

2015

Torfaen County Borough Council Flood Risk Management Plan

Page Left Intentionally Blank

Prepared By:

Owen Griffiths

Flood Risk Officer

Highway Network

Neighbourhood Services

Torfaen County Borough Council

Content

1. Introduction	5
2. Purpose of Flood Risk Management Plans in managing flood risk	6
2.1. What is a Flood Risk Management Plan?	6
2.2. What is included in this FRMP	6
2.3. Legislative Context	7
2.4. Preliminary Flood Risk Assessment	7
2.5. Production of flood hazard and flood risk maps for Flood Risk Areas	8
2.6. Flood Risk Management Plans for Flood Risk Areas.	8
2.7. Flood and Water Management Act	8
3. Study Area	9
3.1 Administrative Area	9
4. Flood risk in Torfaen County Borough Council	12
4.1 Summary of types of flooding present in Torfaen County Borough Council	12
4.2 Communities most at risk from surface water flooding in Torfaen County Borough Council	14
5. How we currently manage flood risk in Torfaen County Borough Council	22
5.1 How we prioritise our work	23
5.2 Who we work with to manage flood risk in Torfaen County Borough Council	24
5.3 How this FRMP has been co-ordinated	25
5.4 Measures already underway in Torfaen County Borough Council to manage flood risk	26
6. Co-ordination with the Severn River Basin Management Plan and Severn River Basin District Flood Risk Management Plan	27
7. Torfaen County Borough Council Flood Risk Management Plan Objectives	31
8. How TCBC will manage flood risk at a local level	33
9. Coordination with the National Strategy for flood and Coastal Erosion risk management	43
9.1 Flood Risk Management plan Conclusions	46
10. Public Consultation	47
11. Monitoring and review	48
12. References	49
Appendix 1: Requirement of the EU Floods directive	50
Appendix 2: Flood Risk Regulations and Flood and Water Management Act 2010	51
Appendix 3: Contact details for Risk management authorities	52
Appendix 4 Severn River Basin District Flood Risk Management Plan Measures	54
Appendix 5 The Local Flood Risk Management Strategy Plan Objectives	56
Appendix 6: Ward Boundary locations	57
Appendix 7: TCBC updated Flood Map for Surface Water High Risk Flood Models	58
Appendix 8: TCBC updated Flood Map for Surface Water Medium Risk Flood Models	59
Appendix 9: TCBC updated Flood Map for Surface Water Low Risk Flood Models	60
Appendix 10: TCBC combined Flood Map for Surface Water Low, Medium and High Risk Flood Models	61
Appendix 11. Flood Risk Management Plan (FRMP) Report on Consultation	62

Tables and Figures

Tables

Table 1	Identifying the Risk Counts made by Natural Resources Wales and JBA in 2013	15
Table 2	Identifying the Low Risk to Surface Water Flooding at Ward Level	16-17
Table 3	Identifying the Medium Risk to Surface Water Flooding at Ward Level	18-19
Table 4	Identifying the High Risk to Surface Water Flooding at Ward Level	20-21
Table 5	Outlining the Primary Roles of Risk Management Authorities Operating Within TCBC	24
Table 6	Local Flood Risk Management Strategy Aims	30
Table 7	Torfaen County Borough Council Flood Risk Plans Set against the National Strategy's four overarching Objectives	37-38
Table 8	Details of the Consultation Phase Required before Full Publication of the Flood Risk Management Plan	40

Figures

Figure 1	Timescale of the Flood Risk Regulations	7
Figure 2	Iconic Images Blaenavon, Pontypool and Cwmbran	10
Figure 3	Torfaen County Borough Council in context of Wales	11
Figure 4	Map of Agreed Flood Risk Areas in England and Wales	13
Figure 5	Torfaen County Borough Council Preliminary Flood Risk Areas	14
Figure 6	Wales River Basin District Management Catchments	27
Figure 7	Extent of Severn River Basin District	28
Figure 8	Summary of the Flood Risk Management Plans Developed to Manage Flood Risk within TCBC	40
Figure 9	Electoral Ward Boundaries	46
Figure 10	TCBC High Risk Flood Map for Surface Water	47
Figure 11	TCBC Medium Risk Flood Map for Surface Water	48
Figure 12	TCBC Low Risk Flood Map for Surface Water	49
Figure 13	TCBC Combined Flood Risk Maps for High, Medium and Low Risk	50

Glossary of Acronyms

BGS	British Geological Survey
CADW	Welsh Government
DCWW	Dwr Cymru/Welsh Water
ESDGC	Education for Sustainable Development for Global Citizenship Coordinators
EU	European Union
FCERM	National Strategy for Flood and Coastal Erosion Risk Management
FRA	Flood Risk Area
FRMP	Flood Risk Management Plan
FWMA 2010	Flood and Water Management Act 2010
GLRF	Gwent Local Resilience Forum
JBA	Jeremy Benn Associates Consultancy
LFRRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
NHE	Natural and Historic Environments
NHS	National Health Service
NRW	Natural Resources Wales
PBC	Property Business and Critical Service
PFRA	Preliminary Flood Risk Assessment
PLP	Property Level Protection
RMA	Risk Management Authority
SEWFRMG	South East Wales Flood Risk Management Group
SINC's	Sites of Importance for Nature Conservation
SRBMP	Severn River Basin Management Plan
SSSI	Sites of Special Scientific Interest
SuDS	Sustainable Urban Drainage Systems
SWCF	South Wales Coal Field
SWTRA	South Wales Trunk Road Agency
TCBC	Torfaen County Borough Council
uFMfSW	Updated Flood Map for Surface Water

