchment is characterised by having steep-sided valleys above the urban areas located on the valley floor. These key settlements include the towns and villages of Maerdy, Ferndale, Tylorstown, Penrhys, Blaenllechau, Stanleytown and Pontygwaith, which are all heavily urbanised. The surrounding area land use is predominately forestry with some hill grazing.

The geology in the area is mostly compromised of Coal measures, Mudstone, siltstone, and sandstone, which forms part of the South Wales Coalfield basin. The Sedimentary bedrock likely formed between 315.2 and 308 million years ago during the Carboniferous period.

3.2 Overview of Flood Risk

The extent and degree of local flood risk in the Upper Rhondda Fach SFRA is significant. Figure 10, extracted from NRW's FRAW map, illustrates the areas at risk of flooding from both surface water and ordinary watercourses, and main river sources across the Upper Rhondda Fach SFRA.

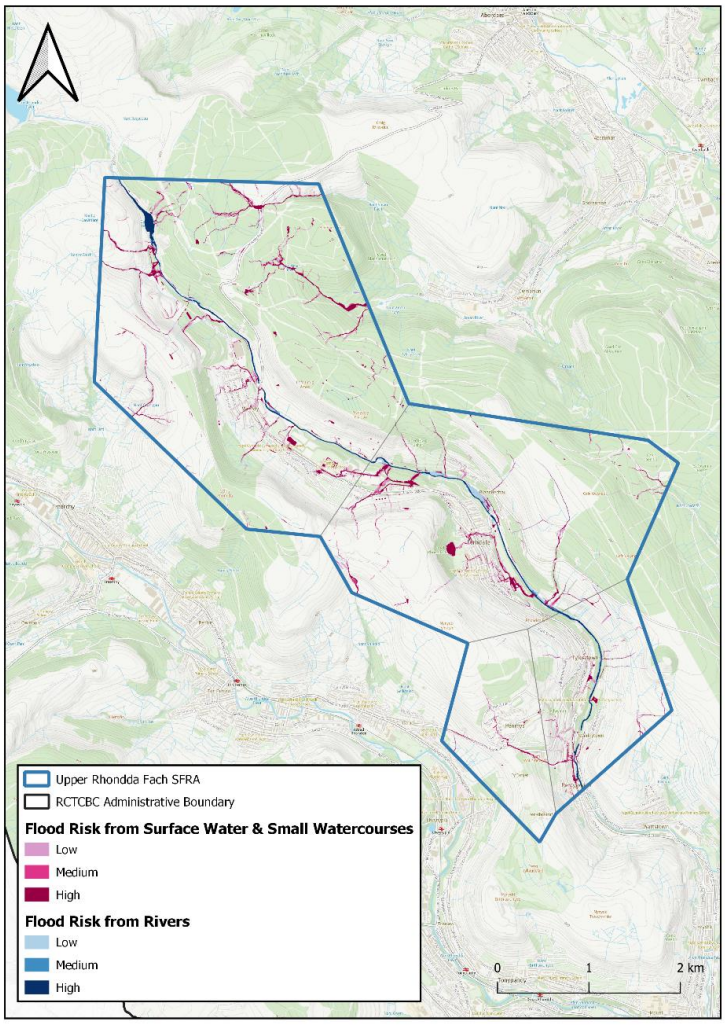

Figure 10: NRW's FRAW map for rivers and ordinary watercourses and surface water flood risk within the Upper Rhondda Fach SFRA

The highest risk posed to people and properties within the SFRA is broadly associated with the network of named and unnamed ordinary watercourses which drain from the steep hillsides in the northeast and west of the SFRA. Whilst the headwaters have generally remained in a 'natural' condition, Castell Nos Reservoir has been constructed north of Maerdy in the upper catchment and watercourses have been modified on the hillsides in relation to the industrial legacy such as coal spoil tips and in later decades for forestry activities. These watercourses have also been heavily modified and culverted beneath urban development on the valley floor before discharging into the Rhondda Fach River, which flows northwest to southeast through the SFRA. Flooding is primarily sourced from culvert inlets and bank breaches associated to the network of ordinary watercourses.

The primary ordinary watercourses flowing through the Upper Rhondda Fach SFRA include:

- Nant Y Gawrnant
- Nant Y Calch
- Nant Aman Fawr

Several unnamed ordinary watercourses are also identified to the southeast of the SFRA, associated with the steep valley sides of Cefn Gwyngul to the east of Ferndale and Tylorstown.

Figure 10 also notes a high to low risk of flooding along the length of the main river which flows through the SFRA; namely the Rhondda Fach River.

All ordinary watercourses and designated main rivers flowing through the Upper Rhondda Fach SFRA have been depicted in Figure 11.

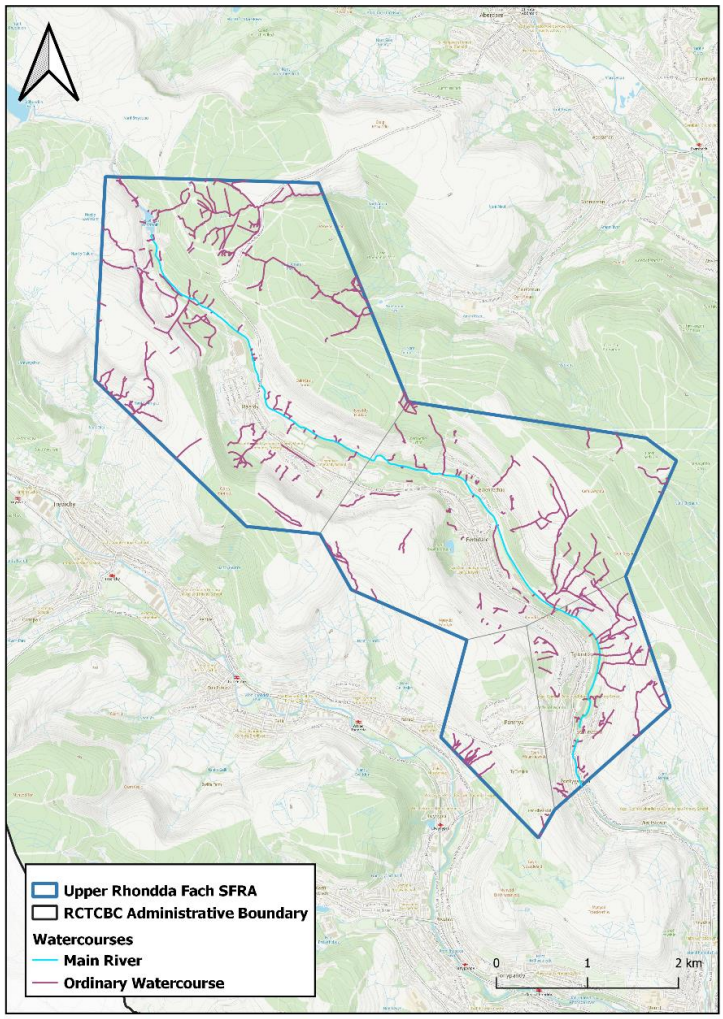

Figure 11: Ordinary watercourses and main rivers flowing through the Upper Rhondda Fach SFRA

3.3 HISTORY OF FLOODING

The Upper Rhondda Fach SFRA area has experienced several flood events over the past twenty years, often in relation to the network of ordinary watercourses and culverted infrastructure which convey a substantial volume of water through the urban settlements.

The most recent and significant flood event that occurred in the SFRA was the February 2020 flood events. Heavy rainfall as a result of Storms Dennis, Ciara and Jorge resulted in significant repeated flooding, with extensive flooding of residential and commercial properties occurring within the communities of Blaenllechau, Ferndale, and Tylorstown. Since Storm Dennis in February 2020, many communities have

experienced flooding multiple times including a further five times in Tylorstown, and three times in Maerdy.

Further records of historical flooding prior to Storm Dennis in the SFRA is limited however, notable flooding occurred in 2018 as a result of Storm Bronagh on 20-21st September and Storm Callum on 12-13th October 2018 which impacted Ferndale and Maerdy. Three unnamed storm events in September and October 2019 also resulted in notable flooding on three separate occasions at Ferndale and Maerdy.

3.4 Assessment of Flood Risk

To meet the requirements of the FRR, RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 9. The data shows the number of receptors at high, medium and low local flood risk in the Upper Rhondda Fach SFRA.

Table 9: Receptors at high, medium and low risk of flooding from local sources in the Upper Rhondda Fach SFRA

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)	564	152	372
Commercial Properties (n)	55	25	17
Essential Services (n)	8	2	1
Primary/Trunk Roads (km)	0.9	0.38	1.63
Main Line Railways (km)	0	0	0
Agricultural Land - Grades 1, 2 and 3 (ha)	0	0	0
SAC (ha)	0	0	0
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	0	0	0
SINC (Ha)	16.84	6.85	17.33
NNR (ha)	0	0	0
LNR (ha)	0	0	0
Ancient Woodland (ha)	0.57	0.10	0.71
Registered Parks and Gardens (ha)	0	0	0
Country Parks (ha)	0	0	0
Scheduled Ancient Monuments (ha)	0	0	0
Listed Buildings (n)	2	0	0

3.5 The Flood Action Plan

The actions presented within the Upper Rhondda Fach SFRA Flood Action Plan are listed in Table 10 and illustrated in Figure 12.

Table 1 Upper [illegible] Catch SF[illegible]tion P[illegible]

Ref	Action Name & De[illegible]ription	[illegible]ocati[illegible]ommu[illegible]y)	Actio[illegible]	[illegible]k to [illegible] MS M[illegible]sure	[illegible]imesca[illegible]	Cost	Funding Option(s)	Status
SFRA3 A1	**Arfryn Terrace FAS** Construction phase of FAS	Tylorsto[illegible]	Alle[illegible]	[illegible]24	[illegible]hort Ter[illegible]	High	WG FCERM Capital	Ongoing
SFRA3 A2	**Blaenllechau SOC** Develop a SOC to better understand the risk of flooding at Blaenllechau, using a whole catchment approach, to provide recommendations for suitable local flood risk management measures.	Ferndale	Alleviate	M6, M7, M8, M10, M11, M14, M15	Short Term	Medium	WG FCERM Capital	Not Started

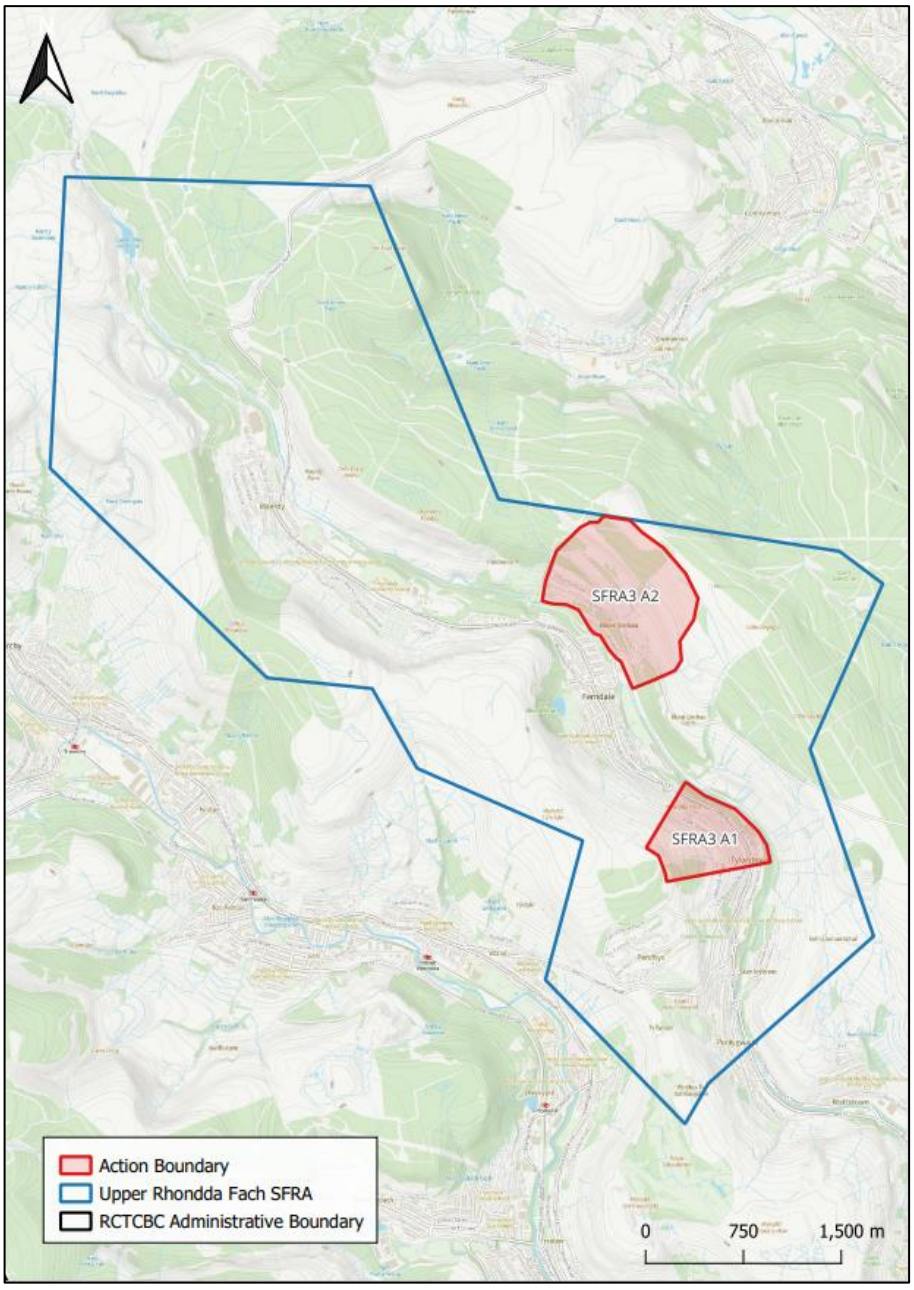

Figure 12: Location plan of the Upper Rhondda Fach SFRA flood actions

4. Lower Rhondda Fach SFRA Flood Action Plan

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Lower Rhondda Fach SFRA. Figure 13 shows where in RCT the Lower Rhondda Fach SFRA is located.

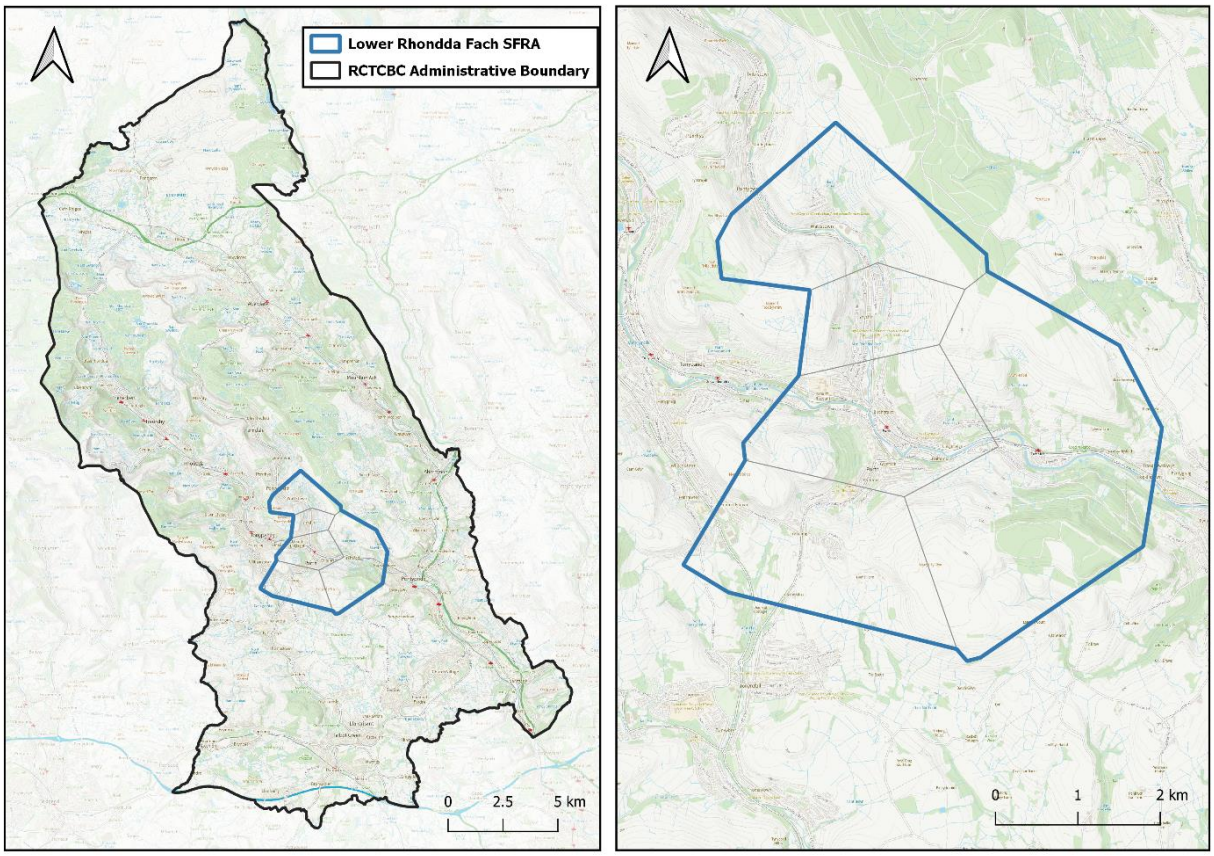

Figure 13: Lower Rhondda Fach SFRA Location Plan

4.1 Area Description

The Lower Rhondda Fach SFRA is located in the southern-central sector of RCTCBC and covers an area of approximately 2245.70 Ha. The SFRA falls within the catchment of the Rhondda Fach River which is sourced from the highlands north of the Upper Rhondda Fach SFRA and drains southeasterly into the Lower Rhondda Fach SFRA. The Rhondda Fach River travels through the settlements of Wattstown and Ynyshir and merges with the Rhondda Fawr River at Porth before conveying in an easterly direction through Trehafod and Hopkinstown.

The Lower Rhondda Fach SFRA comprises of 5 community areas located in the Lower Rhondda Fach valley: Wattstown, Ynyshir, Porth, Trebanog and Trehafod. Table 11 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the CaRR) relative to the rest of Wales, according to the CaRR.

Table 11: Pluvial ranking for the communities within Lower Rhondda Fach SFRA according to the CaRR 2019 data

Community Name	Pluvial Ranking
Wattstown	137
Ynyshir	55
Porth	35
Trebanog	236
Trehafod	132

As shown in Table 11, 2 out of the 5 communities fall within the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales, with the communities of Porth and Ynyshir ranking the highest risk in the SFRA at 35th and 55th in Wales, respectively.

The Lower Rhondda Fach SFRA catchment is characterized by having steep-sided valleys above the urban areas located on the valley floor. These key settlements include the towns and villages of Wattstown, Ynyshir, Porth, Trehafod, Hopkinstown, Cymmer, Llwynycelyn and Trebanog, which are all heavily urbanised. The surrounding area land use is predominantly forestry with some hill grazing.

The geology in the area is mostly compromised of Coal measures, Mudstone, siltstone, and sandstone, which forms part of the South Wales Coalfield basin. The Sedimentary bedrock likely formed between 315.2 and 308 million years ago during the Carboniferous period.

4.2 Overview of Flood Risk

The extent and degree of local flood risk in the Lower Rhondda Fach SFRA is significant. Figure 14, extracted from NRW's FRAW map, illustrates the areas at risk of flooding from both surface water and ordinary watercourses, and main river sources across the Lower Rhondda Fach SFRA.

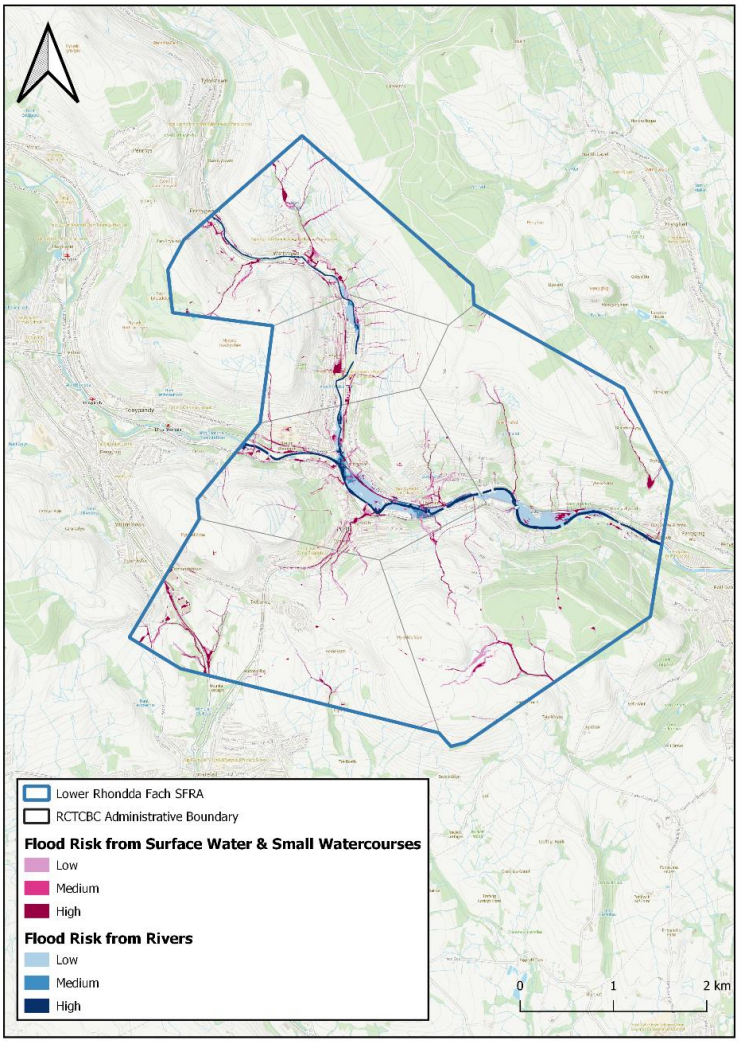

Figure 14: NRW's FRAW map for rivers and ordinary watercourses and surface water flood risk within the Lower Rhondda Fach SFRA

The highest risk posed to people and properties within the SFRA is broadly associated with the network of named and unnamed ordinary watercourses which drain from the steep hillsides in the north and south of the SFRA. Whilst the headwaters have generally remained in a 'natural' condition, the watercourses have been modified on the hillsides in relation to the industrial legacy such as coal spoil tips. These watercourses have also been heavily modified and culverted beneath urban development on the valley floor before discharging into both the Rhondda Fach (from the north) and Rhondda Fawr River (from the west) before merging and flowing east

through the SFRA. Flooding is primarily sourced from culvert inlets and bank breaches associated to the network of ordinary watercourses.

The primary ordinary watercourses flowing through the Lower Rhondda Fawr SFRA include:

- Nant Llechau
- Nant Hafod
- Nant Llwyncelyn
- Nant Graig-Ddu
- Nant Blaenhenwysg
- Nant Gellwion
- Nant Muchudd

Figure 14 also notes a high to low risk of flooding along the length of the main rivers which flow through the SFRA; namely the Rhondda Fawr and Rhondda Fach Rivers.

All ordinary watercourses and designated main rivers flowing through the Lower Rhondda Fach SFRA have been depicted in Figure 15.