1. Introduction

Flood risk management is a principal idea that has been brought to the forefront of international, national and local governments. The UK's focus on flooding was outlined by Sir Michael Pitt with the creation of the Pitt Review in 2008. The report was developed as a comprehensive review of the lessons to be learned from the summer floods of 2007. It is a inclusive report spanning 500 pages in which 92 recommendations were put forward to the UK government. At an international level the floods directive (Directive 2007/60ec of the European parliament and of the European council on the assessment of flood risks) was designed to provide a universal management strategy for flood risk. The directive was transposed into UK law by the Flood Risk Regulations 2009. The regulations placed several requirements on local authorities identified as having a risk to flooding:

- Preliminary flood risk assessment (PFRA) maps and reports by 22 December 2011 (on the basis of which 'Flood Risk Areas' should be identified in accordance with Government guidance);
- Flood hazard maps and flood risk maps by 22 December 2013;
- Flood risk management plans (FRMP) by 22 December 2015;
- All assessments, maps and plans to be reviewed and updated every 6 years.

Further to the development of the Flood Risk Regulations the Flood and Water Management Act 2010 was produced to provide clarity, regarding the powers and responsibilities of flood risk management authorities. The aims of both the flood risk regulations and flood and water management act have been designed to reduce the risk of future flooding; through the use of a UK and indeed European standard of flood risk. The aspects of which focus upon National strategies (Welsh Government), River Basin strategies (Natural Resources Wales) and Local strategies (Lead Local Flood Authority) when applied to Wales.

The Flood and Water Management Act 2010 developed the principals of the flood risk regulations and took on board many of the recommendations put forward within the Pitt review. This new law designated local authorities as Lead Local Flood Authorities (LLFA); and placed a responsibility for ordinary watercourses, surface and groundwater flooding. The law designated two further risk management authorities (RMA) in relation to flooding; Natural Resources Wales (NRW); responsible for main rivers and reservoirs and Welsh Water (DCWW); responsible for the delivery and removal of fresh and foul water.

Through the first stage of the flood risk regulations (PFRA's), 8 local authorities within Wales were deemed to have significant flood risk. Torfaen is one of the 8 areas identified under the PFRA's with the flood risk area identified as 'Pontypool and Cwmbran.' The identification of the 8 flood risk areas through the PFRA has placed a statutory responsibility onto the 8 LLFA's making it statutory to produce the Flood Risk Management Plan's (FRMP). However all 22 LLFAs in Wales have opted to produce a FRMP. The FRMP is the final stage of the Flood Risk Regulation in which Torfaen County Borough Council, as the Lead Local Flood Authority has developed a management plan aimed at reducing the risk of flooding. The plans have been designed utilising the Flood hazard and risk maps developed by NRW.

2. Purpose of Flood Risk Management Plans in managing flood risk

2.1. What is a Flood Risk Management Plan?

Flooding remains a key threat to communities across Wales, and managing this risk through careful planning is important to minimise the risk to communities. Flood risk management planning allows risk management authorities to develop a better understanding of risk from all sources of flooding and agree priorities to manage that risk.

This Flood Risk Management Plan has been developed with this in mind and sets out how Torfaen County Borough Council will over the next 6 years manage flooding so that the communities most at risk and the environment benefit the most. In doing so, this FRMP takes forward the objectives and actions set out in our [Flood Risk Management Strategy](#)

This FRMP also aims to achieve some of the objectives set out in the Welsh Government's National Flood and Coastal Erosion Risk Management Strategy¹ which provides the national framework for flood and coastal erosion risk management in Wales through four overarching objectives:

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

2.2 What is included in this FRMP

The information included in Torfaen County Borough Council FRMP includes the components set out in the EU Flood Directive (see appendix 1). Most of this information has been gathered and updated through this first cycle (2010 – 2016), and has been drawn from the findings of our PFRA and the measures we identified and set out in our Local Flood Risk Management Strategy (LFRMS).

This FRMP sets out appropriate objectives for the management of flood risk within the areas covered by the plan. The objectives focus on reducing the adverse consequences of flooding for human health, the environment, cultural heritage and economic activity.

To do so, this FRMP highlights the areas most at risk from surface water flooding and ordinary watercourses in Torfaen County Borough Council, draws the conclusions from these risks, and sets out the measures we will take over the next 6 years to mitigate these risks and make our communities more resilient.

Due to the nature of flooding and current funding situation, we have also looked at measures to reduce the likelihood of flooding using non-structural measures and covering all aspects of flood risk management, including raising awareness of flooding and better understanding of

¹ <http://wales.gov.uk/topics/environmentcountryside/epq/flooding/nationalstrategy/strategy/?lang=en>

local flooding issues. All the measures identified in this plan have been classed in 4 categories:

- Prevention
- Protection
- Preparedness
- Recovery and Review

2.3 Legislative Context

Under the Flood Risk Regulations 2009, Lead Local Flood Authorities (LLFAs) are responsible for producing Flood Risk Management Plans (FRMPs) for Indicative Flood Risk Areas that were identified in the Preliminary Flood Risk Assessments (PFRAs)². The legislation further provided statutory responsibilities to manage the initial production and review process for each item of the requirements (Appendix 2).

While Natural resources Wales (NRW) is responsible for producing FRMPs at a river basin district level for communities at risk of flooding from main rivers and the sea, LLFAs are only required to produce local FRMPs to manage flooding from groundwater, surface water and ordinary watercourses.