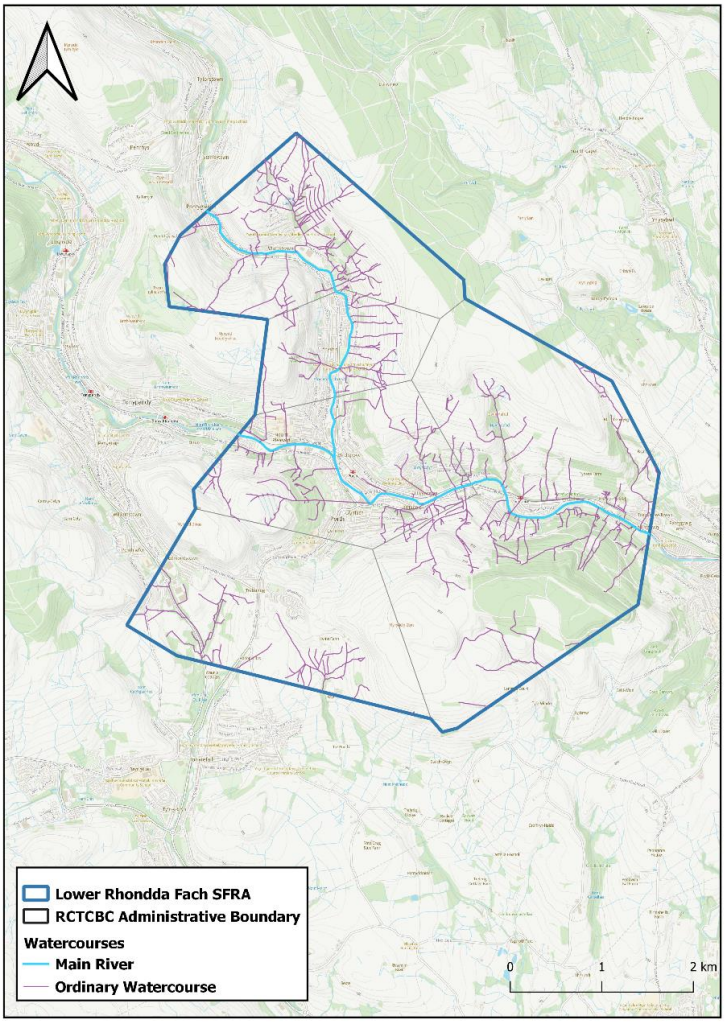

Figure 15: Ordinary watercourses and main rivers flowing through the Lower Rhondda Fach SFRA

4.3 History of Flooding

The Lower Rhondda Fach SFRA has experienced several flood events over the past twenty years, often in relation to the network of ordinary watercourses and culverted infrastructure which convey a substantial volume of water through the urban settlements.

The most recent and significant flood event that occurred in the SFRA was the February 2020 flood events. Heavy rainfall as a result of Storms Dennis, Ciara and Jorge resulted in significant repeated flooding, with extensive flooding of residential and commercial properties occurring within the communities of Porth, Trebanog and

Ynyshir. Since Storm Dennis in February 2020, communities including Porth has experienced flooding on a further six occasions.

Further records of historical flooding prior to Storm Dennis in the SFRA is limited however, notable flooding occurred in 2018 as a result of Storm Bronagh on 20-21st September, Storm Callum on 12-13th October and an Unnamed Storm on 8-9th December 2018 which impacted Porth.

4.4 Assessment of Flood Risk

To meet the requirements of the FRR, RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 12. The data shows the number of receptors at high, medium and low local flood risk in the Lower Rhondda Fach SFRA.

Table 12: Receptors at high, medium and low risk of flooding from local sources in the Lower Rhondda Fach SFRA

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)	638	171	541
Commercial Properties (n)	73	13	20
Essential Services (n)	4	2	5
Primary/Trunk Roads (km)	2.83	1.02	2.97
Main Line Railways (km)	1.2	0.23	0.4
Agricultural Land - Grades 1, 2 and 3 (ha)	2.11	0.34	1.49
SAC (ha)	0	0	0
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	1.39	0.39	1.81
SINC (Ha)	7.32	2.02	9.28
NNR (ha)	0	0	0
LNR (ha)	0	0	0
Ancient Woodland (ha)	2.62	0.46	1.71
Registered Parks and Gardens (ha)	0	0	0
Country Parks (ha)	0	0	0
Scheduled Ancient Monuments (ha)	0	0	0
Listed Buildings (n)	5	2	1

4.5 The Flood Action Plan

The actions presented within the Lower Rhondda Fach SFRA Flood Action Plan are listed in Table 13 and illustrated in Figure 16.

Table 1 Lower [illegible] Action Plan

Ref	Action Name & Description	Location (Community)	Action Type	Link to LFRMS Measure	Timescale	Cost	Funding Option(s)	Status
SFRA4 A1	**Turberville Road** Construction phase of FAS	Porth	Alle[illegible]	[illegible]24	[illegible]hort Ter[illegible]	High	WG FCERM Capital	Ongoing
SFRA4 A2	**Trehafod FAS** Produce an OBC identifying the preferred option(s) for managing the risk of flooding from local sources	Trehafod	Alleviate	M8, M10, M11, M14, M24, M29 & M31	Short Term	Medium	WG FCERM Capital	Ongoing
SFRA4 A3	**Trehafod FAS** Produce a Full Business Case carrying out detailed design and development of the preferred option for managing the risk of flooding from local sources	Trehafod	Alleviate	M6, M7, M8, M10, M11, M14, M24, M29 & M31	Short Term	High	WG FCERM Capital	Not Started
SFRA4 A4	**Trehafod FAS** Construction phase of FAS	Trehafod	Alleviate	M24	Medium Term	Very High	WG FCERM Capital	Not Started
SFRA4 A5	**Llwyncelyn, Porth SOC** Develop a SOC to better understand the risk of flooding at Llwyncelyn, using a whole catchment approach, to provide recommendations for suitable local flood risk management measures.	Porth	Alleviate	M6, M7, M8, M10, M11, M14, M15	Short Term	Medium	WG FCERM Capital	Not Started
SFRA4 A6	**Programme Business Case** Develop a Programme Business Case, assessing the risk of local flooding utilising a catchment-based approach, considering a range of FRM measures inclusive of wider catchment and nature based	Lower Rhondda Fach SFRA	Alleviate	M6, M7, M8, M10, M11, M14, M15, M29 & M31	Medium Term	Medium	WG FCERM Capital	Not Started

Ref	Action Name & De[illegible]ription	[illegible]ocati[illegible] [illegible]mmu[illegible])	Actio[illegible]ype	[illegible]nk to [illegible]RMS M[illegible]sure	[illegible]imesca[illegible]	Cost	Funding Option(s)	Status
	solutions, and encouragin[illegible]llaboration between RMAs, other orga[illegible]ations and the public.							
SFRA4 A7	**Heath Terrace (Central In[illegible] Upgrade** Design and construction works to improve resilience of the culvert inlet structure	Ynyshir	Alleviate	M6 & M10	Short Term	Medium	WG FCERM Small-scale Works	Ongoing
SFRA4 A8	**St Luke's Road, Llwyncelyn** Improvements to upgrade the highway inlet structure	Porth	Alleviate	M6, M10, M17 & M18	Short Term	Medium	WG Resilient Road Fund	Ongoing
SFRA4 A9	**Ynyshir Road** Improvements to upgrade the highway drainage infrastructure	Ynyshir	Alleviate	M6, M10, M17 & M18	Short Term	Medium	WG Resilient Road Fund	Ongoing
SFRA4 A10	**Cymmer Road** Highway drainage improvements and ordinary watercourse rehabilitation to manage local flood risk affecting the highway	Porth	Alleviate	M6, M10, M17 & M18	Short Term	Medium	WG Resilient Road Fund	Ongoing

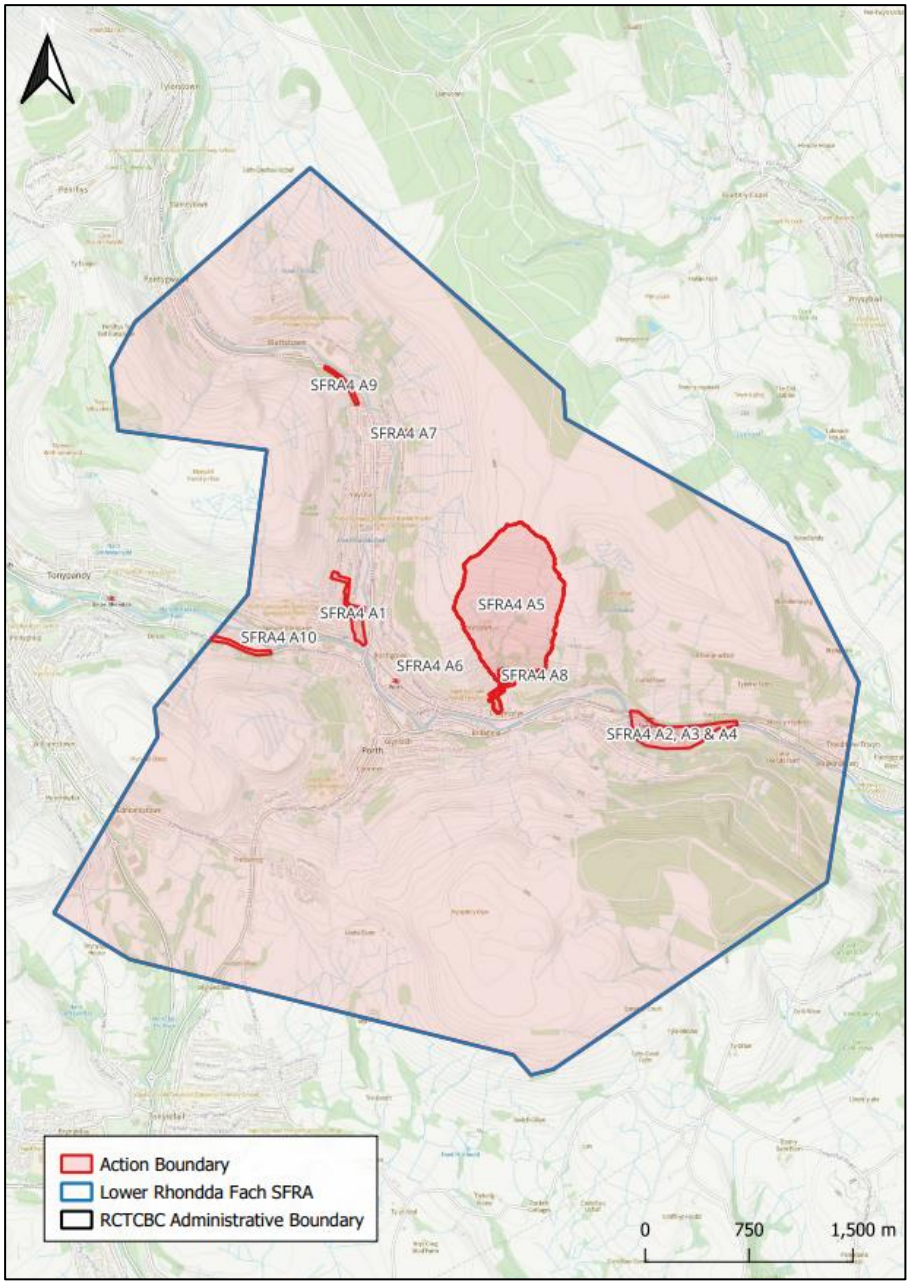

Figure 16: Location plan of the Lower Rhondda Fach SFRA flood actions

5. Upper Cynon SFRA Flood Action Plan

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Upper Cynon SFRA. Figure 17 shows where in RCT the Upper Cynon SFRA is located.

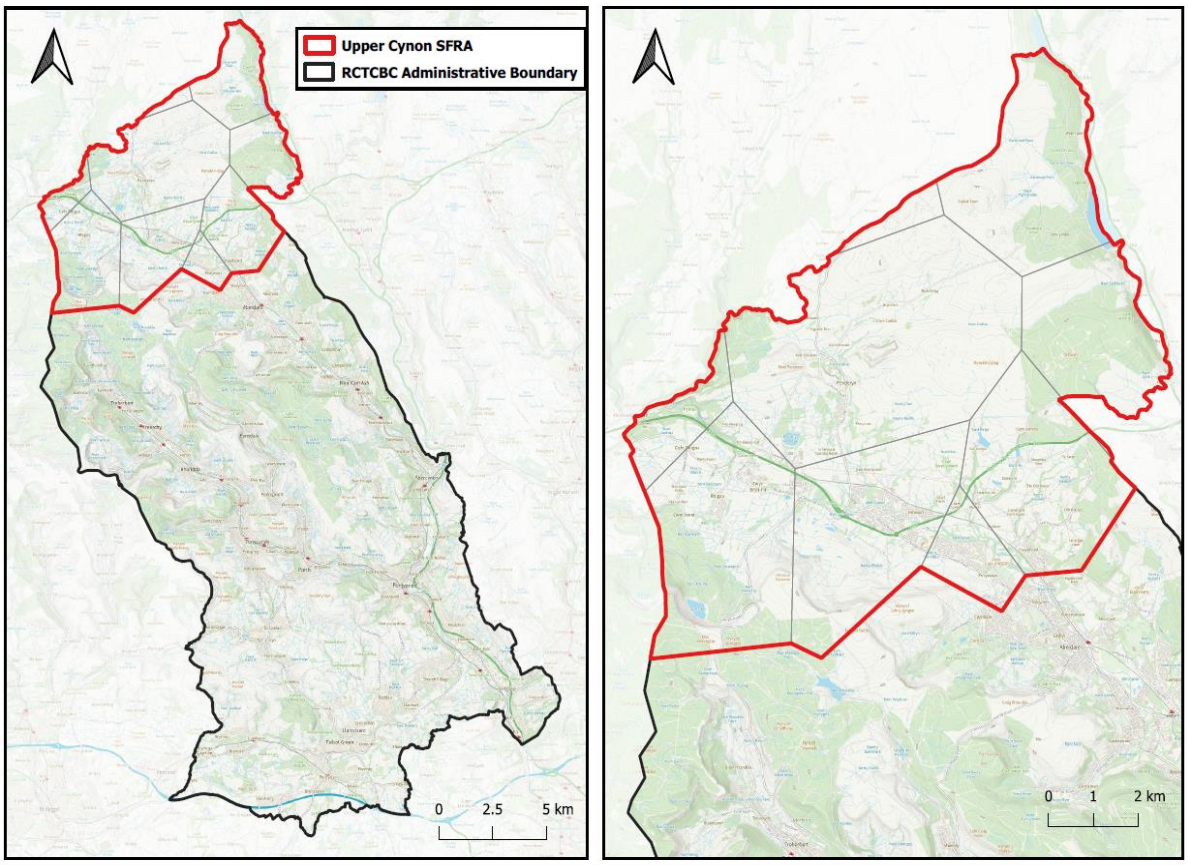

Figure 17: Upper Cynon SFRA Location Plan

5.1 Area Description

The Upper Cynon SFRA is located in the northern sector of RCTCBC and covers an area of approximately 8845.374Ha. The Upper Cynon SFRA falls within two catchment areas, the River Cynon and the River Mellte, which are both sourced from the highlands of the Bannau Brycheiniog. Hydrologically, the area is characterised by several small streams and tributaries which form two separate catchment areas.

The River Cynon is the primary main river and the main catchment in the Upper Cynon SFRA. The river is sourced in the highlands of the Bannau Brycheiniog at Ogof Fawr before flowing southeast along the east side of the village of Pendery. The River Cynon continues to flow southwards towards the villages of Hirwaun and Penywaun where the waters of Nant y Bwllfa, Nant y Cnapiau and Nant Y Bwlch ordinary watercourses discharge into the Cynon along its length. Much of the waterways in this area have been significantly altered over time to facilitate the Hirwaun Ironworks, which operated during the industrial revolution. The River Cynon is further sourced by the combined flows of the Nant Hir and Nant Melyn, which enter the river north of Penywaun, and the Nant y Gwyddel which enters from the east of Penywaun.

The Upper Cynon SFRA is comprised of 10 community areas, with 5 communities within the RCTCBC Administrative Boundary (Hirwaun, Penderyn, Llwydcoed, Penywaun and Rhigos), and 5 located outside the RCTCBC Administrative Boundary (Cefn-coed-y-cymmer, Vaynor, Nant-ddu, Ystradfellte and Pontneddfechan). Table 14 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the CaRR) relative to the rest of Wales, according to the CaRR.

Table 14: Pluvial ranking for the communities within Upper Cynon SFRA according to the CaRR 2019 data

Community Name	Pluvial Ranking
Hirwaun	61
Penderyn	419
Llwydcoed	232
Penywaun	118
Rhigos	357
Cefn Coed Y Cymmer	59
Vaynor	275
Nant Ddu	1061
Ystradfellte	949
Pontneddfechan	1124

As shown in Table 14, 2 communities in the Upper Cynon fall within the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales, with Cefn-Coed-y-Cymmer ranked as the highest risk in the Upper Cynon SFRA (59th), followed by Hirwaun (61st).

The topography of the Upper Cynon region is largely characterized by the highlands of the Bannau Brycheiniog in the north of the region, and the glaciated U-shaped valley formation of the Cynon Valley to the south. The land use in the area is predominantly

agricultural, with some forestry and small pockets of urban development along the valley floors. These small pockets contain the largest settlements in the area, which include the villages of Hirwaun, Penywaun, Rhigos, Penderyn and Llwydcoed.

The geology in the area can be divided into two parts: North and South. Carboniferous sandstone and limestone form the majority of the Sedimentary bedrock in the North of the Upper Cynon, while the south consists mostly of coal measures, Mudstone, siltstone and sandstone, which forms part of the South Wales Coalfield basin.

5.2 Overview of Flood Risk

The extent and degree of local flood risk in the Upper Cynon SFRA is significant. Figure 18, extracted from NRW's FRAW map, illustrates the areas at risk of flooding from both surface water and ordinary watercourses, and main river sources across the Upper Cynon SFRA.

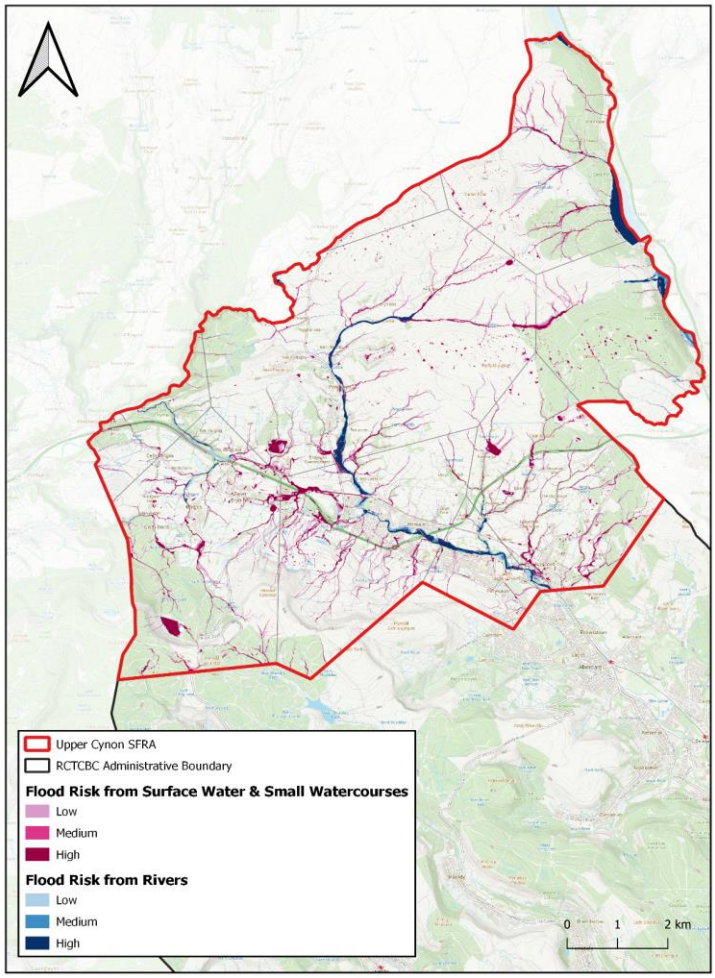

Figure 18: NRW's FRAW map for rivers and ordinary watercourse and surface water flood risk within the Upper Cynon SFRA

As observed in Figure 18, the highest risk posed to people and properties within the Upper Cynon SFRA is broadly associated with the network of named and unnamed ordinary watercourses which drain from the Bannau Brycheiniog in the north, and from the steep hillside of the Rhigos Mountain to the south of the SFRA.

There is also a significant risk to people and properties associated with the River Cynon. The risk from the main River and network of named and unnamed ordinary watercourse has likely been exacerbated by the alteration of much of the water networks in the area. Heavy modification of the main river and its tributaries occurred during the industrial period to facilitate the iron and coal extraction in the region. Additionally, much of the network has been culverted underneath the villages of Hirwaun and Penywaun. As a result, flood risk in the area is primarily sourced from

culvert inlets and bank breaches associated to the main river and network of ordinary watercourses.

The primary ordinary watercourses flowing through the Upper Cynon SFRA include:

- Nant Cadlan
- Nant y Bwllfa
- Nant y Cnapiau
- Nant Y Bwlch
- Nant Hir
- Nant Melyn

All ordinary watercourses and designated main river flowing through the Upper Cynon SFRA have been depicted in Figure 19.

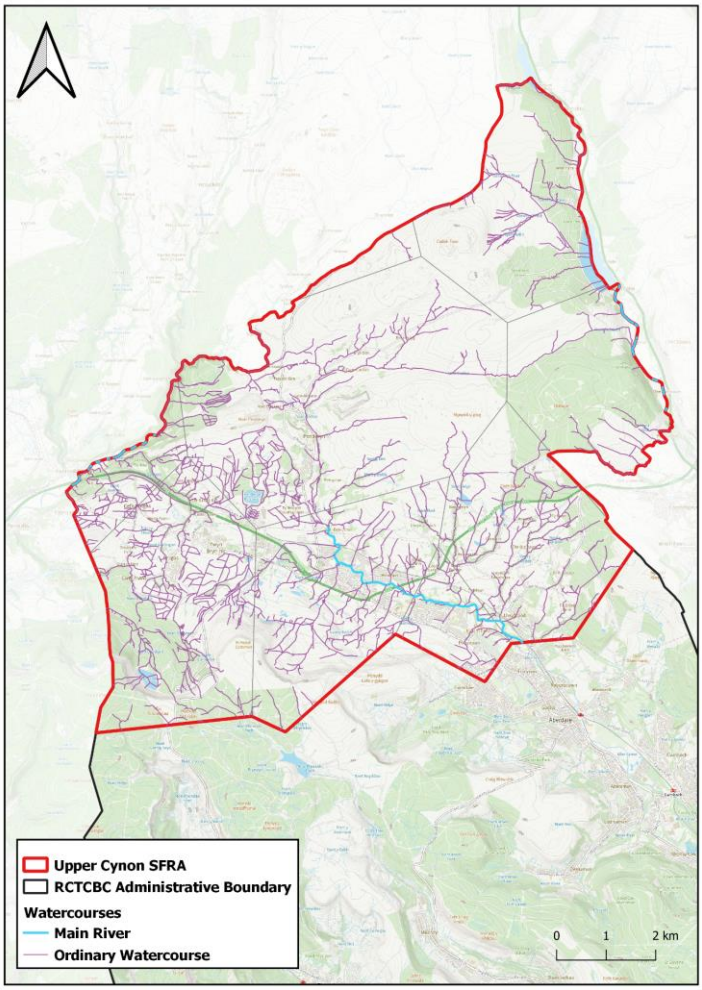

Figure 19: Ordinary watercourses and main rivers flowing through the Upper Cynon SFRA

5.3 History of Flooding

There is little evidence to suggest that there has been a vast history of flooding in the Upper Cynon region, with the most common instances of flooding occurring to the highway networks including Rhigos Road and the A465.

The most recent and significant flood event that occurred in the SFRA was the February 2020 flood events. Heavy rainfall as a result of Storms Dennis, Ciara and Jorge resulted in significant repeated flooding, with extensive flooding of residential and commercial properties across RCT. The primary source of flooding to the Upper Cynon SFRA during Storm Dennis originated from the River Cynon overtopping itss banks at Hirwaun. Main river flooding was exacerbated by excess surface run off as a result of drainage systems becoming overwhelmed due to the intense rainfall.