The Regulations set out a six year cycle with timescales for reporting to the European Commission and the publication of 3 key outputs:

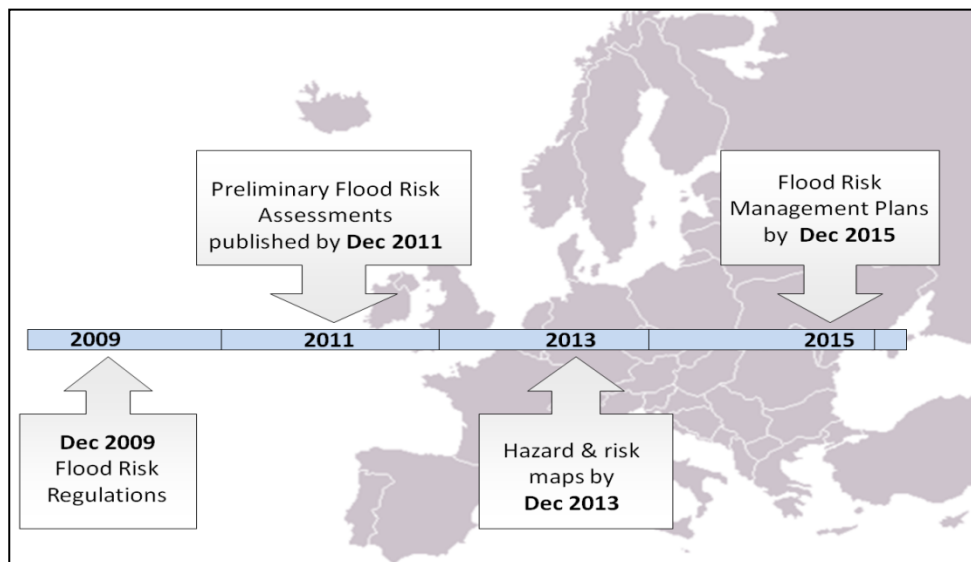


Figure 1: Flood Risk regulations (2009) Timescale

2.4 Preliminary Flood Risk Assessment

The PFRA was a high level screening exercise that compiled information on significant local flood risk from past and future floods, based on readily available information. The scope of the PFRA was to consider flooding from surface runoff, ground water and ordinary watercourses, and any interaction these sources have with main rivers with the aim of identifying flood risk areas as set out under the European Flood Directives (see section 3.3).

² Indicative Flood Risk Areas have been identified where more than 5,000 people are at risk of flooding

2.5 Production of flood hazard and flood risk maps for Flood Risk Areas

In 2013 the Environment Agency, working with Natural Resources Wales (NRW) and LLFAs, produced the updated Flood Map for Surface Water.

The updated map represents a significant improvement on the previous surface water flood maps (2008 and 2010), both in terms of method and representation of the risk of flooding. The updated Flood Map for Surface Water assesses flooding scenarios as a result of rainfall with the following chance of occurring in any given year:

- 1 in 30 (3%)
- 1 in 100 (1%)
- 1 in 1000 (0.1%)

The updated map also provides the following data for each flooding scenario:

- Extent
- Depth
- Velocity (including flow direction at maximum velocity)
- Hazard (as a function of depth and velocity)

It also includes information about the source of the data (i.e. whether it was from the nationally produced modelling or locally produced modelling) and the confidence in the data outputs.

Detailed maps for areas in Torfaen can be obtained using the following link or searching 'What's my flood risk' and following the Environment Agency Natural Resources Wales web links:

<http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=floodmap&layerGroups=default&lang=e&ep=map&scale=7&x=531500&y=181500>

2.6 Flood Risk Management Plans for Flood Risk Areas.

TCBC are currently in the first cycle of the Regulations and FRMPs represent the final output of this cycle and will be published by December 2015.

2.7 Flood and Water Management Act

The Flood and Water Management Act 2010 was passed into law in April 2010 in England and Wales. It was intended to implement Sir Michael Pitt's recommendations following the widespread flooding of 2007. The Act was also intended to clarify roles and responsibilities between Risk Management Authorities (RMA) and established statutory responsibilities for risk management agencies (Appendix 2).

Under the Act, the Welsh Government was required to produce a National Strategy for Flood and Coastal Erosion Risk Management, and Torfaen County Borough Council to produce a Local Flood Risk Management Strategy (LFRMS) which was completed in 2011.

LFRMS were created to define who the Risk Management Authorities are, what their function is and what their responsibilities are. The LFRMS were developed to be consistent with the National Strategy for flood and Coastal Erosion Management. Before publication the draft version of the LFRMS underwent public scrutiny through a consultation period before being officially published.

3. Study Area

3.1 Administrative Area

Torfaen County Borough Council is a Unitary Authority in south east Wales. The areas of Pontypool and Cwmbran have been designated as a flood risk area under the PFRA. However the scope of this document looks at the flood risk for the authority as a whole. The authority has a total population of approximately 92,000 and an area of 125 square kilometres. The north of the County Borough encloses the river valley of the Afon Lwyd containing the towns of Blaenavon, and Pontypool. To the south it widens to surround the town of Cwmbran. The area is predominately urban, with the economy largely reliant on light industry, tourism and farming.

The principal towns of TCBC have a variety of communities from the heavily developed town of Cwmbran which was constructed as the only “New Community” to be established in Wales under the Towns Act 1946. Work began in 1949 and finished in 1989. The population quickly grew from 12,000 to the present 47,000 which accounts for half of the population of the County Borough. Pontypool was a pre-existing town established in 1588 when iron manufacturing took hold and allowed the Pontymoile area to become developed into a suburb of Pontypool. The town grew from strength to strength through the iron industry (Primary Sector); today the town has historical museums depicting the legacy of industry with the secondary sector (manufacturing) taking its place, supporting a population of 28,000. Finally the World heritage site of Blaenavon; which has its history based around both the coal and iron industry, it is evident from the heavily excavated hillsides and the world renowned ‘Big Pit’ historical steel works and museum situated within the heart of the heritage town. Its population is estimated at 6,000. The remaining 21,000 are found within the smaller villages found between the larger towns.

Today’s industry can be found throughout the County Borough with larger sites towards the south and smaller in the north ranging from aeronautical engineering to Food Suppliers. There are 13 commercial estates throughout the County Borough which primarily support the working population; seven of which are found throughout Cwmbran, four are found within Pontypool and two within Blaenavon. These are a mixture of light manufacturing, engineering and retail areas.

There are several types of critical services found throughout the Borough and these vary considerably from gas conveyance stations, electrical sub stations, care homes, pumping stations, and emergency service stations etc. The ownership and maintenance of these installations fall under the respective operators that function within the Borough.

The river catchment of the Afon Llwyd has typically steep sided upper valleys and extensively urbanised valley floors opening out into a meandering lowland river valley. The Afon Llwyd has been described as having a flashy flow regime. This is evident when examining the geological, topological and urban features of the Borough, where the steep valley sides provide little opportunity for storage and interception. This allows for the charging of the river through rapid migration of the precipitation from upland to lowland areas. The relief of the land combined with the underlying geology is the precursor for the lack of water storage or base flow, in very dry summers some smaller tributaries can dry up. Within the Borough there is several abstraction licences issued to private, commercial and industrial areas. There has been a development within Blaenavon to utilise the flow rate of the river to generate electricity from a small scale hydroelectric generator purpose built for the natural history museum.

The local geology is two sided where the western half of the Borough is situated on the eastern most extent of the south wales coal field (SWCF); upper, middle and lower members (Stratigraphical Unit) present. The Eastern Valley is composed primarily of Westphalian

mudstones of the Marros group. There is an intersection layer between the north and south of the valley which comprises of carboniferous limestone's (Major Aquifer) which has established karstic scenery on the base of the valley. The topography within TCBC provides limited availability for storage between the valley sides resulting in limited groundwater risks, which add to the flashy regime of surface water. However recent technological advancements have been used to identify the risk of 'Mine water Rebound' within the SWCF as a result of the shut down of all abandoned mine pumping stations. This has allowed the mines to recharge with water and re-establish the water table. This saturation process has increased the saturation of the bedrock and has developed a rebound within the surface. This movement has been recorded by satellite GPS tracking over a time-lapse of several years. This saturation has taken some time to recharge providing reduced capacity within the available bedrocks, whilst increasing the likelihood of spring discharge from the upper reaches of the Borough. The main river Afon Llwyd typically follows the basement limestone resulting in limited surface water storage.



Figure 2: Principal Towns of Torfaen County Borough Council; Blaenavon (Top Left), Pontypool (Top Right) and Cwmbran (Bottom).