Further records of historical flooding prior to Storm Dennis in the SFRA is limited however, one incident of internal flooding was reported at Penywaun in May 2021.

5.4 Assessment of Flood Risk

To meet the requirements of the FRR, RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 15. The data shows the number of receptors at high, medium and low local flood risk in the Upper Cynon SFRA.

Table 15: Receptors at high, medium and low risk of flooding from local sources in the Upper Cynon SFRA

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)	337	91	341
Commercial Properties (n)	38	6	26
Essential Services (n)	8	1	3
Primary/Trunk Roads (km)	8.39	1.96	5.67
Main Line Railways (km)	0	0	0
Agricultural Land - Grades 1, 2 and 3 (ha)	0.26	0.12	0.15
SAC (ha)	9.77	2.04	6.41
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	22.94	3.42	10.85
SINC (Ha)	57.04	14.41	53.42
NNR (ha)	0.41	0.10	0.28
LNR (ha)	0	0	0
Ancient Woodland (ha)	14.66	2.86	8.91
Registered Parks and Gardens (ha)	0	0	0
Country Parks (ha)	8.33	1.92	6.87
Scheduled Ancient Monuments (ha)	0.54	0.21	1.60
Listed Buildings (n)	4	0	1

5.5 The Flood Action Plan

The actions presented within the Upper Cynon SFRA Flood Action Plan are listed in Table 16 and illustrated in Figure 20.

Table 16: Upper Cynon SFRA Action Plan

Ref	Action Name & Description	Location (Community)	Action Type	Link to LFRMS Measure	Timescale	Cost	Funding Option(s)	Status
SFRA5 A1	**Programme Business Case** Develop a Programme Business Case, assessing the risk of local flooding utilising a catchment-based approach, considering a range of FRM measures inclusive of wider catchment and nature based solutions, and encouraging collaboration between RMAs, other organisations and the public.	Upper Cynon SFRA	Alleviate	M6, M7, M8, M10, M11, M14, M15, M29 & M31	Medium Term	Medium	WG FCERM Capital	Not Started

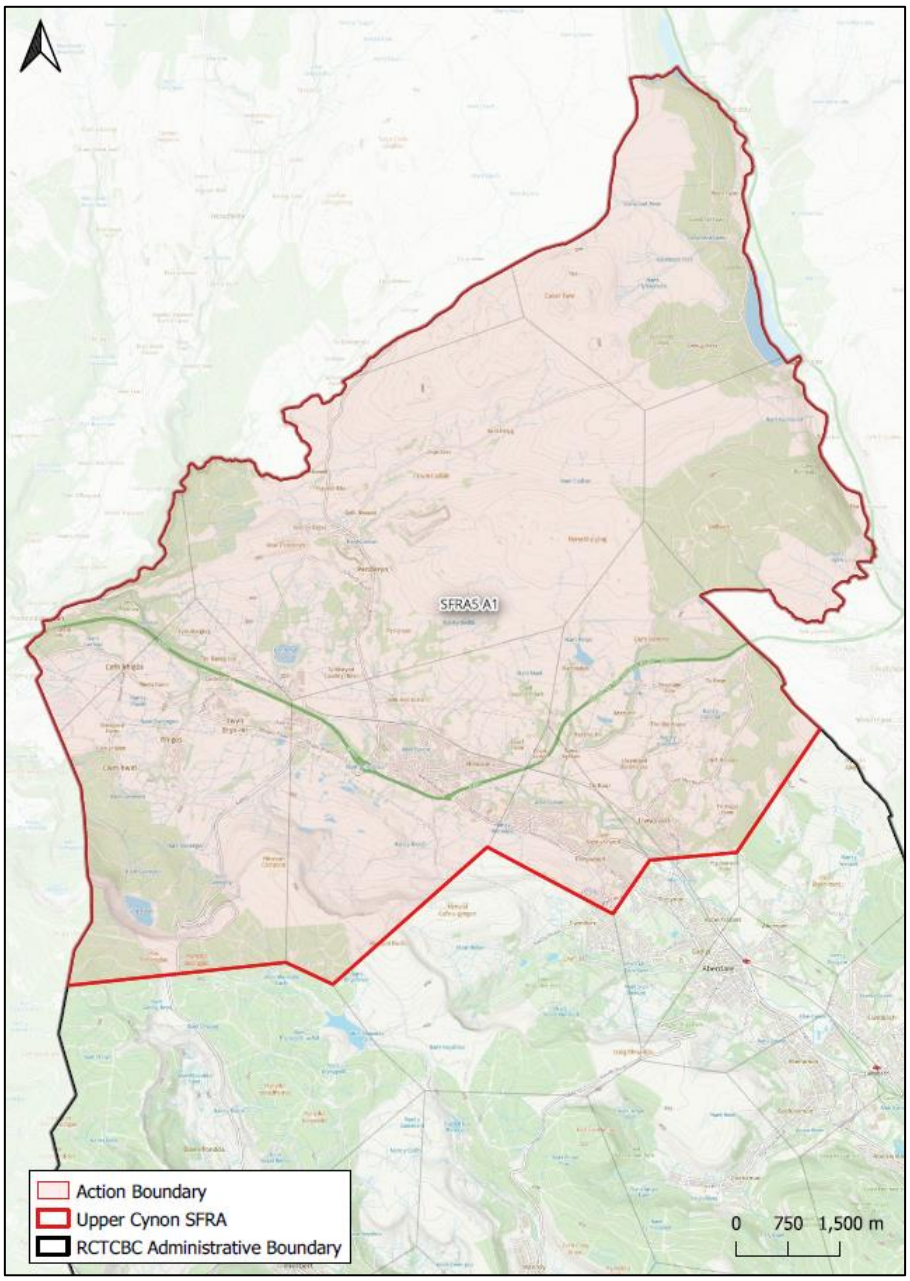

Figure 20: Location plan of the Upper Cynon SFRA flood actions

6. Mid Cynon 1 SFRA Flood Action Plan

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Mid Cynon 1 SFRA. Figure 21 shows where in RCT the Mid Cynon 1 SFRA is located.

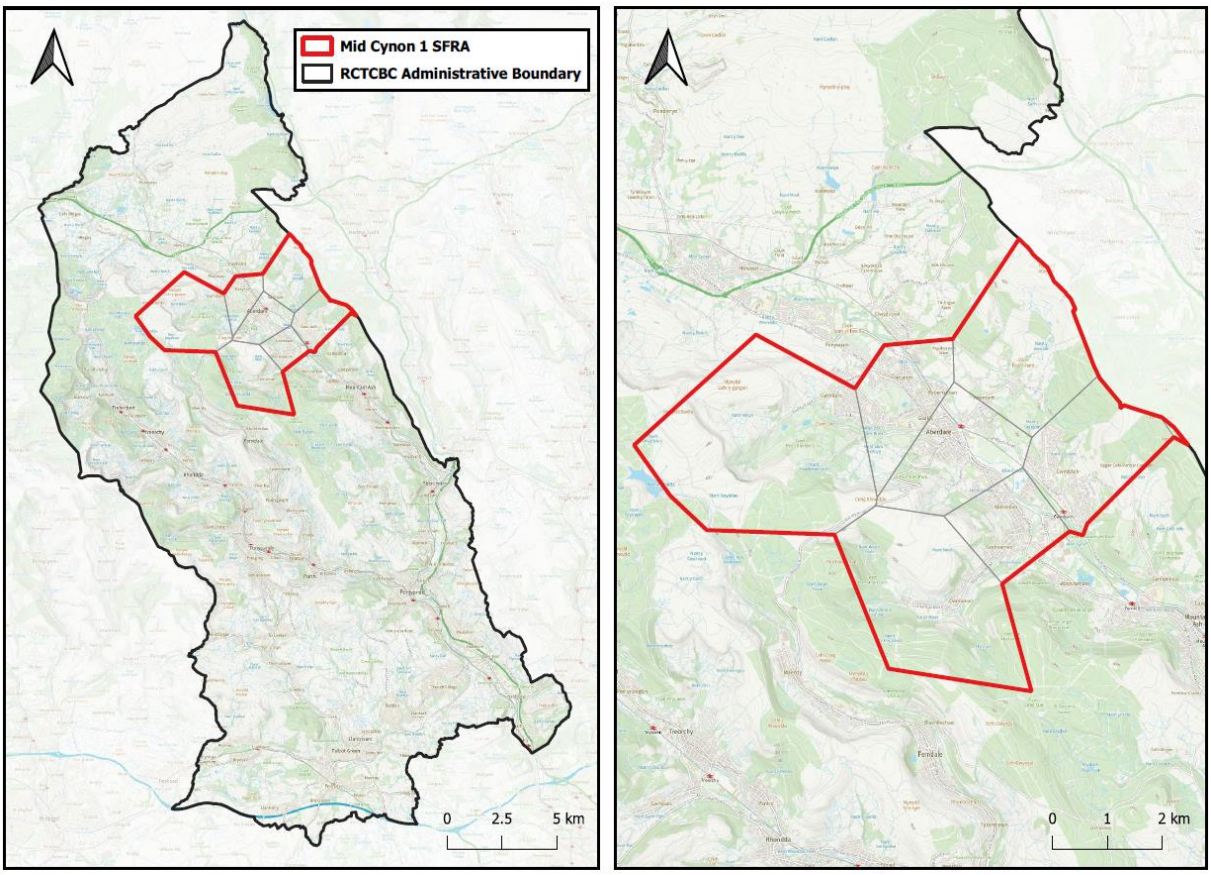

Figure 21: Mid Cynon 1 SFRA Location Plan

6.1 Area Description

The Mid Cynon 1 SFRA is located in the northern sector of RCTCBC and covers an area of approximately 3614.026Ha. Hydrologically, the area falls within the River Cynon catchment and is characterized by several small streams and tributaries which discharge into the River Cynon. The Dare tributary enters the Cynon from the west of Aberdare, while the Nant Wenallt ordinary watercourse enters the Cynon from the northeast of Aberdare.

The River Cynon conveys downstream where the large tributaries of the Nant Gwawr ordinary watercourse and the Aman River, enters to the west of Aberaman and the Nant Y Groes ordinary watercourse from the east at Cwmbach. The River Cynon continues to flow in a southeasterly direction towards the Mid Cynon 2 SFRA.

The Mid Cynon 1 SFRA is comprised of 7 community areas: Trecynon, Cwmdare, Aberdare, Aberaman, Abernant, Cwmaman and Cwmbach. Table 17 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the CaRR) relative to the rest of Wales, according to the CaRR.

Table 17: Pluvial ranking for the communities within Mid Cynon 1 SFRA according to the CaRR 2019 data

Community Name	Pluvial Ranking
Aberaman	115
Aberdare	17
Abernant	240
Cwmdare	515
Cwmbach	122
Cwmaman	149
Trecynon	27

As shown in Table 17, 2 communities in the Mid Cynon 1 SFRA fall within the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales, with Aberdare ranked as the highest risk (17th), followed by Trecynon (27th) in the Mid Cynon 1 SFRA.

The topography of the Mid Cynon 1 SFRA is largely characterized by the glaciated U-shaped valley formation of the Cynon Valley, with steep-sided valleys surrounding the urban areas located on the valley floor. These key settlements include the towns and villages of Aberdare, Trecynon, Cwmbach, Aberaman and Cwmaman, which are all heavily urbanised. The surrounding area land use is predominantly forestry with some hill grazing.
The geology in the area is mostly compromised of Coal measures, Mudstone, siltstone and sandstone, which forms part of the South Wales Coalfield basin. The Sedimentary bedrock likely formed between 318 and 309.5 million years ago during the Carboniferous period.

6.2 Overview of Flood Risk

The extent and degree of local flood risk in the Mid Cynon 1 SFRA is significant. Figure 22, extracted from NRW's FRAW map, illustrates the areas at risk of flooding from both surface water and ordinary watercourses and main river sources across the Mid Cynon 1 SFRA.

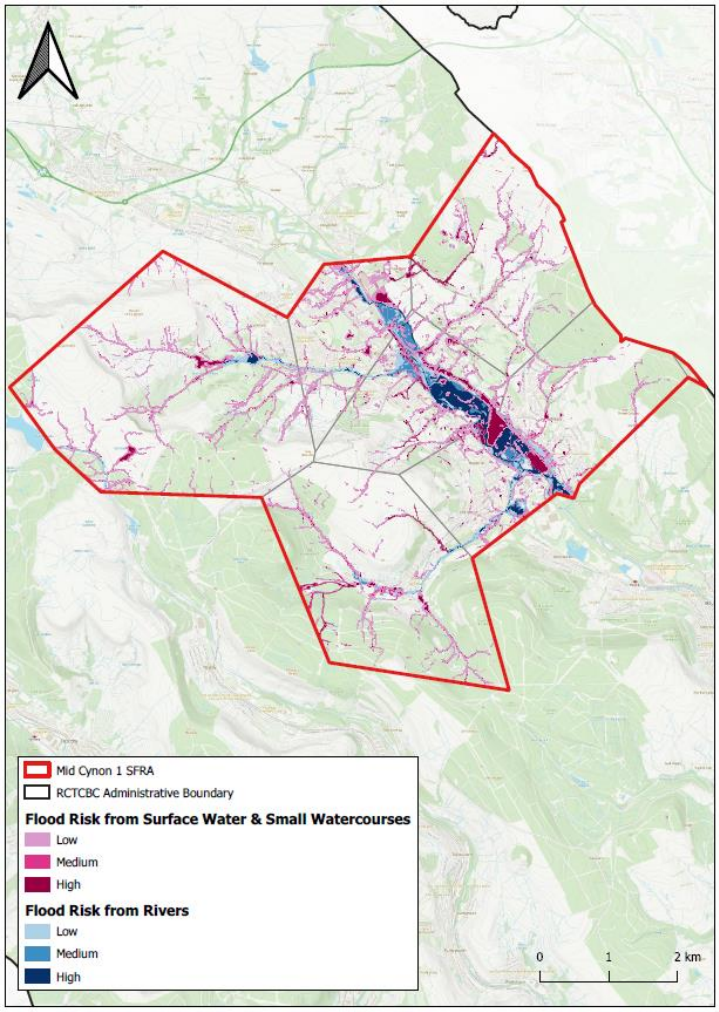

Figure 22: NRWs FRAW map for rivers and ordinary watercourse and surface water flood risk within the Mid Cynon 1 SFRA

As observed in Figure 22, the highest risk posed to people and properties within the Mid Cynon 1 SFRA is broadly associated with the network of named and unnamed ordinary watercourses which drain from the steep-hillsides to the east and west of the SFRA. Whilst these channels have generally remained in a 'natural' condition, the watercourses have been modified on the hillsides in relation to the industrial legacy such as coal spoil tips and in later decades for forestry activities. These watercourses

have also been heavily modified beneath urban development on the valley floor. As a result, the primary source of flood risk in the Mid Cynon 1 SFRA is sources from culvert inlets and bank breaches associated to the network of ordinary watercourses.

The primary ordinary watercourses flowing through the Mid Cynon 1 SFRA include:

- Nant Wenallt
- Nant Melyn
- Nant Gwawr
- Nant Y Groes
- Nant Y Geugarn

Figure 22 also noted a high to low risk of flooding along the length of the River Cynon, particularly at Aberdare and Cwbmach communities.

All ordinary watercourses and designated main river flowing through the Mid Cynon 1 SFRA have been depicted in Figure 23.

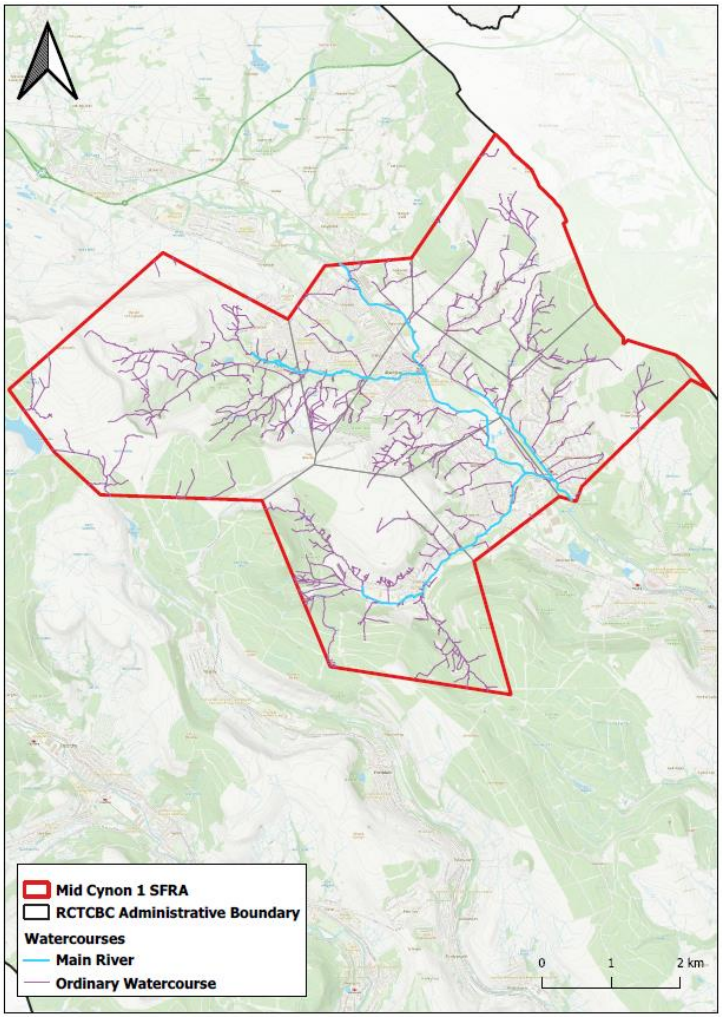

Figure 23: Ordinary watercourses and main rivers flowing through the Mid Cynon 1 SFRA

6.3 History of Flooding

The Mid Cynon 1 SFRA area has experienced several flood events over the past twenty years, often in relation to the network of ordinary watercourses and culverted infrastructure which convey a substantial volume of water through the urban settlements in the region.

The most recent and significant flood event that occurred in the SFRA was the February 2020 flood events. Heavy rainfall as a result of Storms Dennis, Ciara and Jorge resulted in significant repeated flooding, with extensive flooding of residential and commercial properties occurring throughout the SFRA. The primary source of

flooding during Storm Dennis in the Mid Cynon 1 SFRA was a result of significant overland runoff being generated from the steep hillsides above Aberdare and Aberaman draining to the urban areas on the valley floor via a series of ordinary watercourses, many of which became overwhelmed with water and debris and eventually overtopped, impacting several properties on its course of flow.

The River Cynon also overtopped its banks during Storm Dennis, causing flooding to properties at Aberdare.

Further records of historical flooding prior to Storm Dennis in the SFRA is limited however, notable flooding occurred at Cwmbach in 2018 as a result of Storm Bronagh on 20-21st September and Storm Callum on 12-13th October. Further incidences of frequent minor flooding in the Mid Cynon 1 have also occurred during the successive storms in September and October 2019, a series of storm events in 2021 and again in February 2022 during Storm Franklin.

6.4 Assessment of Flood Risk

To meet the requirements of the FRR, RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 18. The data shows the number of receptors at high, medium and low local flood risk in the Mid Cynon 1 SFRA.

Table 18: Receptors at high, medium and low risk of flooding from local sources in the Mid Cynon 1 SFRA

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)	820	302	663
Commercial Properties (n)	69	32	47
Essential Services (n)	15	2	6
Primary/Trunk Roads (km)	1.54	1.14	2.62
Main Line Railways (km)	0	0	0.01
Agricultural Land - Grades 1, 2 and 3 (ha)	24.23	3.21	10.39
SAC (ha)	0	0	0
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	0	0	0
SINC (Ha)	57.61	13.10	42.92
NNR (ha)	0	0	0
LNR (ha)	0	0	0
Ancient Woodland (ha)	5.81	0.76	3.36
Registered Parks and Gardens (ha)	1.07	0.11	0.31
Country Parks (ha)	0	0	0
Scheduled Ancient Monuments (ha)	0.10	0.01	0.07
Listed Buildings (n)	7	2	11

6.5 The Flood Action Plan

The actions presented within the Mid Cynon 1 SFRA Flood Action Plan are listed in Table 19 and illustrated in Figure 24.

Ref	Action Name & De...ription	...ocati... ...mmu...y)	Actio...	...k to ... MS M...sure	...imesca...	Cost	Funding Option(s)	Status
SFRA6 A1	**Maes y Ffynon FAS** Construction phase of FAS	Aberda...	All...	...24	...hort Ter...	High	WG FCERM Capital	Ongoing
SFRA6 A2	**Nant Gwawr (Phase 2) FAS** Produce a Full Business Case carrying out detailed design and development of the preferred option for managing the risk of flooding from local sources	Aberaman	Alleviate	M8, M10, M11, M14, M24, M29 & M31	Short Term	High	WG FCERM Capital	Ongoing
SFRA6 A3	**Nant Gwawr (Phase 2) FAS** Construction phase of FAS	Aberaman	Alleviate	M24	Medium Term	High	WG FCERM Capital	Not Started
SFRA6 A4	**Cwmbach Canal FAS** Produce an OBC identifying the preferred option(s) for managing the risk of flooding from local sources	Cwmbach	Alleviate	M8, M10, M11, M14, M24, M29 & M31	Short Term	Medium	WG FCERM Capital	Ongoing
SFRA6 A5	**Cwmbach Canal FAS** Produce a Full Business Case carrying out detailed design and development of the preferred option for managing the risk of flooding from local sources	Cwmbach	Alleviate	M8, M10, M11, M14, M24, M29 & M31	Short Term	High	WG FCERM Capital	Not Started
SFRA6 A6	**Cwmbach Canal FAS** Construction phase of FAS	Cwmbach	Alleviate	M24	Medium Term	Very High	WG FCERM Capital	Not Started
SFRA6 A7	**Afon Cynon/Wellington Street FAS/NFM** Produce a Full Business Case carrying out detailed design and development of the preferred option for managing the risk of flooding from local sources.	Aberdare	Alleviate	M8, M10, M11, M14, M24, M29 & M31	Short Term	Medium	WG FCERM Capital	Ongoing

Ref	Action Name & De[illegible]ription	[illegible]ocati[illegible] [illegible]mmu[illegible])	Actio[illegible]ype	[illegible]nk to [illegible]RMS M[illegible]sure	[illegible]imesca[illegible]	Cost	Funding Option(s)	Status
SFRA6 A8	**Afon Cynon/Wellington S[illegible]eet FAS/NFM** Construction phase of FAS	[illegible]Aberda[illegible]	Alle[illegible]	[illegible]24	[illegible]hort Te[illegible]	High	WG FCERM Capital	Not Started
SFRA6 A9	**Cefn Pennar Road FAS** Produce a Full Business C[illegible] [illegible]t detailed design and development of the preferred option for managing the risk of flooding from local source**s**	Cwmbach	Alleviate	[illegible]M10, M11, M14, M24, M29 & M31	Short Term	Medium	WG FCERM Capital	Ongoing
SFRA6 A10	**Cefn Pennar Road FAS** Construction phase of FAS	Cwmbach	Alleviate	M24	Medium Term	High	WG FCERM Capital	Not Started
SFRA6 A11	**Nant y Wenallt SOC** Develop a SOC to better understand the risk of flooding from the Nant y Wenallt, using a whole catchment approach, to provide recommendations for suitable local flood risk management measures.	Aber-nant / Aberdare	Alleviate	M6, M7, M8, M10, M11, M14, M15	Medium Term	Medium	WG FCERM Capital	Not Started
SFRA6 A12	**Tirfounder / Bro Deg Road – Phase 2** Construction phase of FAS	Cwmbach	Alleviate	M24	Short Term	Medium	WG FCERM Capital	Ongoing
SFRA6 A13	**Brook Street – Culvert Repair** Design and construction work for the rehabilitation of the ordinary watercourse culvert network to improve its structural condition to reduce the risk of asset failure	Aberaman	Alleviate	M6, M10 & M24	Short Term	Medium	WG FCERM Small-scale Works	Ongoing
SFRA6 A14	**Brynmair Road – Inlet Upgrade** Design and construction work to improve resilience of the culvert inlet structure and ordinary watercourse culvert network	Aberaman	Alleviate	M6, M10 & M24	Short Term	Medium	WG FCERM Small-scale Works	Not Started