Torfaen County Borough Council in context of Wales

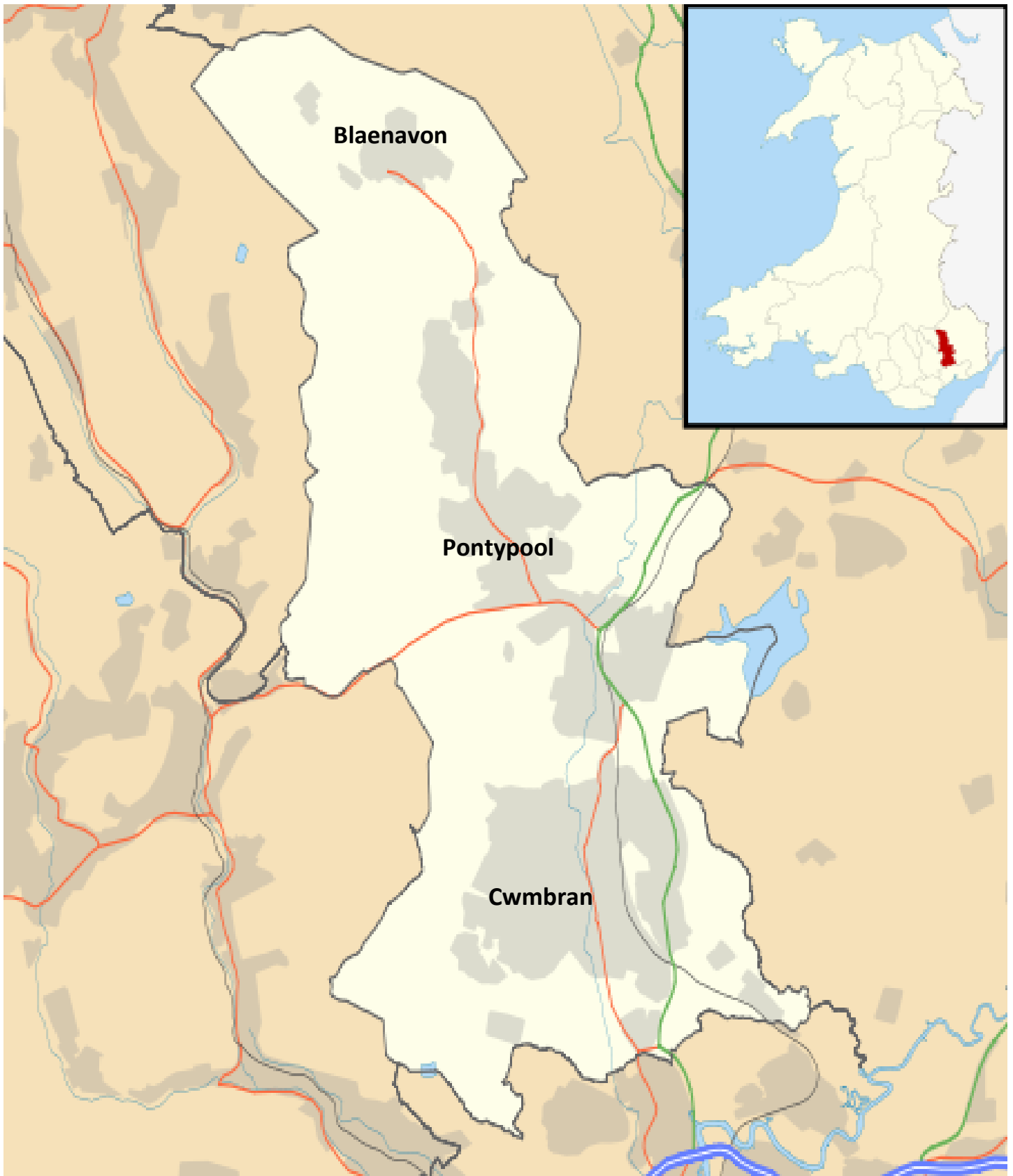


Figure 3: Torfaen County Borough Council Boundary map, with reference to its location on a national scale.

4. Flood risk in Torfaen County Borough Council

4.1 Summary of types of flooding present in Torfaen County Borough Council

Torfaen County Borough Council is subject to flooding from various sources; Riverine, Pluvial/Surface (which encompasses ordinary watercourses), Sewer and Groundwater. The risk of each type of flooding is different when factoring in the type of weather event (intensity and duration), as well as the soil type, rock types and the level of urbanisation which is evident.

Riverine flooding results from the overtopping of main watercourses; within TCBC the Main River is that of the Afon Llwyd which runs north-south within the Borough, there is a section of the Dowlais Brook that has been designated as Main River which feeds into the Afon Llwyd. Main River flood risk is the responsibility of Natural Resources Wales. NRW further have a responsibility for Reservoirs over 25,000 cubic meters, however through schedule 2 of the Flood and Water Management Act 2010 this is set to change to 10,000 cubic meters or more.

Surface water flooding is more common within urban areas which are not obviously prone to flooding. Surface water flooding creates issues for local authorities due to the lack of advanced warning surrounding the phenomenon. Forecasters are unable to accurately predict when, where and how much rainfall will be expected during the events. This is usually down to the localised small area that is affected when heavy sporadic downpours occur. Cwmbran witnessed a localised extreme weather event that resulted in flooding of 198 properties which was a result of surface water flooding exacerbated through the overtopping of ordinary watercourses in May 2014.

Foul and fresh water flood risk is the responsibility of the water undertaker which falls into the responsibility of Dwr Cymru/Welsh Water (DCCW). The foul and fresh water systems operated by DCCW are constructed and maintained to 'at the time current' design standards; currently DCWW construct to the design standards set out within Sewers for Adoptions 7th Edition. The flooding of such features is typically caused by an increase in the water entering into the system overloading it and causing the system to surcharge above ground creating a surface water hazard.

Groundwater flooding occurs where water stored within the permeable layers within the subsurface over tops the storage capacity. This is not always seen upon the valley floors but can occur uphill from natural springs which increase the output. This type of flooding can occur days after the initial rainfall, and is common in areas with major aquifers within the bedrock. The South Wales coal field is regarded as a minor aquifer and the permeable carboniferous limestone is deemed a major aquifer, despite the underlying geology presenting ample stratigraphy to allow for high levels of groundwater, the topography of the area having a high relief, channels the groundwater to the valley floors quickly limiting the amount of percolation and increasing the amount of surface runoff.

There is further difficulty caused by the argillaceous upper coal measures which provide a cap to the larger deeper carboniferous limestone. Numerous studies have been carried out to determine the historical significance of groundwater flooding, the outcome of which has identified the issue that Groundwater is not typically a hazard; however the implications of wetter milder winters may cause a re-examination of the risk when technology allows a comprehensive study of the phenomenon. Currently the British Geological Survey (BGS) have published their first editions of susceptibility to groundwater flooding maps and are developing the databases that support the maps. These next generation maps will likely form part of the next iteration of the flood risk management plans.

Map of Agreed Flood Risk areas in England and Wales

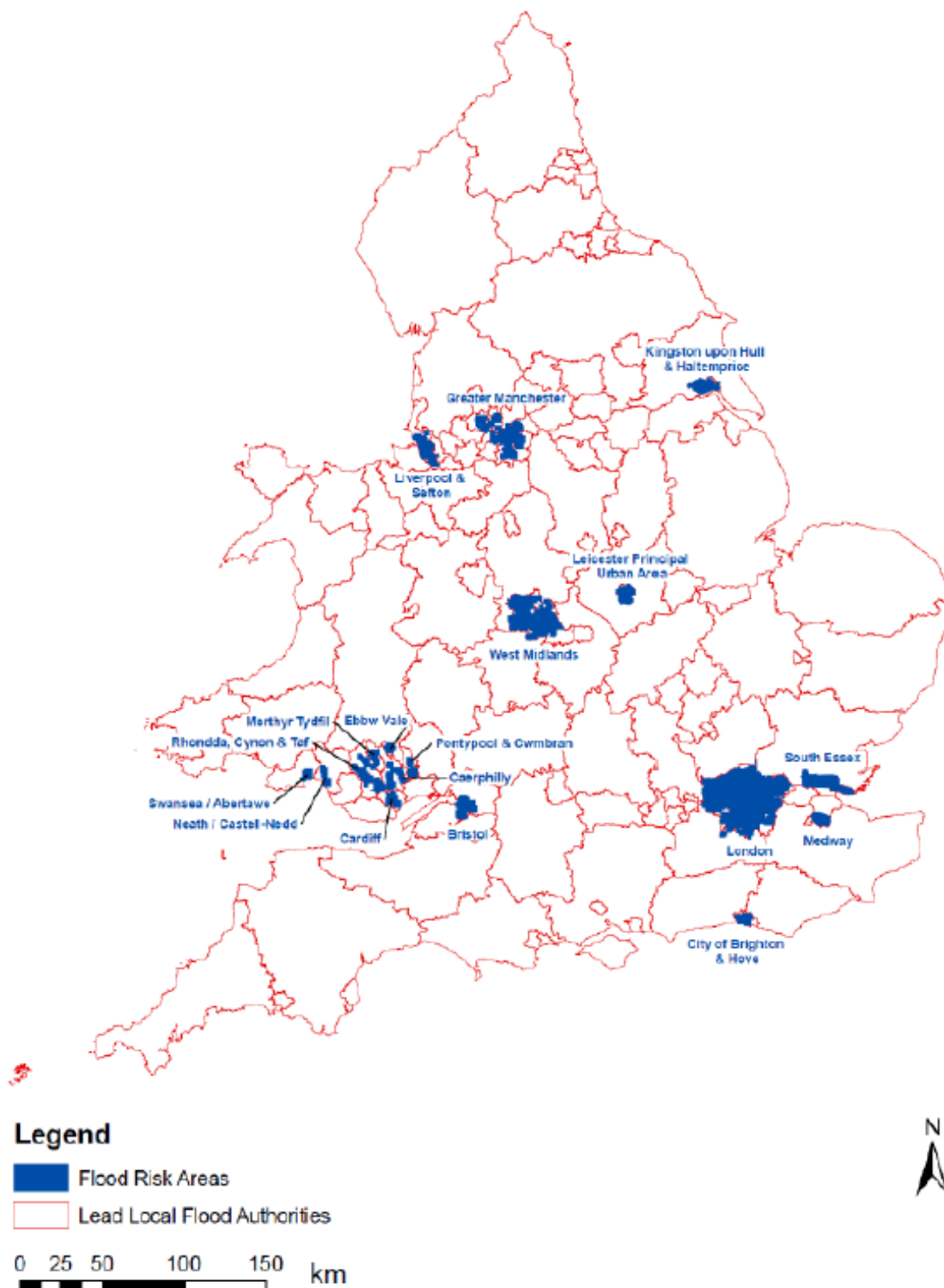


Figure 4: Details the agreed flood risk areas within England and Wales, identified through the Preliminary Flood Risk Assessments.