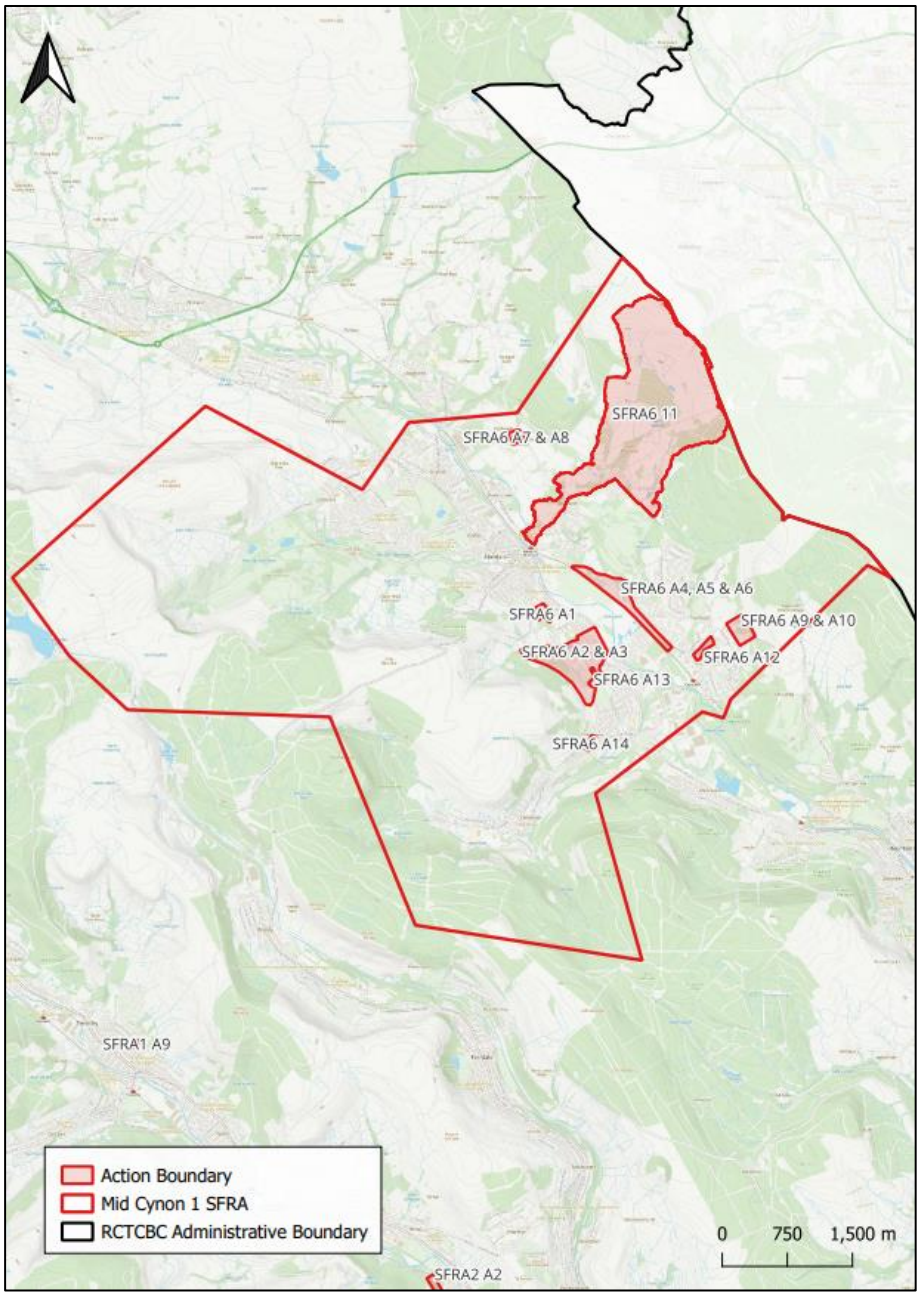

Figure 24: Location plan of the Mid Cynon 1 SFRA flood actions

7. Mid Cynon 2 SFRA Flood Action Plan

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Mid Cynon 2 SFRA. Figure 25 shows where in RCT the Mid Cynon 2 SFRA is located.

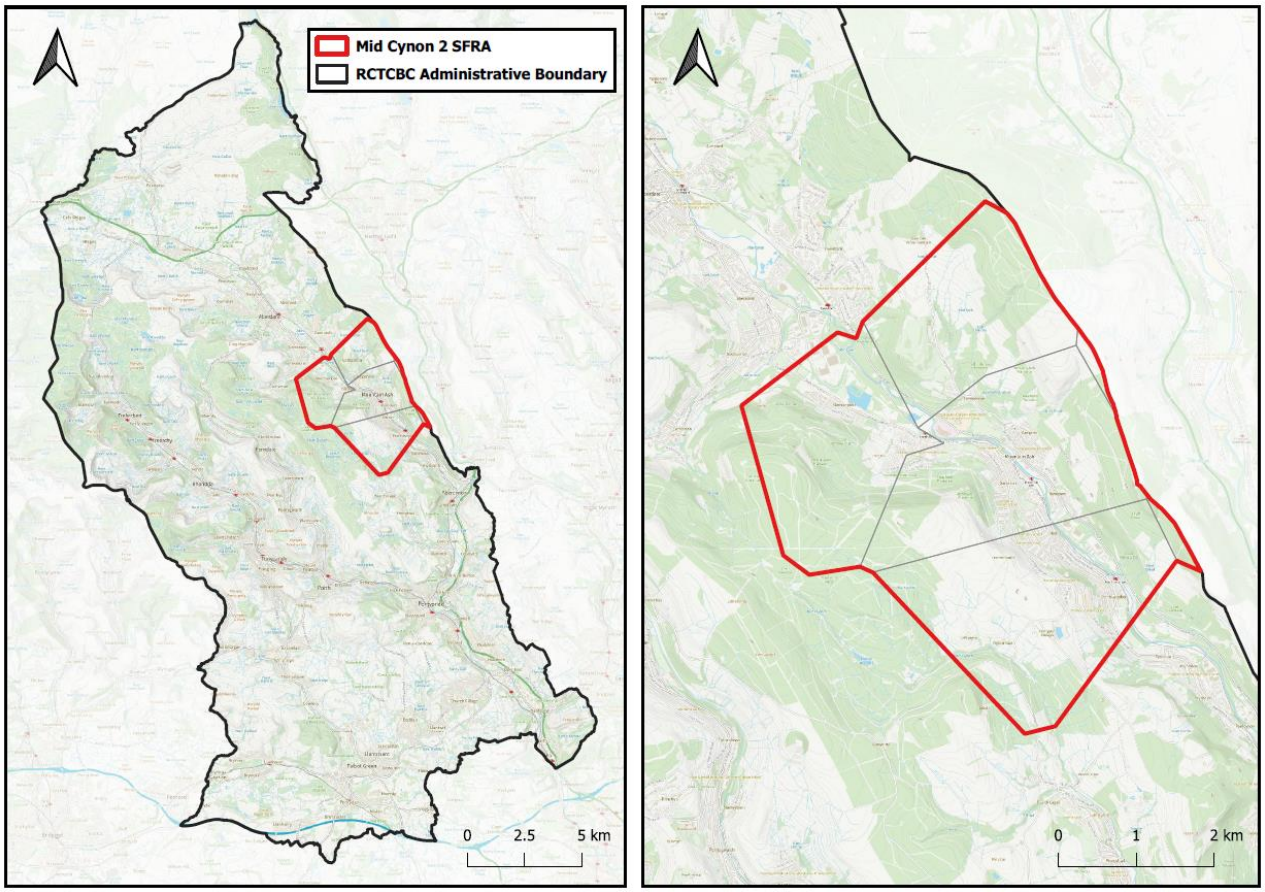

Figure 25: Mid Cynon 2 SFRA Location Plan

7.1 Area Description

The Mid Cynon 2 SFRA is located in the northern sector of RCTCBC and covers an area of approximately 2077.908Ha. Hydrologically, the area falls within the River Cynon catchment and is characterised by several small streams and tributaries which feed into the River Cynon.

The River Cynon conveys in a southeasterly direction through the Mid Cynon 2 SFRA towards the Lower Cynon SFRA, and is fed by a network of named and unnamed ordinary watercourses which drain the hillsides to the northeast and southwest of the SFRA.

The Mid Cynon 2 SFRA is comprised of 4 community areas: Abercwmboi, Cefnpennar, Mountain Ash and Abercwmboi. Table 20 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the CaRR) relative to the rest of Wales, according to the CaRR.

Table 20: Pluvial ranking for the communities within Mid Cynon 2 SFRA according to the CaRR 2019 data

Community Name	Pluvial Ranking
Abercwmboi	130
Cefnpennar	1317
Mountain Ash	92
Penrhiwceiber	207

As shown in Table 20, 1 community within the Mid Cynon 2 SFRA falls within the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales, with the community of Mountain Ash being ranked 92nd.

The topography and land use of Mid Cynon 2 SFRA is characterized by the glaciated U-shaped valley formation of the Cynon Valley, with the upper elevations of the catchment predominantly a rural environment with the higher elevations in the southwest mostly forested. The valleys in the catchment are steep-sided with urban areas located on the valley floor. These key settlements include the towns and villages of Abercwmboi, Cefnpennar, Mountain Ash and Penrhiwceiber.

The geology in the area is comprised of a mixture between the South Wales Upper Coal Measures Formation in the North, and the Rhondda member in the south. Both are inclusive of Coal measures, Mudstone, siltstone, and sandstone. The Sedimentary bedrock in the area likely formed between 315 and 308 million years ago during the Carboniferous period.

7.2 Overview of Flood Risk

The extent and degree of local flood risk in the Mid Cynon 2 SFRA is significant. Figure 26, extracted from NRW's FRAW map, illustrates the areas at risk of flooding from both surface water and ordinary watercourses and main river sources across the Mid Cynon 2 SFRA.

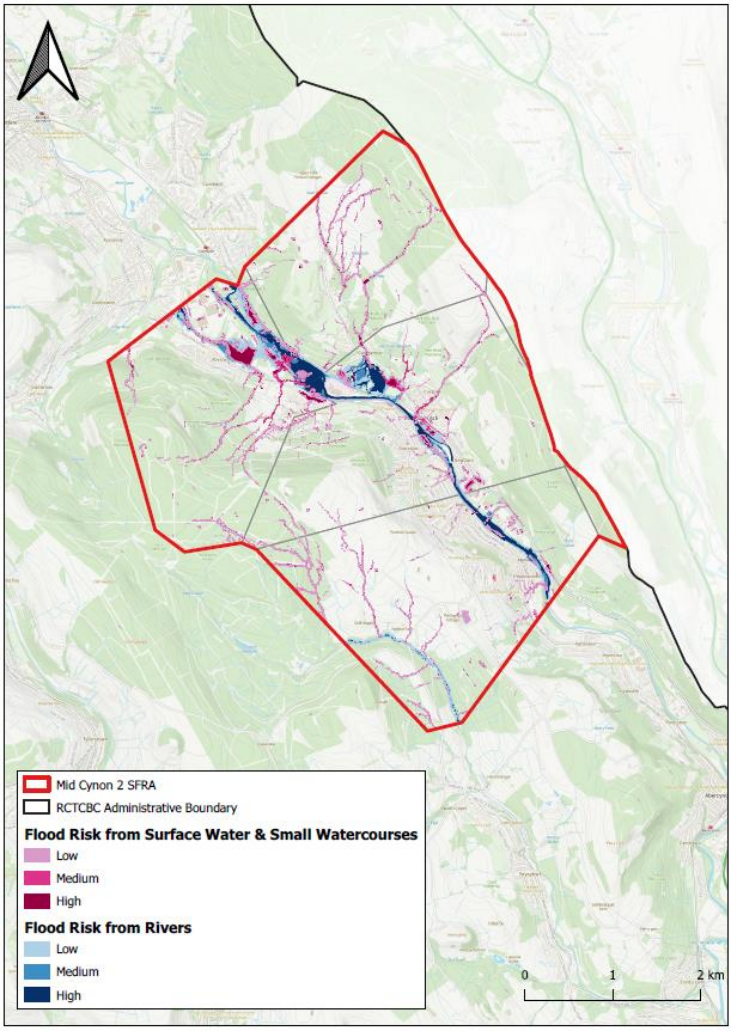

Figure 26: NRWs FRAW map for rivers and ordinary watercourse and surface water flood risk within the Mid Cynon 2 SFRA

As observed in Figure 26, the highest risk posed to people and properties within the Mid Cynon 2 SFRA is broadly associated with the network of named and unnamed ordinary watercourses which drain from the steep-hillsides to the northeast and southwest. Whilst the headwaters have generally remained in a 'natural' condition, the

watercourses have been modified on the hillsides in relation to the industrial legacy such as coal spoil tips and in later decades for forestry activities. These watercourses have also been heavily modified and culverted beneath urban development on the valley floor before discharging into the River Cynon. As a result, the primary risk to people and properties within the Mid Cynon 2 SFRA is sourced from culvert inlets and bank breaches associated to the network of ordinary watercourses.

The primary ordinary watercourses flowing through the Mid Cynon 2 SFRA include:

- Nant Cwm Boi
- Nant Pennar
- Nant Sych
- Nant Gelli-Ddu,
- Nant Y-Ffrwd
- Nant Dafad

Figure 26 also notes a high to low risk of flooding along the length of the River Cynon, particularly within the lower reaches of Abercwmboi and Mountain Ash.

All ordinary watercourses and designated main river flowing through the Mid Cynon 2 SFRA have been depicted in Figure 27.

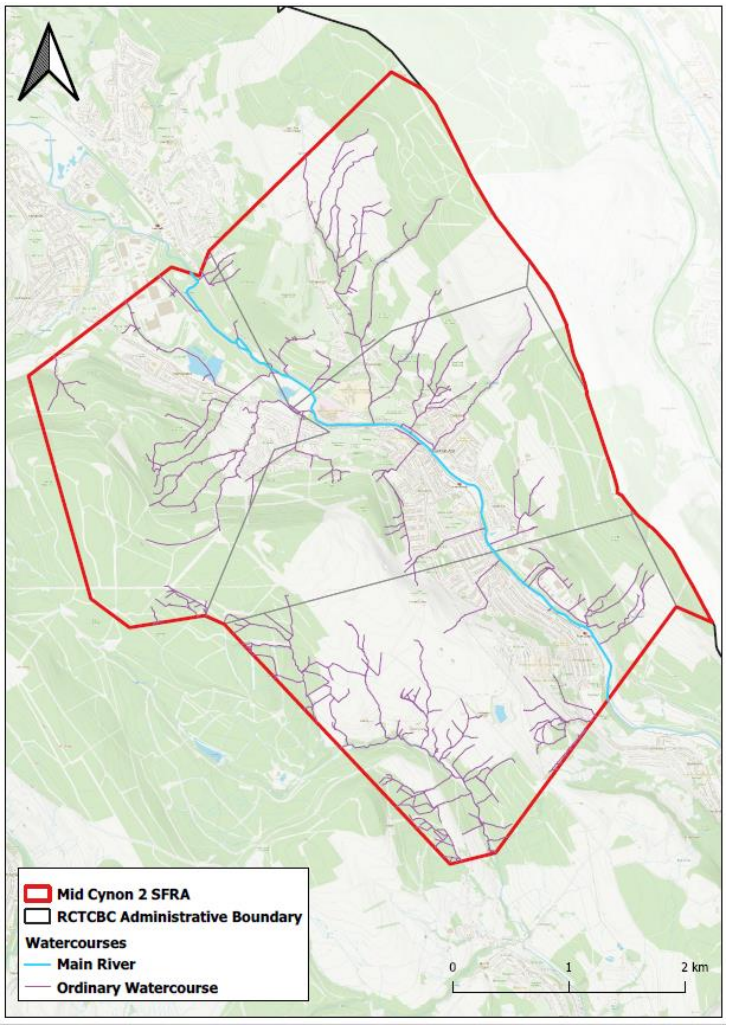

Figure 27: Ordinary watercourses and main rivers flowing through the Mid Cynon 2 SFRA

7.3 History of Flooding

The Mid Cynon 2 SFRA area has experienced several flood events over the past twenty years, often in relation to the network of ordinary watercourses and culverted infrastructure which convey a substantial volume of water through the urban settlements in the region.

The most recent and significant flood event that occurred in the SFRA was the February 2020 flood events. Heavy rainfall as a result of Storms Dennis, Ciara and Jorge resulted in significant repeated flooding, with extensive flooding of residential and commercial properties occurring throughout the SFRA. The primary source of flooding during Storm Dennis in the Mid Cynon 2 SFRA was a result of significant

overland runoff being generated from the steep hillsides above Abercwmboi and Mountain Ash draining to the urban areas on the valley floor via a series of ordinary watercourses, many of which became overwhelmed with water and debris and eventually overtopped, impacting several properties on its course of flow.

The River Cynon also overtopped its banks during Storm Dennis, causing flooding to properties at Mountain Ash.

Further records of historical flooding prior to Storm Dennis in the SFRA is limited however, notable flooding occurred at Abercwmboi, Fernhill and Mountain Ash in 2018 as a result of Storm Bronagh on 20-21st September and Storm Callum on 12-13th October.

7.4 Assessment of Flood Risk

To meet the requirements of the FRR, RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 21. The data shows the number of receptors at high, medium and low local flood risk in the Mid Cynon 2 SFRA.

Table 21: Receptors at high, medium and low risk of flooding from local sources in the Mid Cynon 2 SFRA

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)	182	94	448
Commercial Properties (n)	9	5	31
Essential Services (n)	3	0	2
Primary/Trunk Roads (km)	0.84	0.33	1.64
Main Line Railways (km)	0.32	0.19	0.49
Agricultural Land - Grades 1, 2 and 3 (ha)	3.85	1.08	4.50
SAC (ha)	0	0	0
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	0.02	0	0.02
SINC (Ha)	15.95	3.21	14.50
NNR (ha)	0	0	0
LNR (ha)	0	0	0
Ancient Woodland (ha)	3.91	0.84	3.53
Registered Parks and Gardens (ha)	0	0	0
Country Parks (ha)	0	0	0
Scheduled Ancient Monuments (ha)	0	0	0
Listed Buildings (n)	1	0	6

7.5 The Flood Action Plan

The actions presented within the Mid Cynon 2 SFRA Flood Action Plan are listed in Table 22 and illustrated in Figure 28.

Table 22: Mid Rhondda SFRA Action Plan

Ref	Action Name & Description	Location (Community)	Action Type	Link to LHWMS Measure	Timescale	Cost	Funding Option(s)	Status
SFRA7 A1	**Victor Street – Culvert Repair** Relining and rehabilitation of the ordinary watercourse culvert network to improve its structural condition to reduce the risk of asset failure	Mountain Ash	Alleviate	M6, M10 & M24	Short Term	High	WG FCERM Capital	Ongoing
SFRA7 A2	**Llanwonno Road - Culvert Repair** Design and construction works for the relining and rehabilitation of the ordinary watercourse culvert network to improve its structural condition to reduce the risk of asset failure	Penrhiwceiber / Mountain Ash	Alleviate	M6, M10 & M24	Short Term	Medium	WG FCERM Small-scale Works	Ongoing

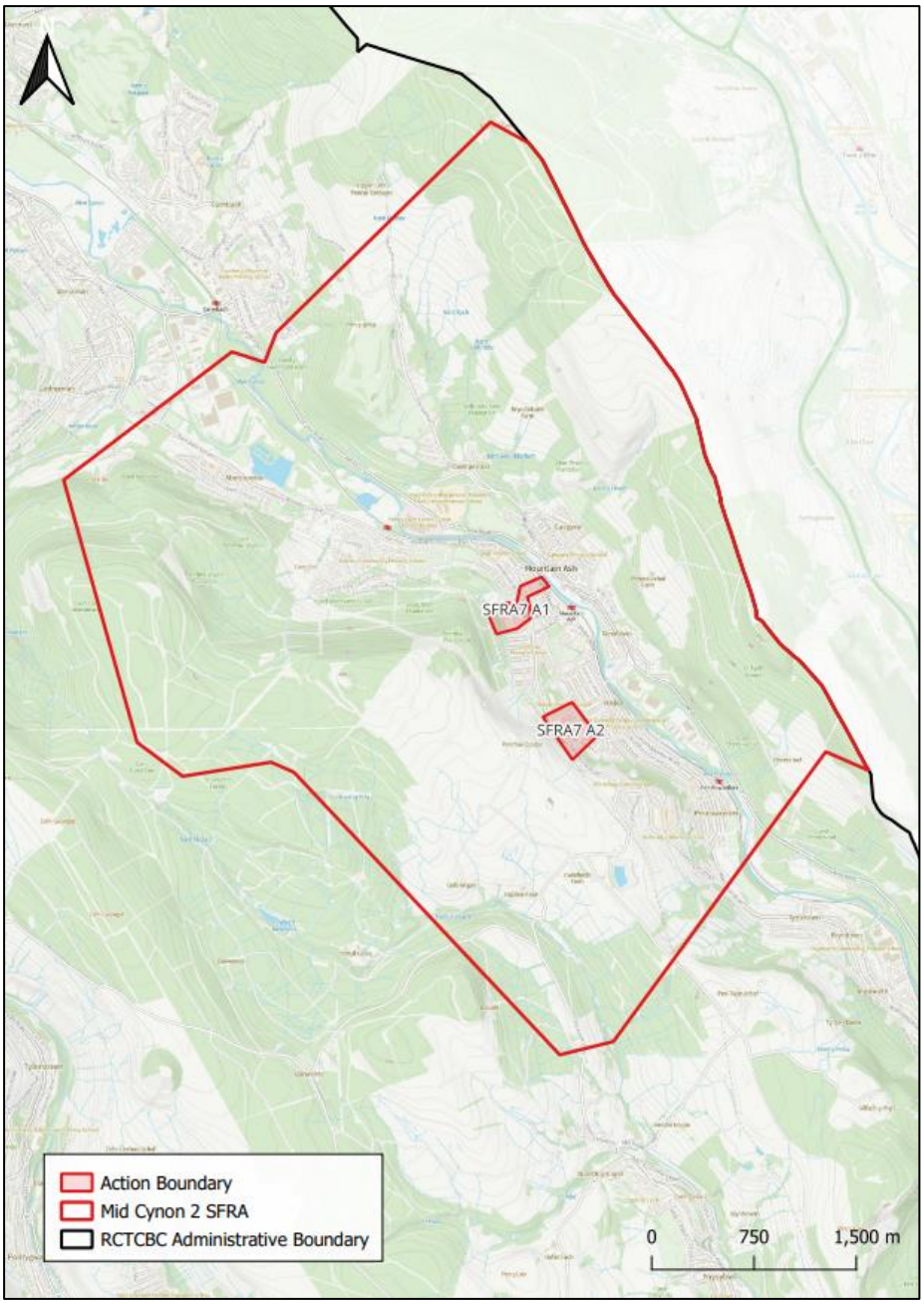

Figure 28: Location plan of the Mid Cynon 2 SFRA flood actions

8. Lower Cynon SFRA Flood Action Plan

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Lower Cynon SFRA. Figure 29 shows where in RCT the Lower Cynon SFRA is located.