Torfaen County Borough Council Preliminary Flood Risk Areas

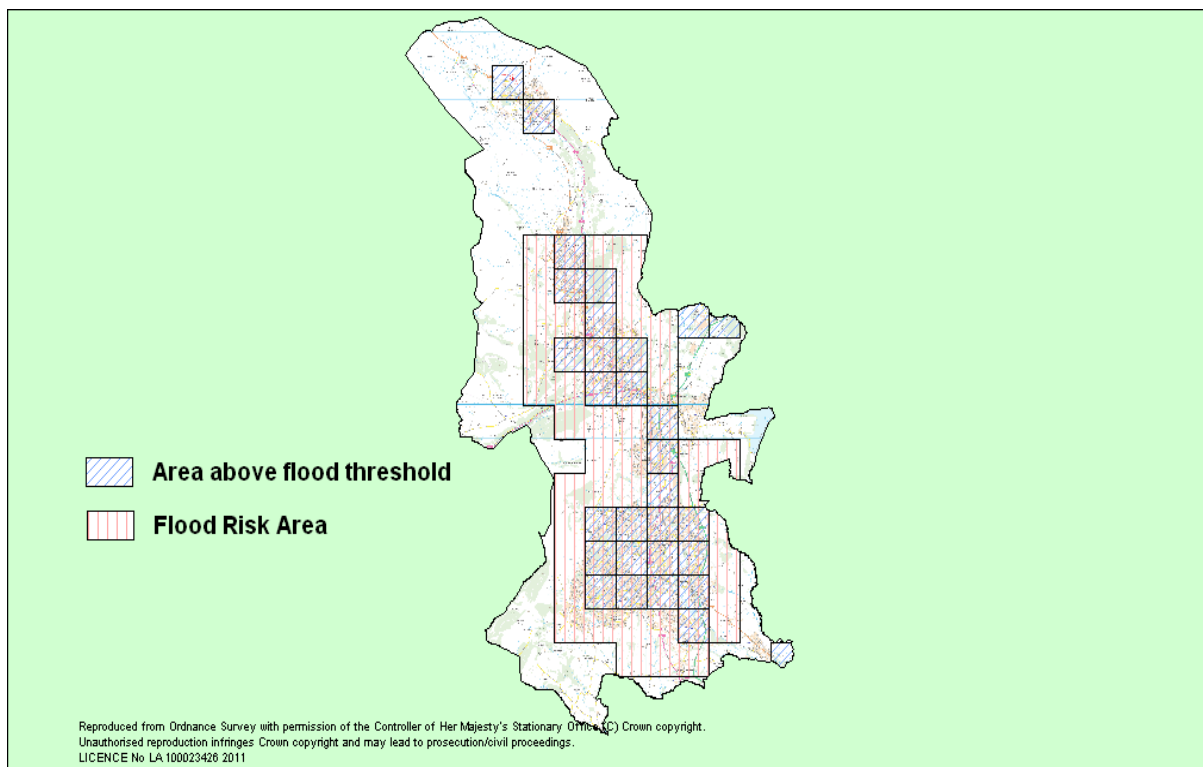


Figure 5: Preliminary flood risk assessment output, highlighting the flood risk areas within TCBC, taken from Torfaen County Borough Council Preliminary Flood Risk Assessment, Output produced by NRW.

4.2 Communities most at risk from surface water flooding in Torfaen County Borough Council

To identify risk within the authority it was deemed practical to separate the borough into communities, however this proved difficult to identify at what scale this should be undertaken; Town, Village, Community Council, Electoral Ward etc. The decision was made to use Electoral Ward areas due to the level of infrastructure already in place. Council members and residents are familiar with the spatial arrangement of these areas.

The communities designated as at risk have been determined by the high level modelling that has taken place through the partner working between risk management authorities. The outcomes of the modelling were extensive, determining which communities are at risk of flooding resulted in a statistical analysis of the risk to; People, economic activity and natural and historic environments. The initial counts were provided by NRW through the flood risk maps produced for the Severn River Basin Management Plan.

The count methodology used by NRW was set in three stages:

- High risk means that each year, there is a chance of flooding of greater than 1 in 30 (3.3%)
- Medium risk means that each year, there is a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%)
- Low risk means that each year, there is a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%)

Table identifying the Risk Counts made by Natural Resources Wales and JBA in 2013

Counts for Flood Risk Area				
Risk to People and Property	Total in Defined Area	Risk Counts		
		High	Medium	Low
People	79,815	340	630	4945
Services	92	0	1	15
Risk to Economic Activity				
Non Residential Properties	5607	81	112	567
Primary/Trunk Roads (Km)	19	0	0	3
Railway – Main Line (Km)	13	0	1	1
Agricultural Land Grades 1-3	911	6	4	15
Risk to Natural and Historic Environments				
Bathing Waters	0	0	0	0
Environmental Permitting Regulations (EPR) Installations	2	1	0	0
Special Areas of Conservation (SAC) (ha)	0	0	0	0
Special Protection Areas (SPA)	0	0	0	0
Ramsar Sites (ha)	0	0	0	0
World Heritage Sites (ha)	0	0	0	0
Sights of Special Scientific Interest (SSSI)	0	0	0	0
Parks and Gardens (ha)	132	3	2	13
Scheduled Ancient Monuments (ha)	38	0	0	0
Listed Buildings	164	13	5	10
Licensed Abstractions	15	3	0	0

Table 1: Risk counts made by the Environment Agency and sourced from JBA consulting

Table 1 identifies the counts made on a county borough scale and has identified TCBC's risk to people, economic activity and natural and historic environments. This is a larger scale model which doesn't take into account local issues that surround flood risk. Although this was a starting point for the next stage, in which TCBC have carried out an assessment of the risk of flooding based on a 200mm depth of water at the three stages of risk used by NRW. Following the addition of depth TCBC factored in modern day building regulations in which door frame height was factored into the assessments; 150mm is a typical figure for the average height of a door frame above the adjacent land. To represent this figure a 200mm buffer was introduced to properties to reflect the 150mm height. Utilising this buffer zone and typical depth an assumption was made:

'Any property recognised as having 50% or more of its perimeter wetted by the overlying flood models is deemed as being internally flooded'

The results of this spatial analysis have been depicted in Table 1 which represents the individual wards and the combined counts (Residential Properties, Commercial Properties and Services) set against the lowest risk factor which would represent the greatest impact. The spatial location of the ward boundaries are depicted within Appendix 6. The spatial representation of risk has been summarised within Appendices 4 – 7. The counts provided for People have been done through the use of the population per dwelling average which is nationally 2.35 per dwelling. The results for residential properties have their fore been multiplied by 2.35 to determine the number of people at risk.