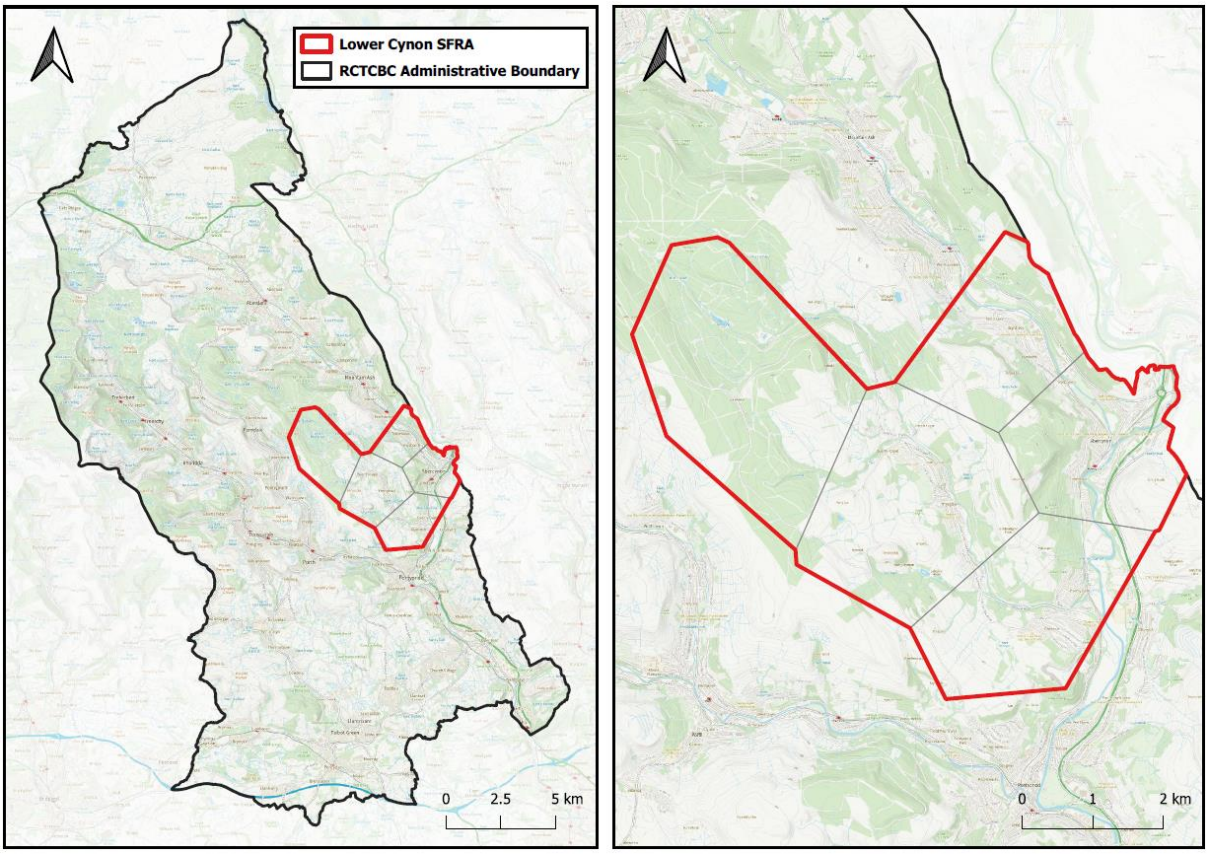

Figure 29: Lower Cynon SFRA Location Plan

8.1 Area Description

The Lower Cynon SFRA is located in the northeastern sector of RCTCBC and covers an area of approximately 2896.443Ha. Hydrologically, the area falls within the River Cynon and River Taf catchment areas.

The River Cynon flows in a southeasterly direction through the village of Ynysboeth and is fed by the Nant Y Fedw and other unnamed ordinary watercourses before

merging with the River Taf at Abercynon. The River Taf conveys in a southwesterly direction towards the Lower Taf SFRA.

Further south in the Lower Cynon SFRA, in the Taf catchment area, the Nant Clydach (a designated main river) flows down the Clydach valley, with several tributaries including the Nant Yr Ysfa and Y Ffrwd merging with the Nant Clydach just north of Ynysbwl, before discharging into the River Taf north Glyncoch.

The Lower Cynon SFRA is comprised of 6 community areas: Abercynon, Llanwonno, Glyncoch, Ynysboeth, Ynysbwl and Treharris. Table 23 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the CaRR) relative to the rest of Wales, according to the CaRR.

Table 23: Pluvial ranking for the communities within Lower Cynon SFRA according to the CaRR 2019 data

Community Name	Pluvial Ranking
Abercynon	330
Llanwonno	1722
Glyncoch	437
Ynysboeth	277
Ynysybwl	177
Treharris	180

As shown in Table 23, there are no communities in the Lower Cynon that fall within the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales. The highest pluvial risk is identified within the Ynysybwl community, ranked 177 followed by the Treharris community, ranked 180.

The topography of the Lower Cynon region is largely characterized by the steep sided hillsides in the area, with the Cynon, Taff and Clydach Valley all located within the SFRA. The land use in the area is predominantly agricultural, with some forestry and only small pockets of urban development along the valley floors. These small pockets contain the largest settlements in the area, which include the towns and villages of Abercynon, Glyncoch and Ynysybwl. The geology in the area mostly consists of carboniferous sandstone which was formed between 309.5 and 308 Mya.

8.2 Overview of Flood Risk

The extent and degree of local flood risk in the Lower Cynon SFRA is significant. Figure 30, extracted from NRW's FRAW map, illustrates the areas at risk of flooding from both surface water and ordinary watercourses, and main river sources across the Lower Cynon SFRA.

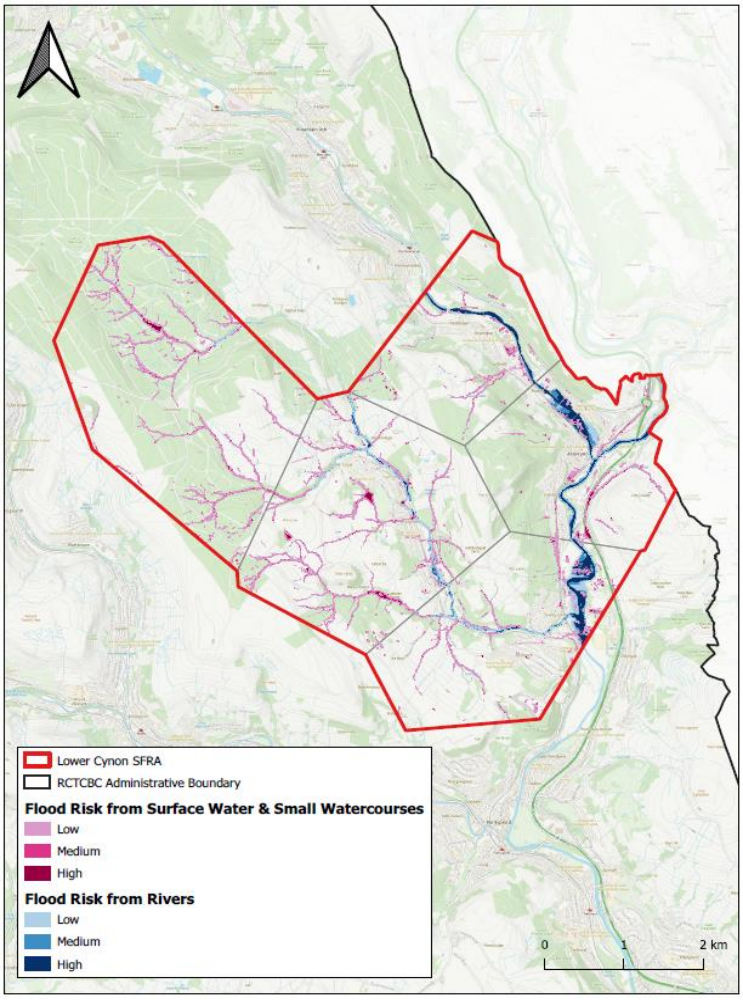

Figure 30: NRWs FRAW map for rivers and ordinary watercourse and surface water flood risk within the Lower Cynon SFRA

As observed in Figure 30, the highest risk posed to people and properties within the Lower Cynon SFRA is broadly associated with the network of named and unnamed ordinary watercourses which drain from the steep-hillsides of the Cynon and Clydach Valley. Whilst these channels have generally remained in a 'natural' condition, the watercourses have been modified on the hillsides in relation to the industrial legacy

such as coal spoil tips and in later decades for forestry activities. These watercourses have also been heavily modified to accommodate urban development. As a result, the primary risk to people and properties within the Lower Cynon SFRA is sourced from culvert inlets and bank breaches associated to the network of ordinary watercourses.

The primary ordinary watercourses flowing through the Lower Cynon SFRA include:

- Nant Y Fedw
- Nant Clydach
- Nant yr Isfa
- Yr Ffrwd

Figure 30 also notes a high to low risk of flooding along the length of the main rivers which flow through the SFRA; namely the River Cynon, River Taf and the nant Clydach.

All ordinary watercourses and designated main rivers flowing through the Lower Cynon SFRA have been depicted in Figure 31.

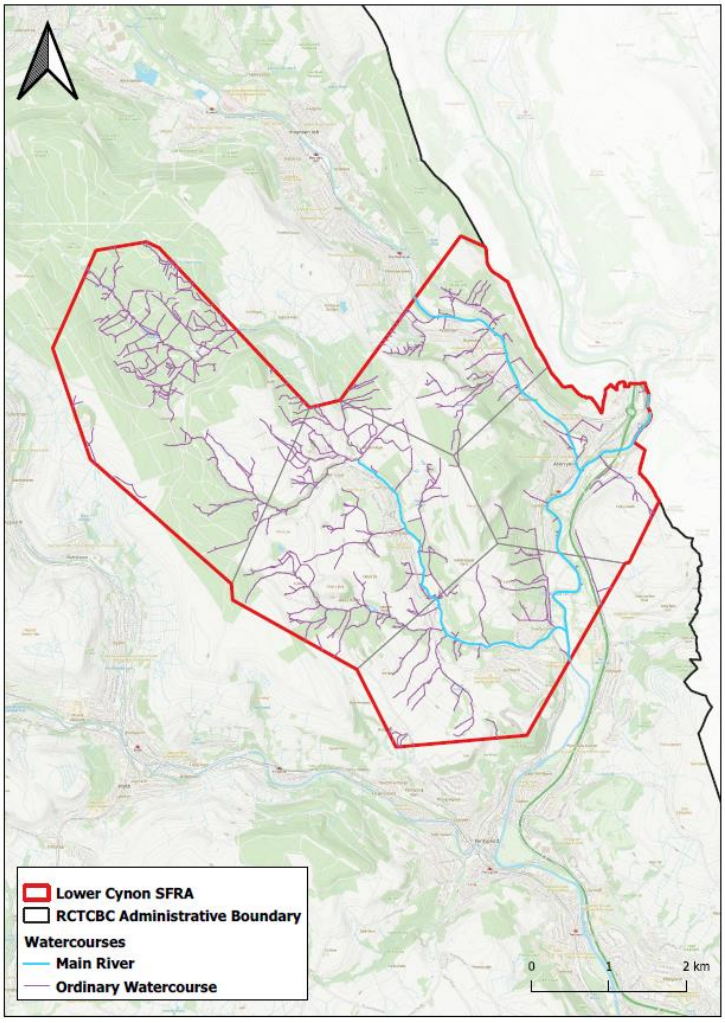

Figure 31: Ordinary watercourses and main rivers flowing through the Lower Cynon SFRA

8.3 History of Flooding

The Lower Cynon SFRA area has experienced several flood events over the past twenty years, often in relation to the network of ordinary watercourses and culverted infrastructure which convey a substantial volume of water through the urban settlements in the region.

The most recent and significant flood event that impacted the SFRA occurred during the February 2020 flood events. Heavy rainfall as a result of Storms Dennis, Ciara and Jorje resulted in significant flooding to the communities of Abercynon, Ynysboeth and

Ynysbwl. Repeat flooding to properties at Ynysboeth was also recorded during Storm Christoph in January 2021.

Further records of historical flooding prior to 2020 in the SFRA are limited however, there are records of flooding occurring in 2018 as a result of Storm Bronagh on 20-21st September and Storm Callum on 12-13th October, which impacted areas including Abercynon.

8.4 Assessment of Flood Risk

To meet the requirements of the FRR, RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 24. The data shows the number of receptors at high, medium and low local flood risk in the Lower Cynon SFRA.

Table 24: Receptors at high, medium and low risk of flooding from local sources in the Lower Cynon SFRA

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)	337	53	235
Commercial Properties (n)	5	1	1
Essential Services (n)	3	2	1
Primary/Trunk Roads (km)	1.39	0.28	1.44
Main Line Railways (km)	0.13	0.3	0.69
Agricultural Land - Grades 1, 2 and 3 (ha)	2.92	1.14	3.78
SAC (ha)	0	0	0
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	0	0	0
SINC (Ha)	25.01	5.32	20.65
NNR (ha)	0	0	0
LNR (ha)	0.02	0.01	0.03
Ancient Woodland (ha)	7.95	1.31	4.44
Registered Parks and Gardens (ha)	0	0	0
Country Parks (ha)	0	0	0
Scheduled Ancient Monuments (ha)	0	0	0
Listed Buildings (n)	0	0	0

8.5 The Flood Action Plan

The actions presented within the Lower Cynon SFRA Flood Action Plan are listed in Table 25 and illustrated in Figure 32.

Table 25: Low Carbon SFRA Action Plan

Ref	Action Name & Description	Location (Community)	Action Type	Link to LFRMS Measure	Timescale	Cost	Funding Option(s)	Status
SFRA8 A1	**Dan-y-Cribyn - Culvert Repair** Design and construction works for the relining and rehabilitation of the ordinary watercourse culvert network to improve its structural condition to reduce the risk of asset failure	Ynsybwl	Alleviate	M6, M10 & M24	Short Term	Medium	WG FCERM Small-scale Works	Ongoing
SFRA8 A2	**High Street (Ynysybwl) – Inlet Upgrade** Design and construction work to improve the resilience of the culvert inlet structure and ordinary watercourse culvert network	Ynysybwl	Alleviate	M10 & M24	Short Term	Medium	WG FCERM Small-scale Works	Not Started
SFRA8 A3	**Plantation Road – Inlet Upgrade** Design and construction work to improve the resilience of the culvert inlet structure and ordinary watercourse channel	Abercynon	Alleviate	M10 & M24	Short Term	Medium	WG FCERM Small-scale Works	Not Started
SFRA8 A4	**Clydach Terrace FAS (Main River Flooding)** The LLFA will cooperate with NRW as the RMA for main river flooding who are leading on the development of a business case to manage the risk of main river flooding.	Ynsybwl	Alleviate	M6, M7, M8 & M16	Medium Term	ER	Revenue	Ongoing

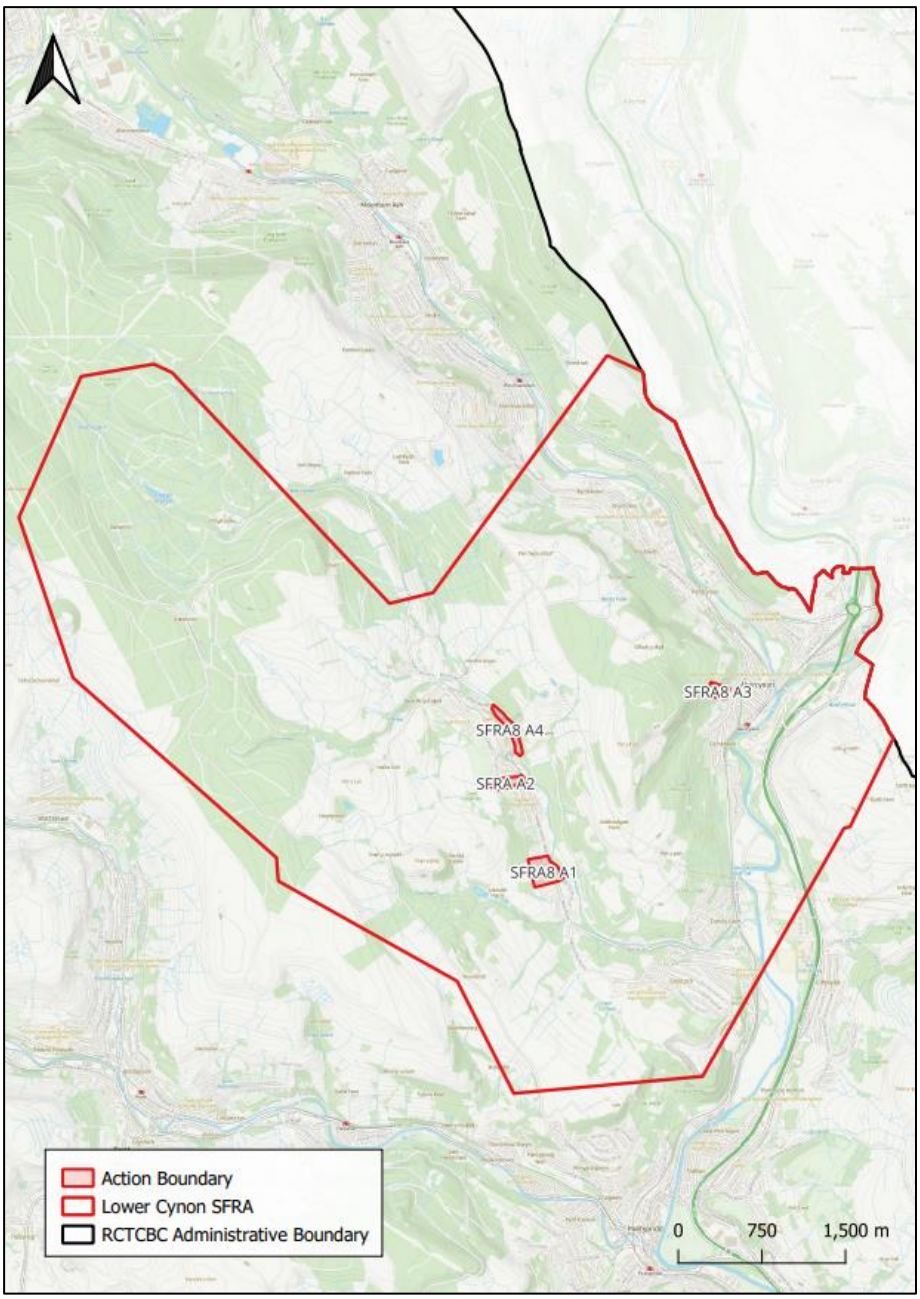

Figure 32: Location plan of the Lower Cynon SFRA flood actions

9. Lower Taf SFRA Flood Action Plan

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Lower Taf SFRA. Figure 33 shows where in RCT the Lower Taf SFRA is located.

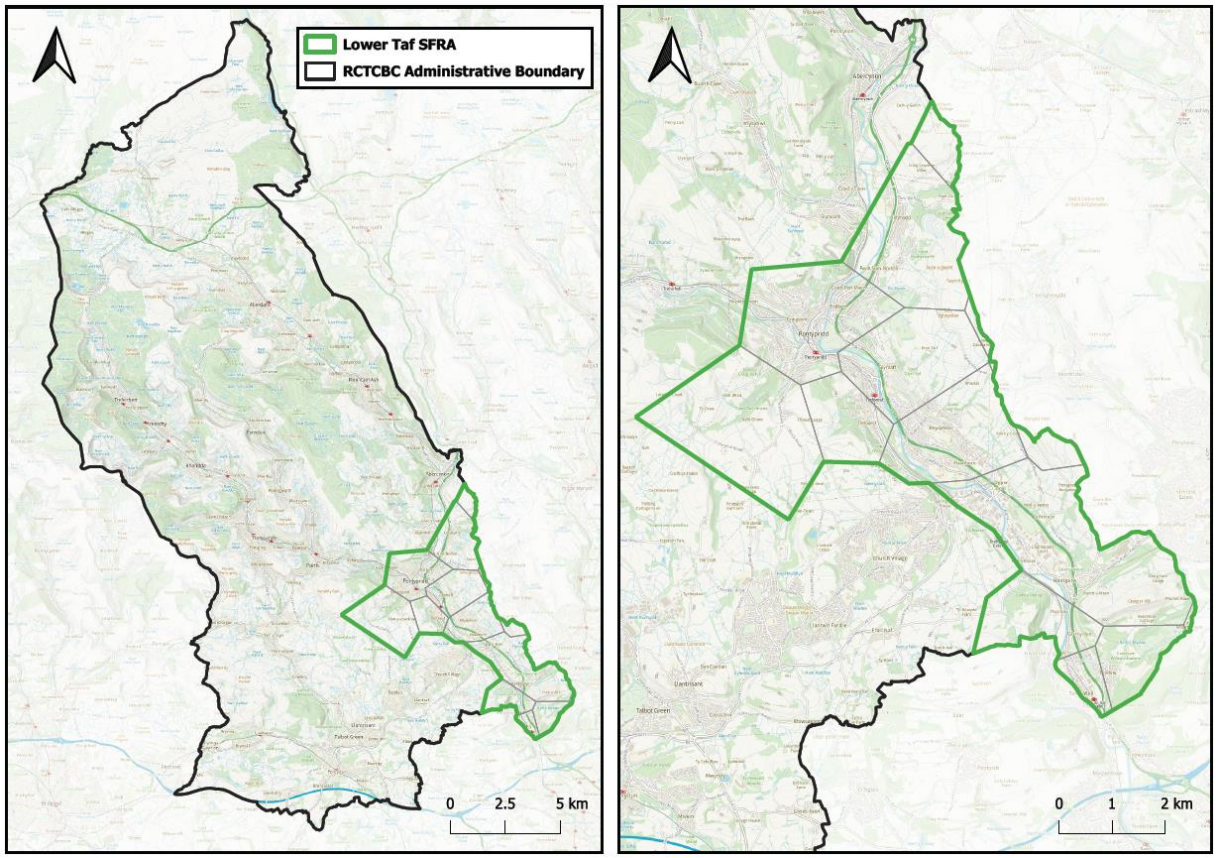

Figure 33: Lower Taf SFRA Location Plan

9.1 Area Description

The Lower Taf SFRA is located in the southeastern sector of RCTCBC and covers an area of approximately 3803.95 Ha. The SFRA falls within the River Taf catchment which is sourced from the highlands to the north of Merthyr Tydfil, before merging with the River Cynon as it enters RCTCBC.

The River Taf conveys in a southwesterly direction through the Lower Taf SFRA before merging with the Rhondda River at its confluence in Pontypridd. The River Taf continues to flow in a southeasterly direction through the towns and villages of Pontypridd, Glyntaff, Treforest, Rhydyfelin, Hawthorn, Nantgarw and Taff's Well.

The Lower Taf SFRA comprises of 9 community areas in RCTCBC: Cilfynydd, Pontypridd, Pen-Y-Coedcae, Glyntaff, Treforest, Rhydyfelin, Nantgarw, Taff's Well and Ty Rhiw; and 3 community areas classified as outside of RCTCBC Administrative Boundary: Abertridwr, Llanfabon, Senghenydd and Gwaelod-Y-Garth. Table 26 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the CaRR) relative to the rest of Wales, according to the CaRR.

Table 26: Pluvial ranking for the communities within Lower Taf SFRA according to the CaRR 2019 data

Community Name	Pluvial Ranking
Cilfynydd	128
Pontypridd	49
Pen-Y-Coedcae	1541
Treforest	330
Glyntaff	91
Rhydyfelin	8
Nantgarw	101
Taff's Well	151
Ty Rhiw	815
Gwaelod-Y-Garth	646
Abertridwr	242
Senghenydd	275
Llanfabon	497

As shown in Table 26, 4 out of the 9 RCT Unitary Authority communities fall within the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales, with Rhydyfelin ranking 8th highest risk in Wales, followed by Pontypridd at 49th, Glyntaff 91st and Nantgarw 102nd.

The Lower Taf SFRA catchment is characterised by having a 'U'-shaped valley as the steep-sided hillsides start to disperse as the valley floor becomes flatter and wider towards the south of the SFRA. These floodplains house some of RCT's largest urban

settlements. The key settlements in the Lower Taf SFRA include Pontypridd, Cilfynydd, Treforest, Glyntaf, Rhydyfelin, Hawthorn, Upper Boat, Nantgarw, and Taff's Well.

The geology in the SFRA predominantly consists of coal measures, mudstone, siltstone, and sandstone, which forms part of the South Wales Coalfield basin which was likely to have formed between 309.5 and 308 million years ago. Towards the southern tip of the SFRA the geology changes, with carboniferous limestone and ooidal sedimentary bedrock likely to have formed between 344.5 and 337 million years ago.

9.2 Overview of Flood Risk

The extent and degree of local flood risk in the Lower Taf SFRA is significant. Figure 34, extracted from NRW's FRAW map, illustrates the areas at risk of flooding from both surface water and ordinary watercourses and main river sources across the Lower Taf SFRA.

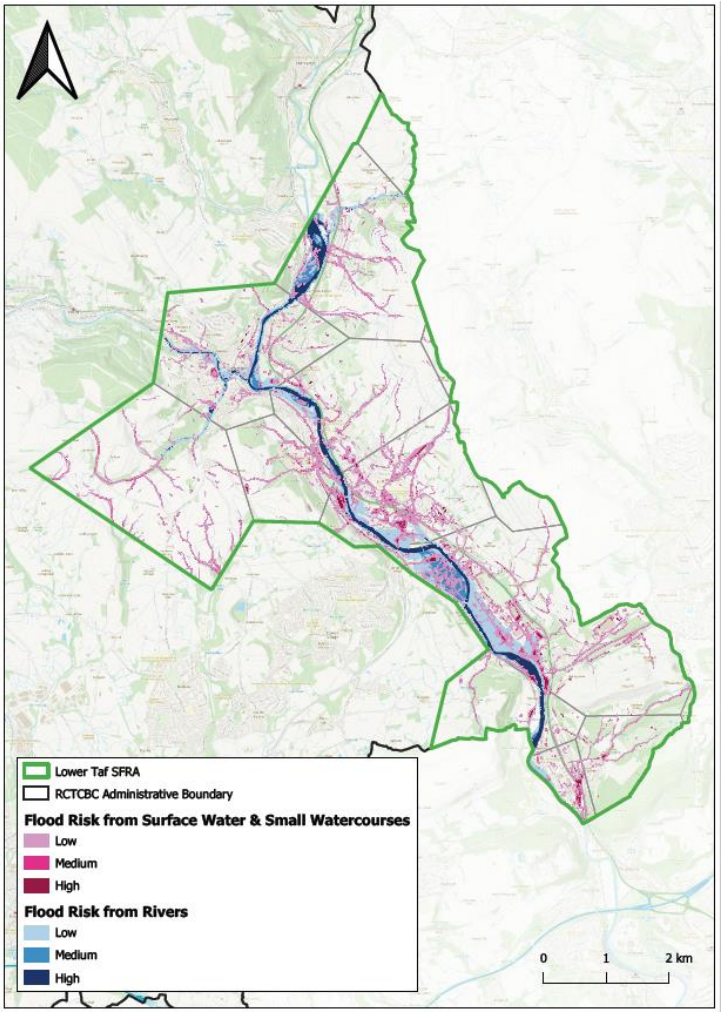

Figure 34: NRWs FRAW map for rivers and ordinary watercourse and surface water flood risk within the Lower Taf SFRA

The highest risk posed to people and properties within the SFRA is broadly associated with the River Taf and River Rhondda breaching their banks, with significant main river flood risk noted at the confluence. This is largely due to the degree of development along the floodplains of the River Taf, particularly at Pontypridd, Treforest and Nantgarw.

Significant ordinary watercourse and surface water flood risk is also identified across the Lower Taf SFRA, broadly associated to the network of named and unnamed ordinary watercourse which drain the hillsides to the east and west of the SFRA.

The primary ordinary watercourses flowing through the Ely SFRA include:

- Nant Corwg
- Nant Ffynnonwen
- Nant Felen
- Nant Y Brynau

All ordinary watercourses and designated main rivers flowing through the Lower Taf SFRA have been depicted in Figure 35.

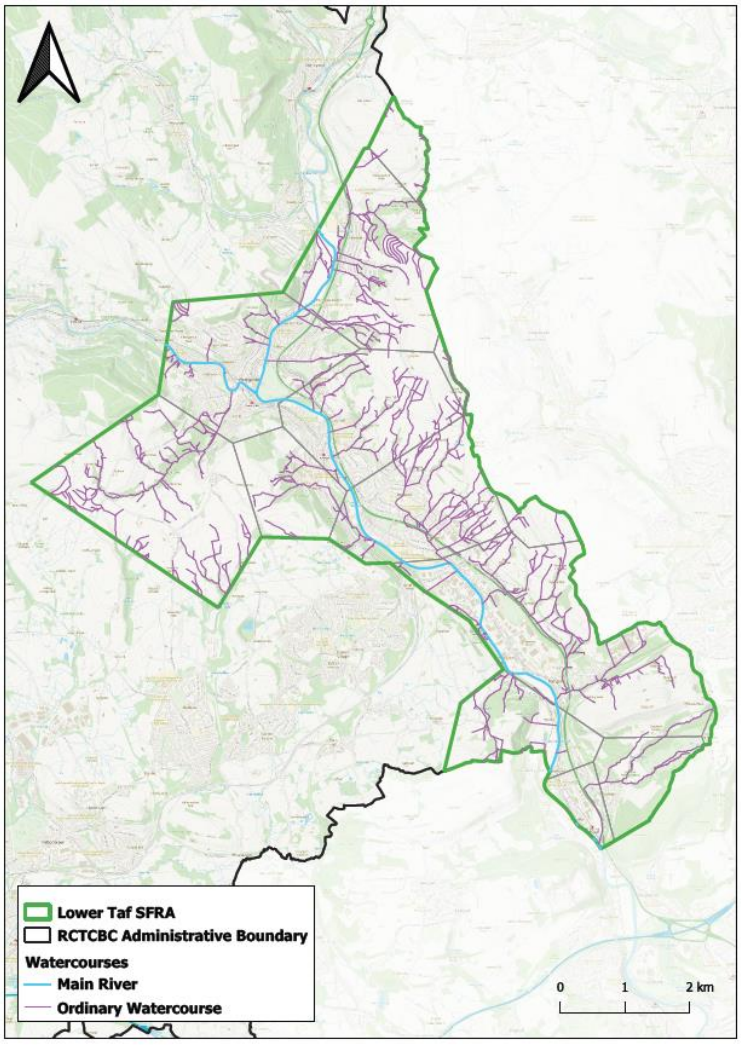

Figure 35: Ordinary watercourses and main rivers flowing through the Lower Taf SFRA

9.3 History of Flooding

The Lower Taf SFRA area has experienced several flood events over the past twenty years, often in relation to the network of ordinary watercourses and culverted infrastructure which convey a substantial volume of water through the urban settlements.

The most recent and significant flood event that occurred in the SFRA was the February 2020 flood events. Heavy rainfall as a result of Storms Dennis, Ciara and Jorge resulted in significant repeated flooding, with extensive flooding of residential and commercial properties occurring within the communities of Cilfynydd, Pontypridd, Rhydyfelin, Glyntaff, Hawthorn, Nantgarw, Taff's Well, Treforest, Upper Boat and Church Village.

During Storm Dennis in February 2020, the River Taf overtopped its banks at several locations, causing significant flooding to low-lying areas.

Since Storm Dennis in February 2020, communities including Pontypridd has experienced flooding on a further six occasions, whilst Taff's Well has experienced flooding a further five times, Rhydyfelin three times and Cilfynydd three times.

Further records of historical flooding prior to Storm Dennis in the SFRA is limited however, notable flooding occurred in 2018 as a result of Storm Bronagh on 20-21st September 2018 which impacted Rhydyfelin and Pontypridd.

9.4 Assessment of Flood Risk

To meet the requirements of the FRR, RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 27. The data shows the number of receptors at high, medium and low local flood risk in the Lower Taf SFRA.

Table 27: Receptors at high, medium and low risk of flooding from local sources in the Lower Taf SFRA

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)	964	328	1218
Commercial Properties (n)	156	29	81
Essential Services (n)	17	3	10
Primary/Trunk Roads (km)	6.49	2.28	7.43
Main Line Railways (km)	0.39	0.25	0.75
Agricultural Land - Grades 1, 2 and 3 (ha)	9.62	3.48	10.03
SAC (ha)	0	0	0
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	0.73	0.09	0.40
SINC (Ha)	18.31	4.74	18.83
NNR (ha)	0	0	0
LNR (ha)	0.05	0.01	0.04
Ancient Woodland (ha)	9.72	2.07	8.69
Registered Parks and Gardens (ha)	0.63	0.27	0.73
Country Parks (ha)	0	0	0
Scheduled Ancient Monuments (ha)	0.06	0.01	0.15
Listed Buildings (n)	18	1	3

9.5 The Flood Action Plan

The actions presented within the Lower Taf SFRA Flood Action Plan are listed in Table 28 and illustrated in Figure 36.

Table 28: Llynfi SFRA Flood Risk Management Plan

Ref	Action Name & Description	Location (Community)	Action Type	Link to LFRMS Measure	Timescale	Cost	Funding Option(s)	Status
SFRA9 A1	**Oakland Terrace** Produce a Full Business Case carrying out detailed design and development of the preferred option for managing the risk of flooding from local sources	Cilfynydd	Alleviate	M8, M10, M11, M14, M24, M29 & M31	Medium Term	High	WG FCERM Capital	Ongoing
SFRA9 A2	**Oakland Terrace** Construction phase of FAS	Cilfynydd	Alleviate	M24	Medium Term	Very High	WG FCERM Capital	Not Started
SFRA9 A3	**Park Street, Treforest** Produce a Full Business Case carrying out detailed design and development of the preferred option for managing the risk of flooding from local sources	Treforest	Alleviate	M8, M10, M11, M14, M24, M29 & M31	Medium Term	Medium	WG FCERM Capital	Not Started
SFRA9 A4	**Park Street, Treforest** Construction phase of FAS	Treforest	Alleviate	M24	Medium Term	High	WG FCERM Capital	Not Started
SFRA9 A5	**Glyntaff - SOC** Develop a SOC to better understand the risk of flooding at Glyntaff, using a whole catchment approach, to provide recommendations for suitable local flood risk management measures.	Glyntaff	Alleviate	M6, M7, M8, M10, M11, M14, M15	Medium Term	Medium	WG FCERM Capital	Not Started
SFRA9 A6	**Nant Garw Ordinary Watercourse - SOC** Develop a SOC to better understand the risk of flooding from the Nant Garw, using a whole catchment approach, to provide	Nant Garw	Alleviate	M6, M7, M8, M10, M11, M14, M15	Medium Term	Medium	WG FCERM Capital	Not Started

Ref	Action Name & De ription	ocati mmu)	Actio ype	nk to RMS M sure	imesca	Cost	Funding Option(s)	Status
	recommendations for suita local flood risk management measure							
SFRA9 A7	**Ely Brook – Inlet Upgrad** Design and construction w the resilience of the culvert inlet structure and ordinary watercourse channel	Cilfynydd	Alleviate	M6 10 & M24	Short Term	Medium	WG FCERM Small-scale Works	Not Started
SFRA9 A8	Establish and deliver a pilot Personal Flood Plan scheme for the community of Rhydyfelin	Rhydyfelin	Preparedness	M3, M4, M5, M6, M7 & M8	Short Term	ER	Revenue	Ongoing
SFRA9 A9	Establish and deliver a pilot Community Flood Plan for the community of Rhydyfelin	Rhydyfelin	Preparedness	M3, M4, M5, M6, M7 & M8	Medium Term	ER	Revenue	Not Started

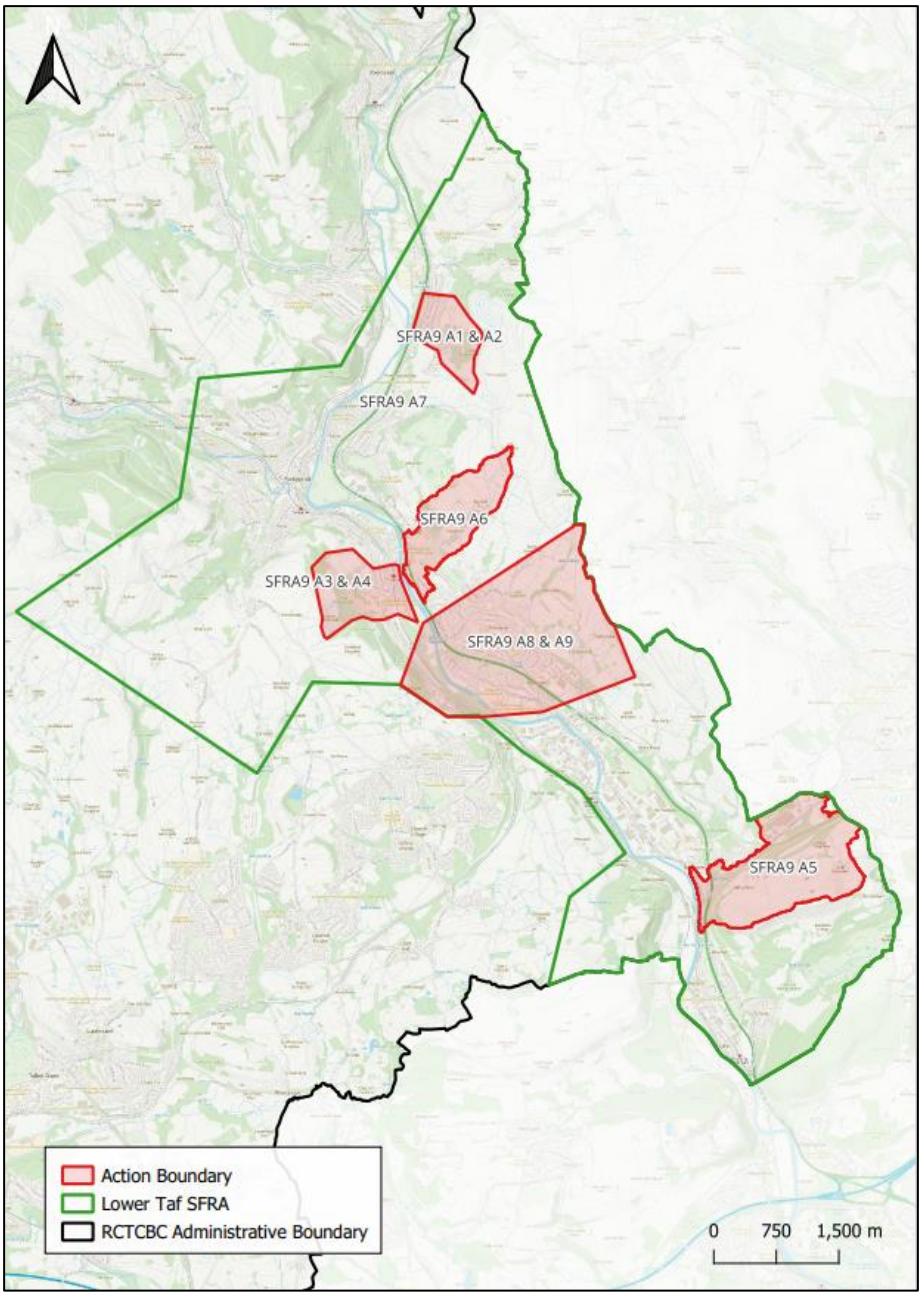

Figure 36: Location plan of the Lower Taf SFRA flood actions

10. Ely SFRA Flood Action Plan

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Ely SFRA. Figure 37 shows where in RCT the Ely SFRA is located.

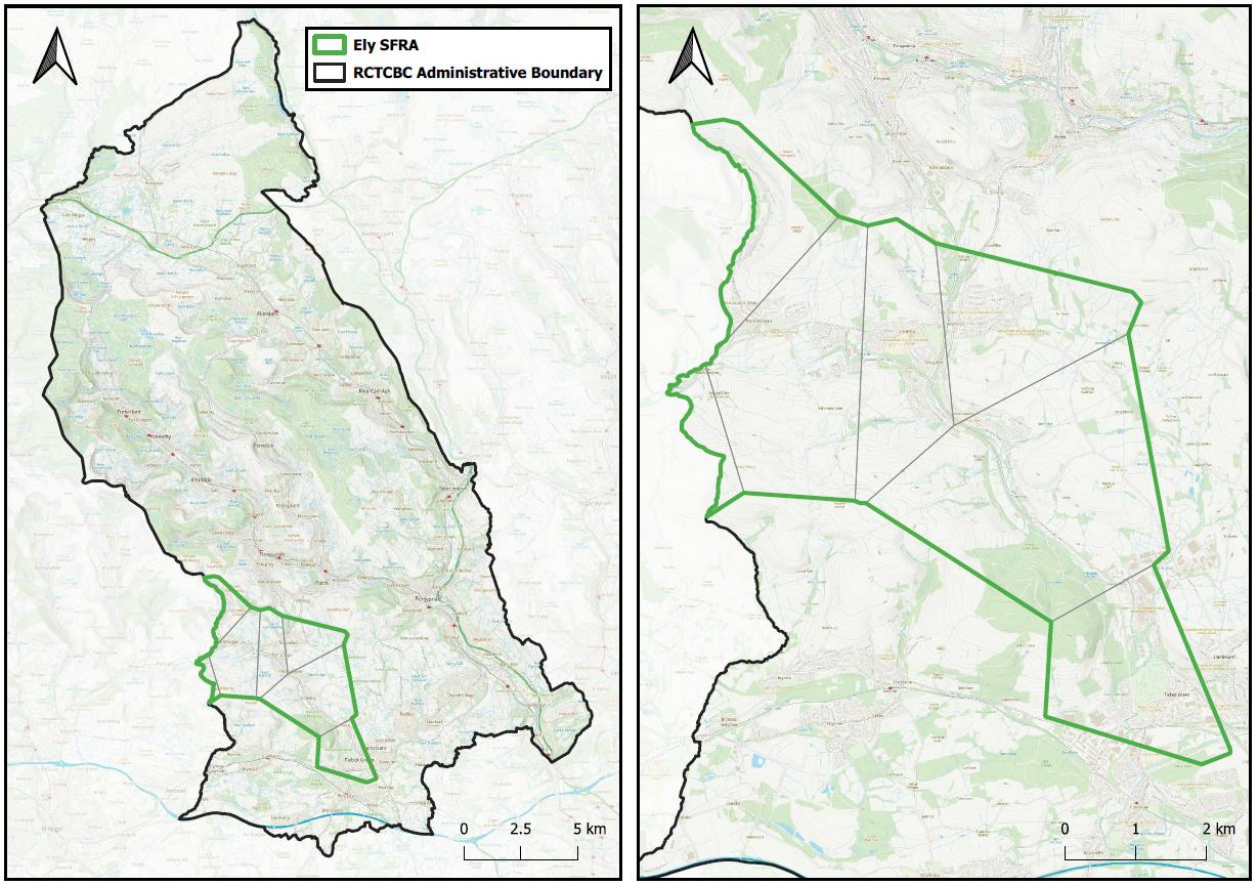

Figure 37: Ely SFRA Location Plan

10.1 Area Description

The Ely SFRA is located in the western sector of RCTCBC and curves towards the south following the Ely River. The SFRA covers an area of approximately 3127.68 Ha.

The SFRA falls within the Ely River catchment which is sourced by the highlands in the north of the SFRA; Mynydd Pen-y-Graig and Mynydd Dinas. The Ely River conveys southeast through the settlements of Tonyrefail, Ty'n-Y-Bryn, Thomastown, Coedely,

Ynysmaerdy and Talbot Green before reaching the Taf West SFRA and continuing towards Cardiff.

The Ely SFRA comprises of 6 community areas located within the RCTCBC Administrative Boundary: Hendreforgan, Bryn Golau, Tonyrefail, Coedely, Gilfach-Goch, and Talbot Green; and 1 community area located outside of the RCTCBC Administrative Boundary: Glynogwr. Table 29 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the CaRR) relative to the rest of Wales, according to the CaRR.

Table 29: Pluvial ranking for the communities within Ely SFRA according to the CaRR 2019 data

Community Name	Pluvial Ranking
Hendreforgan	133
Bryn Golau	71
Tonyrefail	193
Coedely	322
Talbot Green	236
Gilfach-Goch	173
Glynogwr	1007

As shown in Table 29, 1 community falls within the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales, with the Bryn Golau community ranked as 71st in Wales.

The Ely SFRA catchment is characterised by having steep-sided valleys above the urban areas located on the valley floor. These key settlements include the towns and villages of Gilfach Goch, Hendreforgan, Bryn Golau, Ty'n-Y-Bryn, Tonyrefail, Thomastown, Coedely, Ynysmaerdy and Talbot Green. The surrounding area land use is predominately forestry with some hill grazing.

The geology in the area is mostly compromised of Coal measures, Mudstone, siltstone, and sandstone, which forms part of the South Wales Coalfield basin. The Sedimentary bedrock likely formed between 315.2 and 308 million years ago during the Carboniferous period.

10.2 OVERVIEW OF FLOOD RISK

The extent and degree of local flood risk in the Ely SFRA is significant. Figure 38, extracted from NRW's FRAW map, illustrates the areas at risk of flooding from both surface water and ordinary watercourses and main river sources across the Ely SFRA.

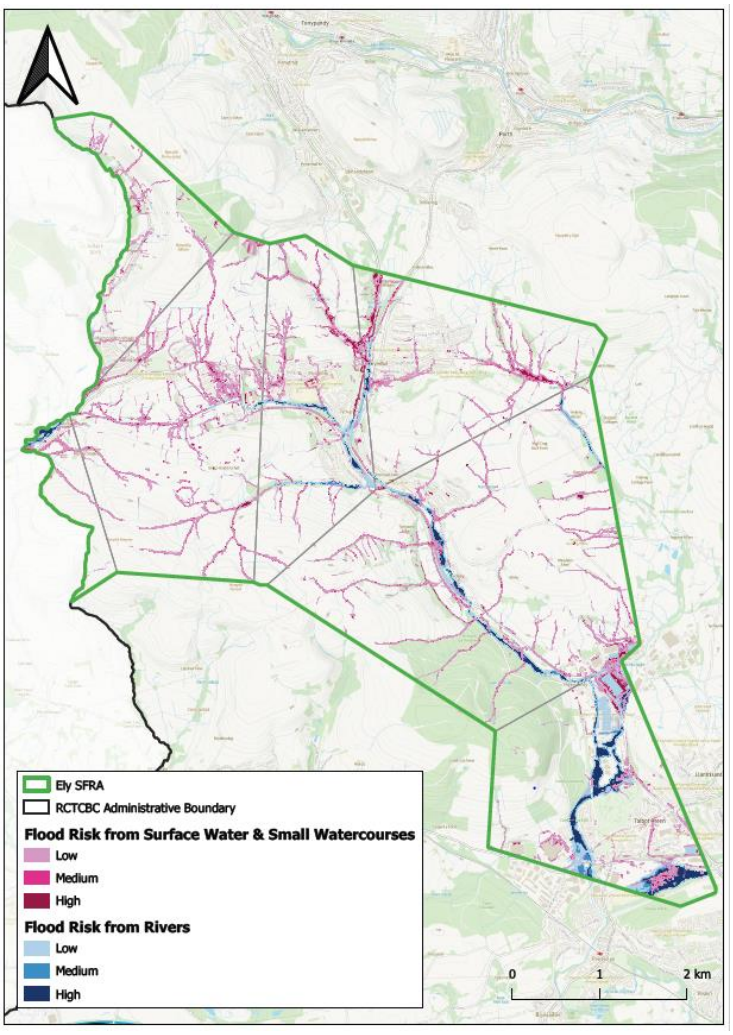

Figure 38: NRWs FRAW map for rivers and ordinary watercourse and surface water flood risk within the Ely SFRA

The highest risk posed to people and properties within the north of the SFRA is broadly associated with the network of named and unnamed ordinary watercourses which drain from the steep hillsides in the north, east and west of the SFRA. Whilst the headwaters have generally remained in a 'natural' condition, the watercourses have been heavily modified and culverted beneath urban development on the valley floor before discharging into the Ely River, which flows southeast through the SFRA.

Flooding is primarily sourced from culvert inlets and bank breaches associated to the network of ordinary watercourses.

The primary ordinary watercourses flowing through the Ely SFRA include:

- Ogwr Fach
- Nant Cae'rgwerlas
- Nant Melyn
- Nant Cwm-Du

Figure 38 also notes a high to low risk of flooding along the length of the main rivers which flow through the SFRA; namely the River Ely, Clun River, Nant Muchudd, Nant Llanilid, and Nant Erin which are designated main rivers.

All ordinary watercourses and designated main rivers flowing through the Ely SFRA have been depicted in Figure 39.

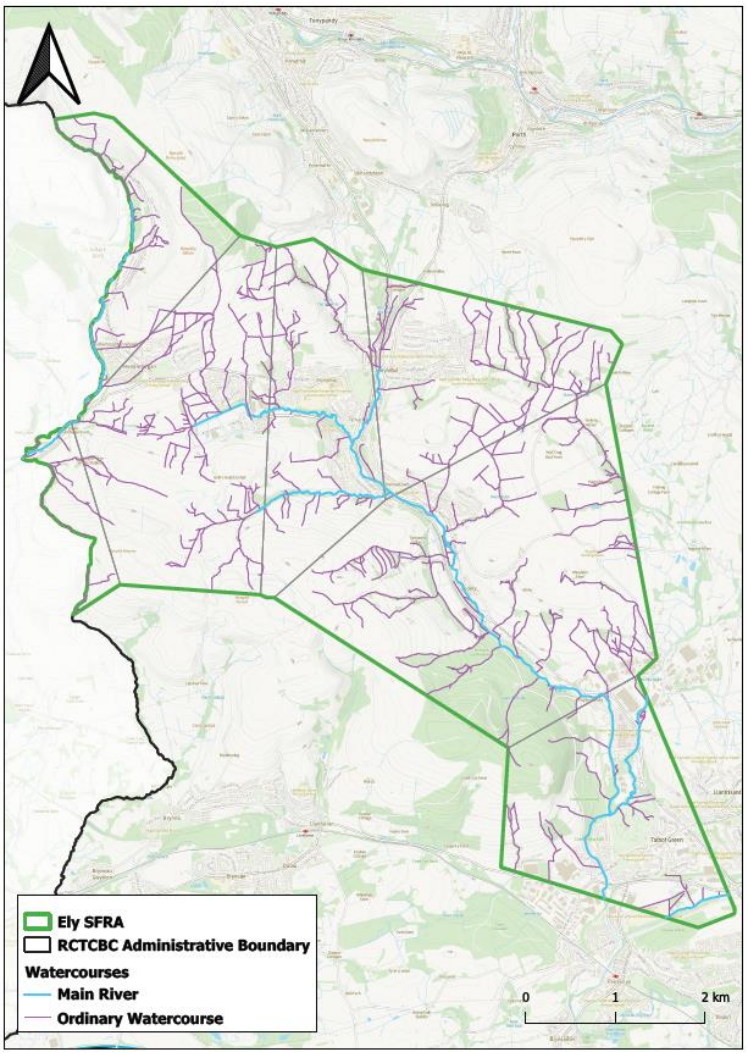

Figure 39: Ordinary watercourses and main rivers flowing through the Ely SFRA

10.3 History of Flooding

The Ely SFRA area has experienced several flood events over the past twenty years, often in relation to the network of ordinary watercourses and culverted infrastructure which convey a substantial volume of water through the urban settlements.

The most recent and significant flood event that occurred in the SFRA was the February 2020 flood events. Heavy rainfall as a result of Storms Dennis, Ciara and Jorge resulted in significant repeated flooding, with extensive flooding of residential and commercial properties occurring within the communities of Tonyrefail and Gilfach-

Goch. Since Storm Dennis in February 2020, communities in the Ely SFRA have experienced further minor flooding to properties, including three occasions at Tonyrefail and Gilfach-Goch.

Further records of historical flooding prior to Storm Dennis in the SFRA is limited however, notable flooding occurred in 2018 as a result of Storm Callum on 12-13th October 2018 which impacted Thomastown and an Unnamed Storm on 8-9th December 2018 which impacted Tonyrefail.

10.4 Assessment of Flood Risk

To meet the requirements of the FRR, RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 30. The data shows the number of receptors at high, medium and low local flood risk in the Ely SFRA.

Table 30: Receptors at high, medium and low risk of flooding from local sources in the Ely SFRA

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)	380	162	467
Commercial Properties (n)	33	7	33
Essential Services (n)	5	0	4
Primary/Trunk Roads (km)	3.66	1.32	3.58
Main Line Railways (km)	0.03	0.01	0.12
Agricultural Land - Grades 1, 2 and 3 (ha)	5.48	1.98	6.66
SAC (ha)	0	0	0
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	4.58	1.26	3.73
SINC (Ha)	15.27	4.13	14.18
NNR (ha)	0	0	0
LNR (ha)	0	0	0
Ancient Woodland (ha)	5.74	0.91	2.52
Registered Parks and Gardens (ha)	0	0	0
Country Parks (ha)	0	0	0
Scheduled Ancient Monuments (ha)	0	0	0
Listed Buildings (n)	0	0	2

10.5 The Flood Action Plan

The actions presented within the Ely SFRA Flood Action Plan are listed in Table 31 and illustrated in Figure 40.

Table 3 [illegible] Flood

Ref	Action Name & D[illegible]ription	Locat[illegible]ommu[illegible]y)	Actio[illegible]	[illegible]k to [illegible]RMS M[illegible]sure	Timesca[illegible]	Cost	Funding Option(s)	Status
SFRA10 A1	**Mill Street** Highway drainage improvements and ordinary watercourse rehabilitation to manage local flood risk affecting the highway	Tonyrefail East	Alleviate	M6, M10, M17 & M18	Short Term	Medium	WG Resilient Road Fund	Ongoing

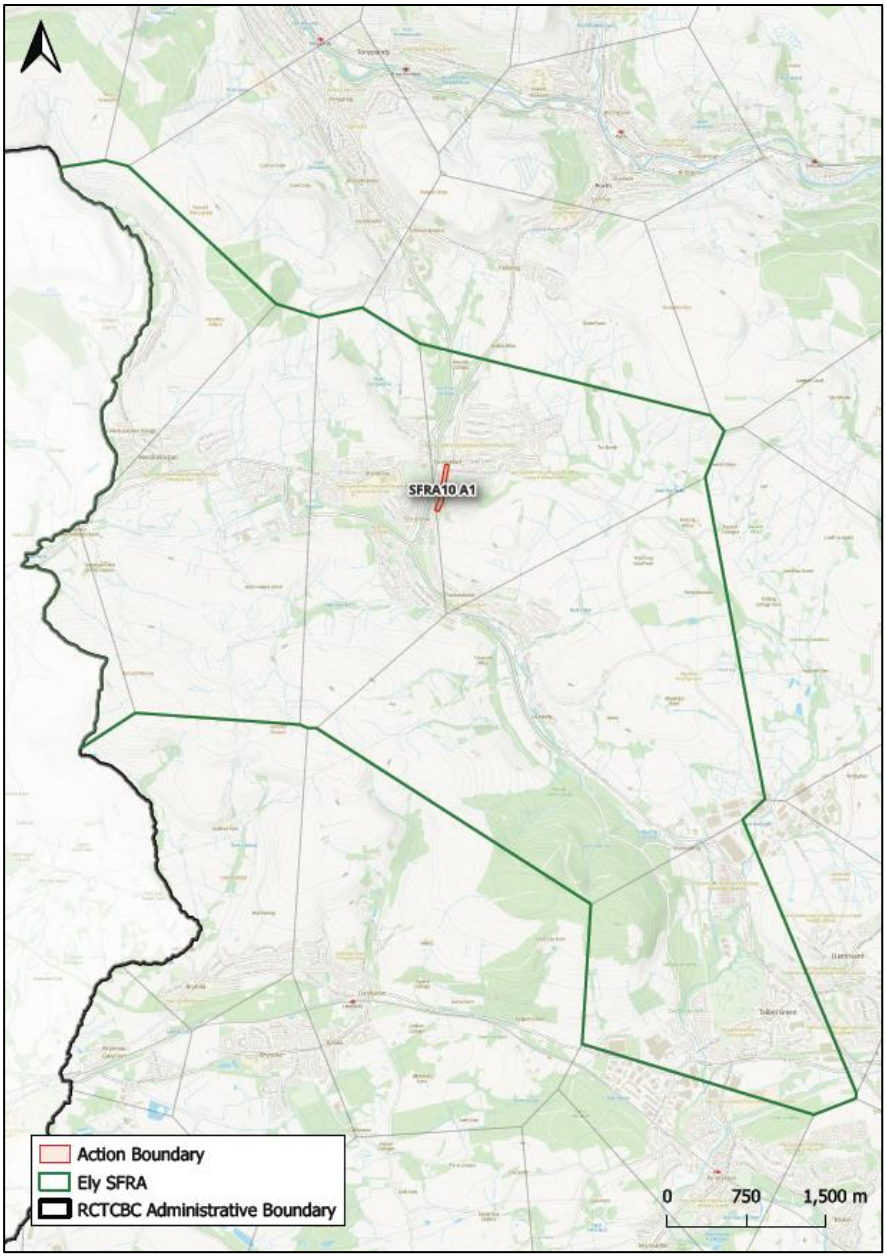

Figure 40: Location plan of the Ely SFRA flood actions

11. Taf West SFRA Flood Action Plan

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Taf West SFRA. Figure 41 shows where in RCT the Taf West SFRA is located.

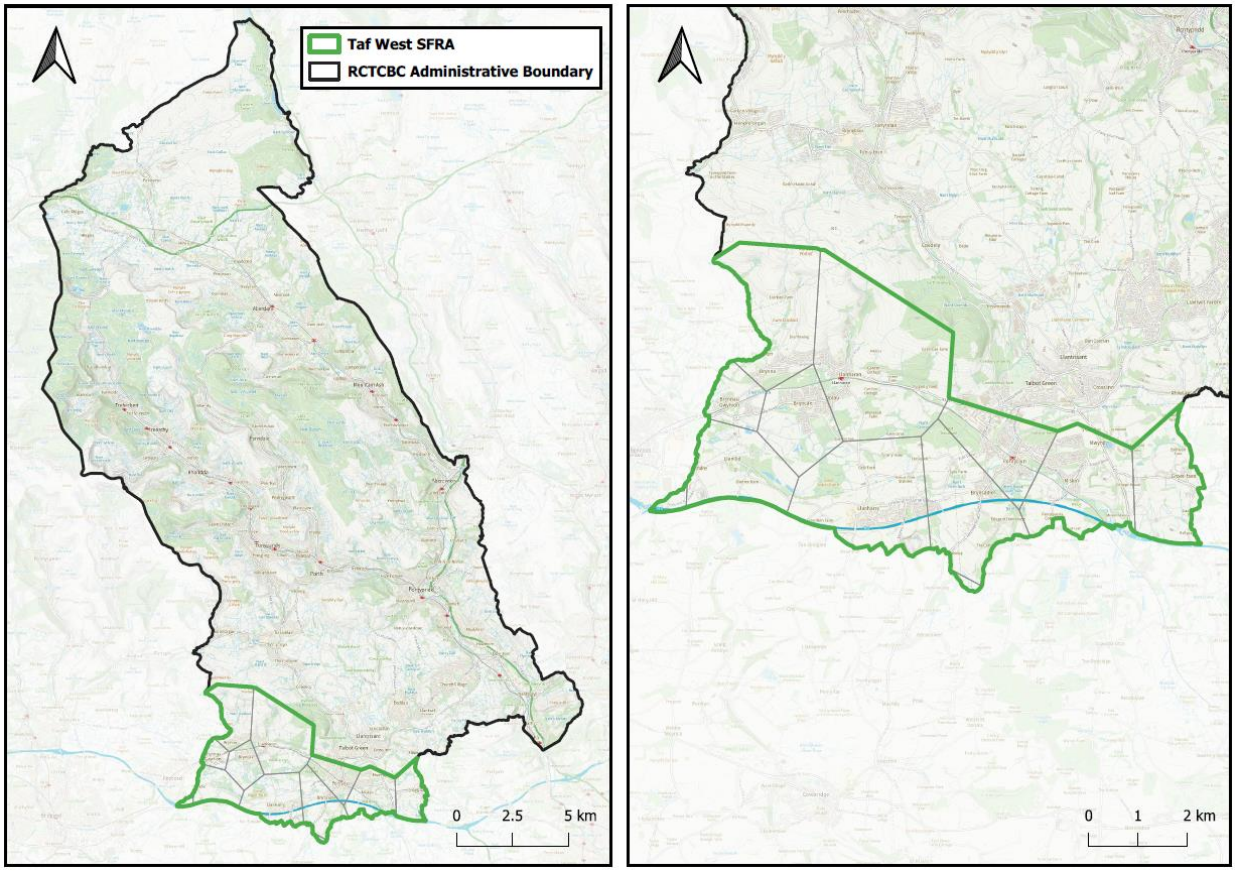

Figure 41: Taf West SFRA Location Plan

11.1 Area Description

The Taf West SFRA is located in the southwest of RCTCBC and covers an area of approximately 3637.18 Ha. The SFRA falls within two catchment areas; the Ewenni Fach to the west and the River Ely catchment to the east.

The Ewenni Fach catchment is sourced by the headwaters of Mynydd Meiros and flows southwest through the key settlements of Llanharan, Bryncae, Brynna and

Brynnau Gwynion before entering Bridgend County Borough Council area, outfalling to Swansea Bay at Ogmore by Sea.

The River Ely, which is sourced by the highlands close to the town of Tonyrefail in the Ely SFRA, drains southwards through Talbot Green before entering Taf West SFRA and merging with the River Clun, Nant Melyn and Nant Felin-fach at Pontyclun and flowing in south-easterly direction through Miskin before existing the RCT administrative Boundary towards Cardiff.

The Taf West SFRA comprises of 10 community areas: Brynna, Brynnau Gwynion, Llanilid, Bryncae, Llanharan, Llanharry, Pontyclun, Brynsadler, Miskin and Groes – Faen. Table 32 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the CaRR) relative to the rest of Wales, according to the CaRR.

Table 32: Pluvial ranking for the communities within Taf West SFRA according to the CaRR 2019 data

Community Name	Pluvial Ranking
Brynna	646
Brynnau Gwynion	949
Llanilid	1722
Bryncae	314
Llanharan	191
Llanharry	515
Pontyclun	686
Brynsadler	1007
Miskin	705
Groes - Faen	1722

As shown in Table 32, all 10 communities fall outside the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales. Llanharan falls within the top 10% (top 222) of communities ranking 191st.

In comparison with other SFRAs in RCT, the Taf West SFRA ranks lowest in terms of pluvial risk, based on the CaRR. This is largely due to the topography of the Taf West SFRA being predominately low-lying agricultural land. Residential development is located primarily adjacent to major watercourses in the area. Key settlements in the Taf West SFRA include Brynnau Gwynion, Brynna, Felindre, Bryncae, Llanharan, Llanharry, Brynsadler, Pontyclun, Miskin, Mwyndy and Groes – Faen.

The geology in the area is mostly compromised of Coal measures to the north of the SFRA, with mudstone, siltstone, and sandstone, forming part of the South Wales Coalfield basin. The Sedimentary bedrock likely formed between 315.2 and 308 million years ago during the Carboniferous period. The geology to the south around Brynsadler and Miskin is part of the Cornelly Oolite Formation which comprises of limestone, ooidal sedimentary bedroom, which was likely to have formed between 344.5 and 337 million years ago during the Carboniferous period.

11.2 Overview of Flood Risk

The extent and degree of local flood risk in the Taf West SFRA is moderate. Figure 42, extracted from NRW's FRAW map, illustrates the areas at risk of flooding from both surface water and ordinary watercourses and main river sources across the Taf West SFRA.

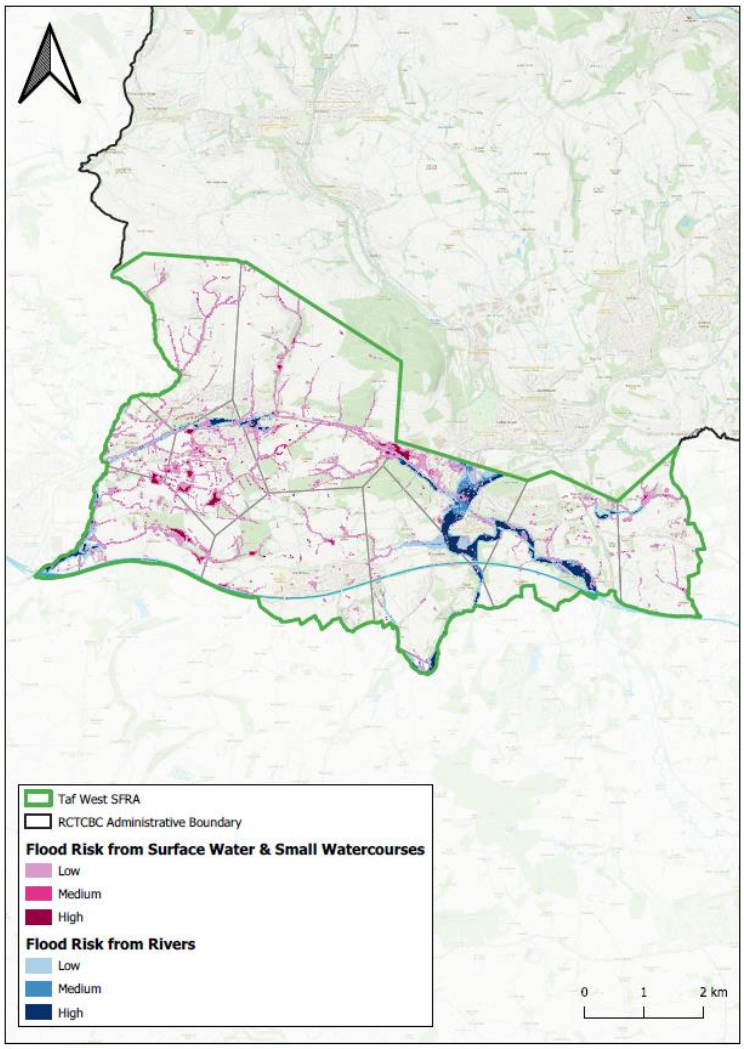

Figure 42: NRWs FRAW map for rivers and ordinary watercourse and surface water flood risk within the Taf West SFRA

The highest risk posed to people and properties within the west of the SFRA is broadly associated with the network of named and unnamed ordinary watercourses which drain towards the Ewenni Fach River in the west and the River Ely in the east. These watercourses have largely been modified and culverted beneath the key settlements. As a result, flooding is primarily sourced from culvert inlets and bank breaches associated to the network of ordinary watercourses. Large areas of land towards the south of the SFRA has remained largely undeveloped and therefore identified at lower risk of flooding to people and properties.

The primary ordinary watercourses flowing through the Taf West SFRA include:

- Nant Graean
- Nant Llanbad
- Otters Brook Trout Pools

Figure 42 also notes a high to low risk of flooding along the length of the main rivers which flow through the SFRA, which includes the Nant Felin – Fach, Nant Dyfrgi, Nant Rhydhalog and Nant Melyn, which are all designated main rivers in addition to the Clun River, Ely River and the Ewenni Fach River. There is a high risk of main river flooding identified at the confluence of the River Clun and Ely, at Pontyclun.

All ordinary watercourses and designated main rivers flowing through the Taf West SFRA have been depicted in Figure 43.

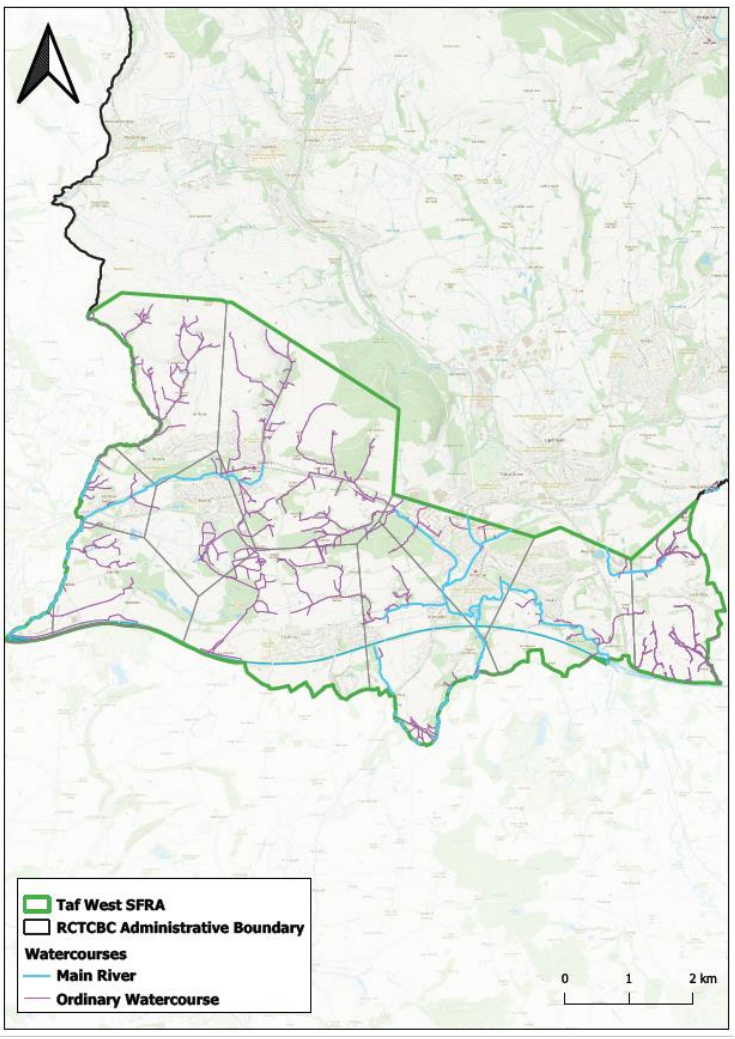

Figure 43: Ordinary watercourses and main rivers flowing through the Taf West SFRA

11.3 History of Flooding

The Taf West SFRA area has experienced several flood events over the past twenty years, often in relation to the network of ordinary watercourses and culverted infrastructure which convey a substantial volume of water through the urban settlements.

The most recent and significant flood event that occurred in the SFRA was in August 2022. Heavy rainfall as a result of an unnamed storm event on the 16th of August 2022 resulted in internal flooding of residential and commercial properties within the communities of Brynna and Llanharan.

Further records of historical flooding prior to August 2022 in the SFRA is limited however, notable flooding occurred during the floods of February 2020 as a result of Storm Dennis and Storm Jorje which impacted Pontyclun, Llanharan and Llanharry, in addition to four unnamed storm events between September and November in 2019 which impacted Llanharry, Brynna and Pontyclun. The impacts experienced during the floods of February 2020 was less severe in the Taf West SFRA compared with other communities in RCT.

11.4 Assessment of Flood Risk

To meet the requirements of the FRR, RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 33. The data shows the number of receptors at high, medium and low local flood risk in the Taf West SFRA.

Table 33: Receptors at high, medium and low risk of flooding from local sources in the Taf West SFRA

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)	118	59	166
Commercial Properties (n)	21	17	25
Essential Services (n)	0	0	4
Primary/Trunk Roads (km)	1.98	0.38	1.56
Main Line Railways (km)	0.70	0.08	0.5
Agricultural Land - Grades 1, 2 and 3 (ha)	18.83	6.37	21.64
SAC (ha)	0	0	0
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	0.55	0.37	1.06
SINC (Ha)	26.03	6.46	21.96
NNR (ha)	0	0	0
LNR (ha)	0	0	0
Ancient Woodland (ha)	6.95	1.60	4.97
Registered Parks and Gardens (ha)	0.75	0.45	1.21
Country Parks (ha)	0	0	0
Scheduled Ancient Monuments (ha)	0.03	0.05	0.05
Listed Buildings (n)	2	2	2

11.5 The Flood Action Plan

The actions presented within the Taf West SFRA Flood Action Plan are listed in Table 34 and illustrated in Figure 44.

Table 34: Taf West SFRA Flood Risk Management Plan

Ref	Action Name & Description	Location (Community)	Action Type	Link to RMS Measure	Timescale	Cost	Funding Option(s)	Status
SFRA11 A1	**Programme Business Case** Develop a Programme Business Case, assessing the risk of local flooding utilising a catchment-based approach, considering a range of FRM measures inclusive of wider catchment and nature based solutions, and encouraging collaboration between RMAs, other organisations and the public.	Taf West SFRA	Alleviate	M6, M7, M8, M10, M11, M14, M15, M29 & M31	Medium Term	Medium	WG FCERM Capital	Not Started

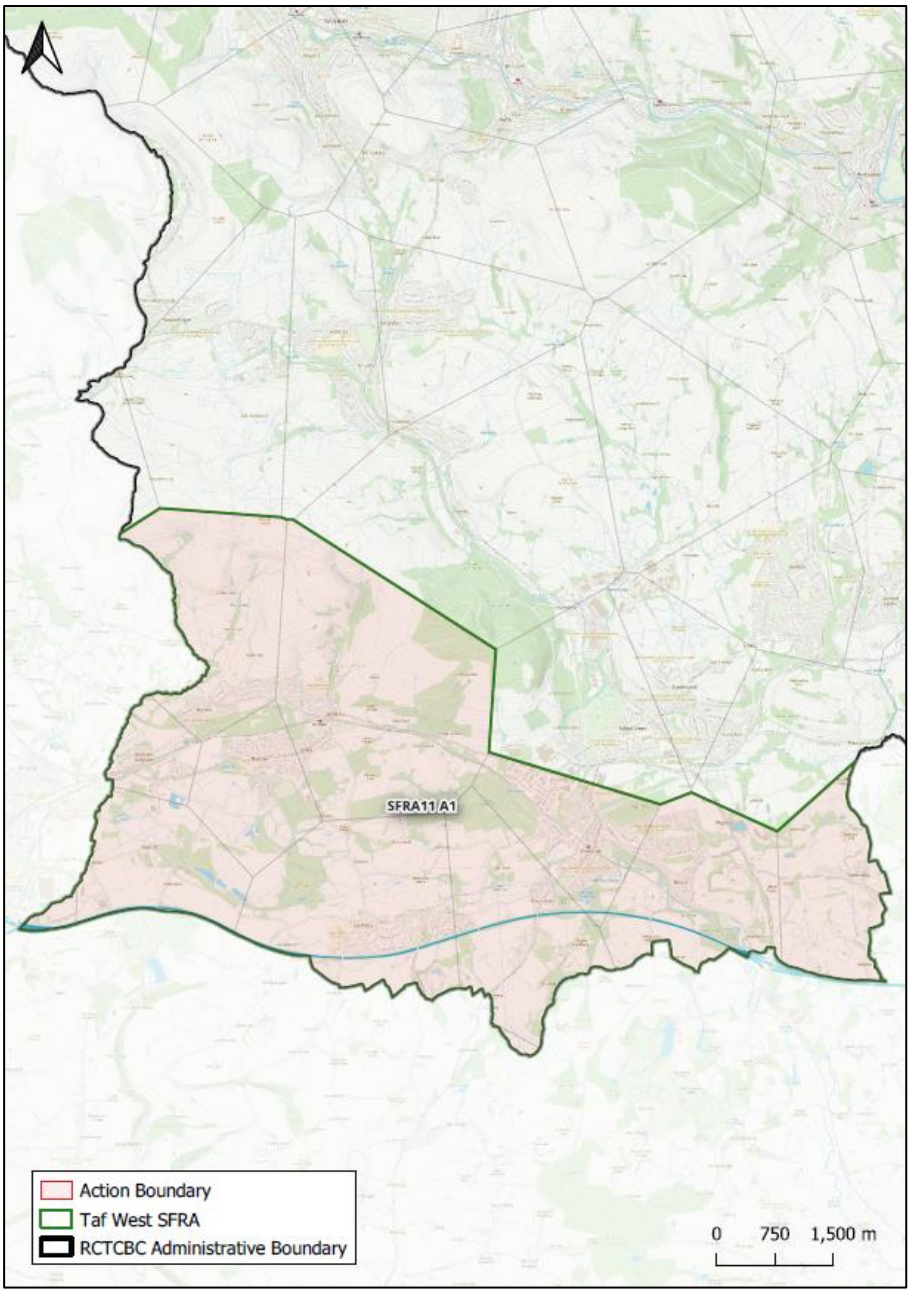

Figure 44: Location plan of the Taf West SFRA flood actions

12. TAF EAST SFRA FLOOD ACTION PLAN

The following Flood Action Plan sets out the actions that RCTCBC are in the process of undertaking, or plan to undertake, to help manage the risk of flooding from local sources within the Taf East SFRA. Figure 45 shows where in RCT the Taf East SFRA is located.

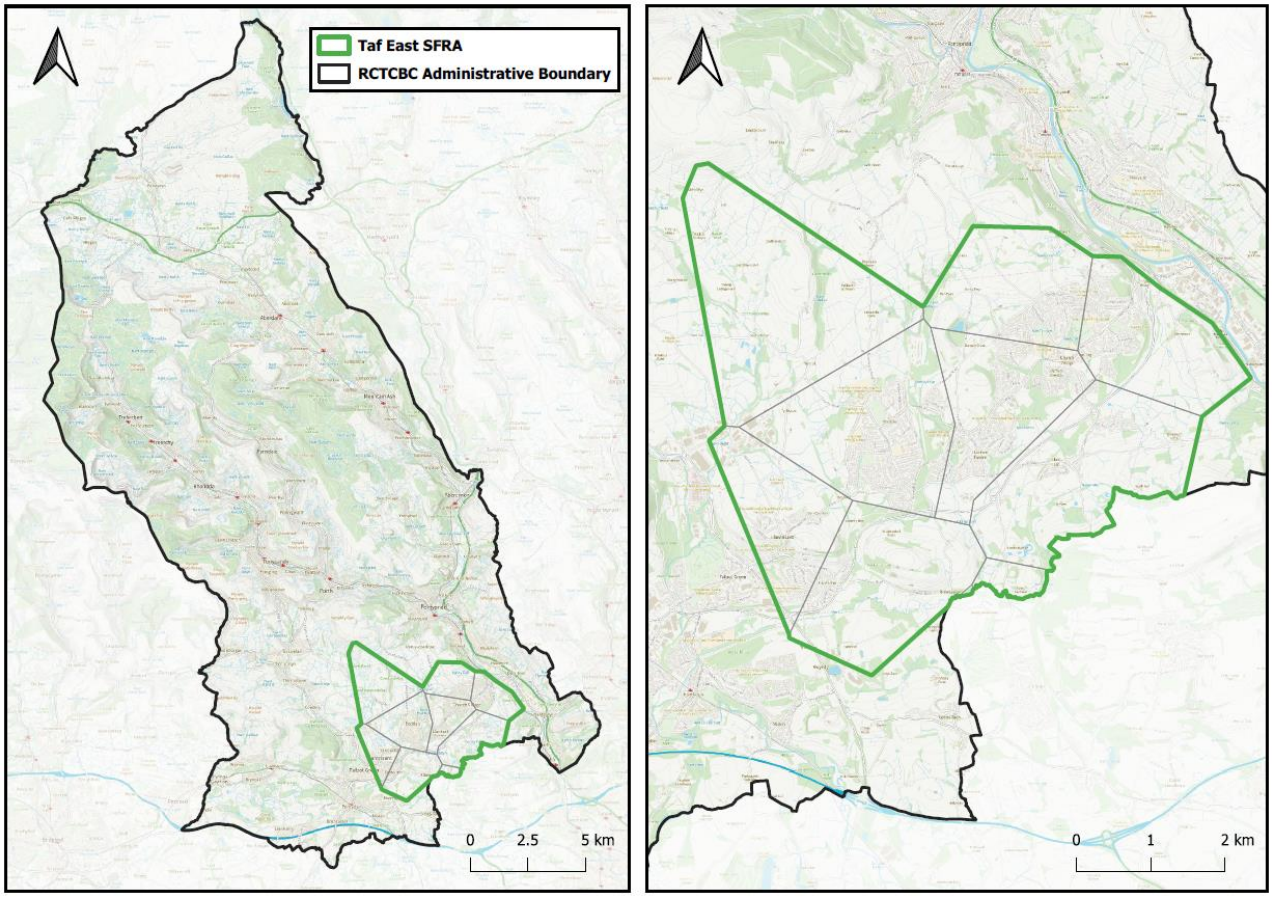

Figure 45: Taf East SFRA Location Plan

12.1 AREA DESCRIPTION

The Taf East SFRA is located in the south-central sector of RCTCBC and covers an area of approximately 3014.77 Ha. The SFRA falls within the Ely River catchment which is sourced from the highlands to the west of the SFRA. The River Clun is a major tributary of the Ely River and is sourced from the headwaters of the Garth Mountain, situated in the southeast of the Taf East SFRA. The River Clun drains through the

settlements of Efail Isaf, Llantwit Fardre, Rhiwsaeson, Cross Inn and Llantrisant before merging with the Ely River further downstream at Pontyclun, located to the southwest of the SFRA.

The Taf East SFRA comprises of 8 community areas located within the RCTCBC Administrative Boundary: Church Village, Ton-teg, Llantwit Fardre, Castellau, Beddau, Llantrisant, Cross Inna and Efail Isaf; and 1 community area located outside of the RCTCBC Administrative Boundar: Creigiau. Table 35 depicts the ranking of those communities in terms of their surface water and ordinary watercourse flood risk (referred to as 'Pluvial Ranking' in the CaRR) relative to the rest of Wales, according to the CaRR.

Table 35: Pluvial ranking for the communities within Taf East SFRA according to the CaRR 2019 data

Community Name	Pluvial Ranking
Church Village	344
Ton-teg	168
Llantwit Fardre	197
Castellau	449
Beddau	76
Llantrisant	170
Cross Inn	374
Efail Isaf	372
Creigiau	705

As shown in Table 35, only 1 community falls within the top 5% (top 111) of communities at greatest risk of pluvial flooding in Wales, with Beddau ranked as 76th most at risk in Wales.

The topography of the Taf East SFRA catchment is characterised by having steep-sided valleys above the urban areas located on the valley floor, however the valleys in the south of RCT are much more 'U'-shaped, with increased development along the low-lying valley floors. The SFRA is comprised of mountainous regions to the southeast and northeast, limiting development, however, land use throughout the Taf East SFRA is predominantly used for agricultural grazing, forestry, and public recreation.

Key settlements include the towns and villages of Church Village, Ton-teg, Llantwit Fardre, Efail Isaf, Gwaun Miskin, Llantwit Chase, Hendrescythan, Rhiwsaeson, Beddau, Cross Inn, Dan Caerlan, Llantrisant and Castellau-Ganol.

12.2 Overview of Flood Risk

The extent and degree of local flood risk in the Taf East SFRA is moderate. Figure 46, extracted from NRW's FRAW map, illustrates the areas at risk of flooding from both surface water and ordinary watercourses and main river sources across the Taf East SFRA.

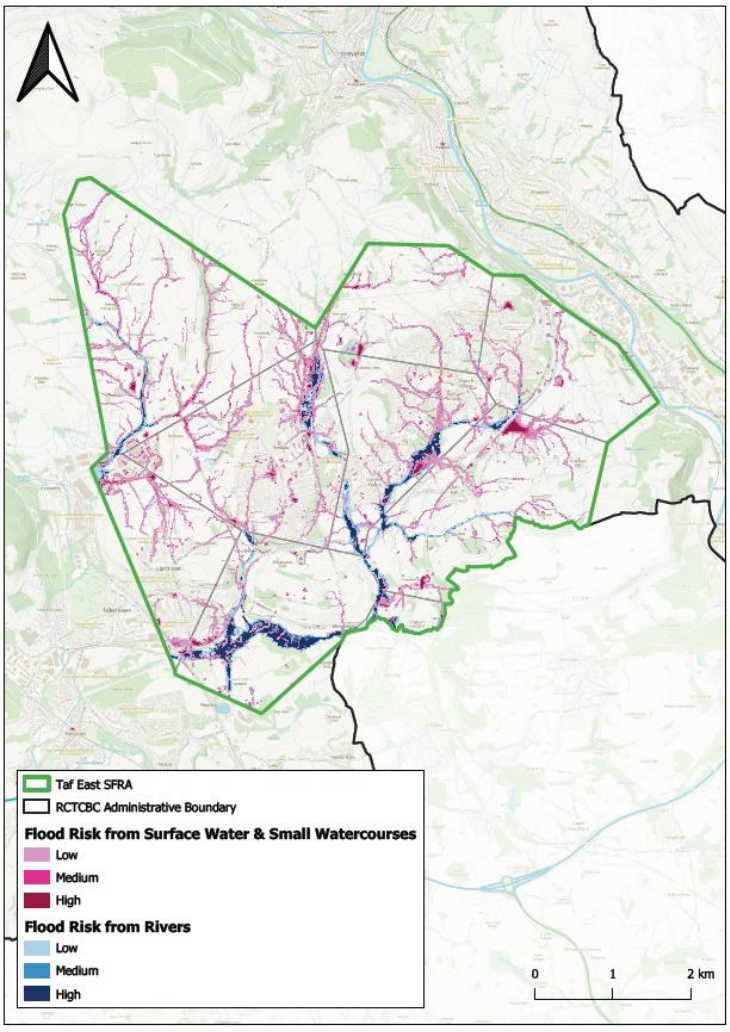

Figure 46: NRWs FRAW map for rivers and ordinary watercourse and surface water flood risk within the Taf East SFRA

The highest risk posed to people and properties within the SFRA is broadly associated with the network of named and unnamed ordinary watercourses which drain from the steep hillsides in the north, northeast and east of the SFRA. Whilst the headwaters have generally remained in a 'natural' condition, the watercourses have been heavily

modified and culverted beneath urban development on the valley floor, before discharging into the River Clun which flows southwest through the SFRA.

As a result, flooding is primarily sourced from culvert inlets and bank breaches associated to the network of ordinary watercourses.

The primary ordinary watercourses flowing through the Taf East SFRA include:

- Nant Muchudd
- Nant Y Arian
- Nant Y Dall

Figure 46 also notes a high to low risk of flooding along the length of the main rivers which flow through the SFRA; namely the Clun River and its tributaries including the Nant Myddlyn, Nant Y Felin, Nant Dowlais, and the Nant Cymdda-bach.

All ordinary watercourses and designated main river flowing through the Taf East SFRA have been depicted in Figure 47.

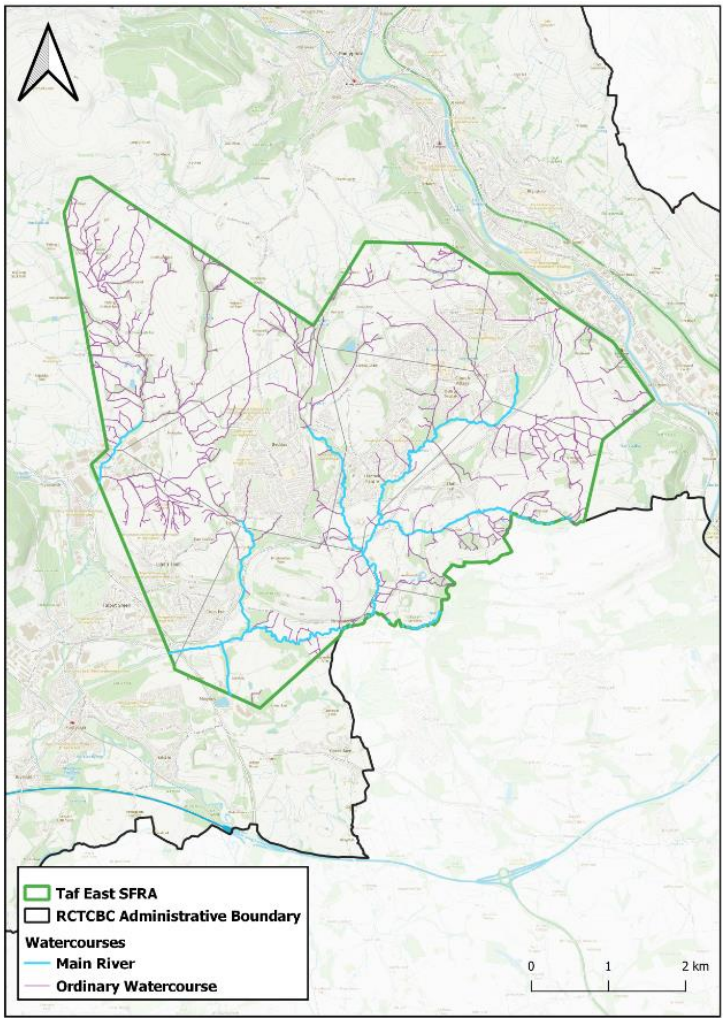

Figure 47: Ordinary watercourses and main rivers flowing through the Taf East SFRA

12.3 HISTORY OF FLOODING

The Taf East SFRA area has experienced several flood events over the past twenty years, often in relation to the network of ordinary watercourses and culverted infrastructure which convey a substantial volume of water through the urban settlements.

The most recent and significant flood event that occurred in the SFRA was the February 2020 flood events. Heavy rainfall as a result of Storms Dennis, Ciara and Jorge resulted in significant repeated flooding, with extensive flooding of residential and commercial properties occurring within the communities of Church Village, Efail

Isaf and Llantrisant. Since the storm events in February 2020, there has only been two minor flooding incidents that have resulted in internal flooding within the communities of Beddau and Llantwit Fadre in October 2021.

Further records of historical flooding prior to Storm Dennis in the SFRA is limited however, notable flooding occurred in 2018 as a result of an Unnamed Storm on 8-9th December 2018 which impacted Ton-teg.

12.4 Assessment of Flood Risk

To meet the requirements of the FRR, RCTCBC have assessed the risk of flooding from local sources for different receptor types, the results of which is provided in Table 36. The data shows the number of receptors at high, medium and low local flood risk in the Taf East SFRA.

Table 36: Receptors at high, medium and low risk of flooding from local sources in the Taf East SFRA

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)	462	172	799
Commercial Properties (n)	27	8	33
Essential Services (n)	5	3	8
Primary/Trunk Roads (km)	2	0.74	3.25
Main Line Railways (km)	0.2	0.08	0.78
Agricultural Land - Grades 1, 2 and 3 (ha)	15.96	4.62	17.49
SAC (ha)	0	0	0
SPA (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
SSSI (ha)	4.33	1.32	5.46
SINC (Ha)	24.34	6.97	23.18
NNR (ha)	0	0	0
LNR (ha)	0	0	0
Ancient Woodland (ha)	7.67	2.01	5.52
Registered Parks and Gardens (ha)	0	0	0
Country Parks (ha)	0	0	0
Scheduled Ancient Monuments (ha)	0.12	0.01	0.04
Listed Buildings (n)	4	1	0

12.5 The Flood Action Plan

The actions presented within the Taf East SFRA Flood Action Plan are listed in Table 37 and illustrated in Figure 48.

e 37: T E RA Fl n

Ref	Action Name & D ription	Locat ommu y)	Actio	k to RMS M sure	Timesca	Cost	Funding Option(s)	Status
SFRA12 A1	**Programme Business C e** Develop a Programme B ; assessing the risk of local flooding utilising a catchment-based approach, considering a range of FRM measures inclusive of wider catchment and nature based solutions, and encouraging collaboration between RMAs, other organisations and the public.	Taf East SFRA	Alleviate	M6, M7, M8, M10, M11, M14, M15, M29 & M31	Medium Term	Medium	WG FCERM Capital	Not Started

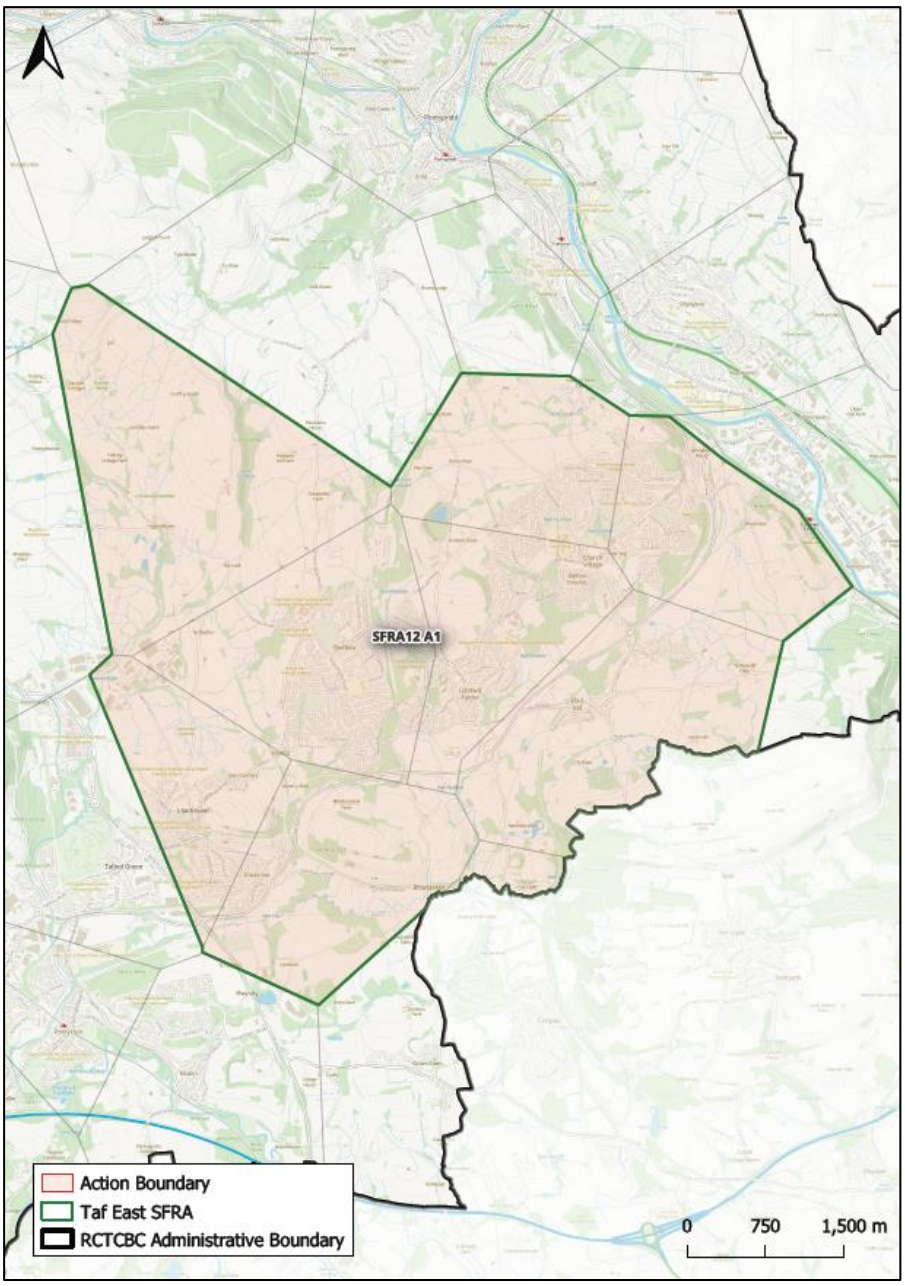

Figure 48: Location plan of the Taf East SFRA flood actions