Table Identifying the Levels of Low Risk Surface Water Flooding at Ward Level

Risk to People and Property	Total in Defined Area	Abersychan	Brynwern	Coed Eva	Croesyceiliog North	Croesyceiliog South	Cwmyrnyscoy	Fairwater	GreenMeadow	Liantarnam	Llanyravon North	Llanyravon South	New Inn	Panteg
Risk to People		In Flood Risk Area												
People	79,815	85	0	55	90	15	90	60	70	265	55	235	130	75
Properties	39,000	36	0	24	37	5	38	26	30	112	23	100	54	31
Services	92	3	0	1	0	0	0	1	0	5	2	1	3	3
Risk to Economic Activity														
Non Residential Properties	5607	5	0	1	3	3	5	1	0	28	7	4	11	7
Primary/Trunk Roads (Km)	35.6	2.2	1	0	0	0	1	0	0	1	0	1	0	2
Railway – Main Line (Km)	13	0	0	0	0	0	0	0	0	0	0	0	0	2
Agricultural Land Grades 1-3	19	0	0	0	1	1	0	1	0	1	1	1	1	0
Risk to Natural and Historic Environments														
Bathing Waters	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Permitting Regulations (EPR) Installations	30	0	0	0	0	0	0	0	0	0	0	0	0	0
Special Areas of Conservation (SAC)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Special Protection Areas (SPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ramsar Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0
World Heritage Sites	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Sights of Special Scientific Interest (SSSI)	4	0	0	0	0	0	0	0	0	0	0	0	1	0
Parks and Gardens	132	0	0	0	0	0	0	0	0	1	0	0	0	0
Scheduled Ancient Monuments	38	2	0	0	0	0	0	0	0	1	0	0	0	0
Listed Buildings	164	2	0	0	0	0	0	0	0	0	0	0	2	2
Licensed Abstractions	21	2	0	0	0	0	1	0	0	0	0	0	0	0

Risk to People and Property	Total in Defined Area	Pontnewydd	Pontnewynydd	Pontypool	Snatchwood	St Cadoc's Penygran	St Dials	Trevethin	Two Locks	Upper Cwmbrian	Wainfeilin	Blaenavon	
Risk to People		In Flood Risk Area (FRA)											Not in FRA
People	79,815	380	15	80	250	5	110	50	125	45	10	230	
Property	39,000	161	6	34	107	1	47	21	52	19	4	96	
Services	92	5	1	4	0	0	5	1	2	2	1	5	
Risk to Economic Activity													
Non Residential Properties	5607	29	42	13	12	0	45	4	6	1	2	50	
Primary/Trunk Roads (Km)	35.6	1	0	2	2	0	1	0	0	0	2	2	
Railway – Main Line (Km)	13	0	0	0	0	0	0	0	0	0	0	0	
Agricultural Land Grades 1-3	19	0	0	0	0	0	0	0	1	0	0	0	
Risk to Natural and Historic Environments													
Bathing Waters	0	0	0	0	0	0	0	0	0	0	0	0	
Environmental Permitting Regulations (EPR) Installations	30	0	0	0	0	0	1	0	0	0	0	1	
Special Areas of Conservation (SAC)	0	0	0	0	0	0	0	0	0	0	0	0	
Special Protection Areas (SPA)	0	0	0	0	0	0	0	0	0	0	0	0	
Ramsar Sites	0	0	0	0	0	0	0	0	0	0	0	0	
World Heritage Sites	1	0	0	0	0	0	0	0	0	0	0	1	
Sights of Special Scientific Interest (SSSI)	4	0	0	0	0	0	0	0	1	0	0	1	
Parks and Gardens	132	0	0	1	0	2	0	0	0	0	0	0	
Scheduled Ancient Monuments	38	0	0	0	0	0	0	0	0	0	0	10	
Listed Buildings	164	1	2	5	0	0	0	2	2	0	0	2	
Licensed Abstractions	21	0	0	0	0	0	0	1	0	0	0	3	

Table 2: Low risk results of the spatial analysis, representing the individual wards and the risk to; People, Economic Activity, Natural and Historic Environments, produced from the Data supplied by JBA, NRW and verified by TCBC analysis.

Table Identifying the Levels of Medium Risk Surface Water Flooding at Ward Level

Risk to People and Property	Total in Defined Area	Abersychan	Brynwern	Coed Eva	Croesyceiliog North	Croesyceiliog South	Cwmyrnyscoy	Fairwater	GreenMeadow	Liantarnam	Llanyravon North	Llanyravon South	New Inn	Panteg
Risk to People		In Flood Risk Area												
People	79,815	15	0	15	15	0	55	15	15	60	10	60	10	5
Properties	39,000	6	0	6	6	0	22	5	7	25	4	24	4	2
Services	92	2	0	0	0	0	0	0	0	3	0	0	1	1
Risk to Economic Activity														
Non Residential Properties	5607	0	0	0	0	0	3	0	0	5	1	1	3	0
Primary/Trunk Roads (Km)	35.6	1	1	0	0	0	0	0	0	0	0	1	0	1
Railway – Main Line (Km)	13	0	0	0	0	0	0	0	0	0	0	0	0	1
Agricultural Land Grades 1-3	19	0	0	0	0	0	0	1	0	1	1	1	1	0
Risk to Natural and Historic Environments														
Bathing Waters	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Permitting Regulations (EPR) Installations	30	0	0	0	0	0	0	0	0	0	0	0	0	0
Special Areas of Conservation (SAC)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Special Protection Areas (SPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ramsar Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0
World Heritage Sites	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Sights of Special Scientific Interest (SSSI)	4	0	0	0	0	0	0	0	0	0	0	0	1	0
Parks and Gardens	132	0	0	0	0	0	0	0	0	1	0	0	0	0
Scheduled Ancient Monuments	38	2	0	0	0	0	0	0	0	0	0	0	0	0
Listed Buildings	164	1	0	0	0	0	0	0	0	0	0	0	1	0
Licensed Abstractions	21	1	0	0	0	0	0	0	0	0	0	0	0	0

Risk to People and Property	Total in Defined Area	Pontnewydd	Pontnewynydd	Pontypool	Snatchwood	St Cadoc's Penygran	St Dials	Trevethin	Two Locks	Upper Cwmbran	Wainfein	Blaenavon	
Risk to People		In Flood Risk Area (FRA)											Not in FRA
People	79,815	120	10	10	5	0	20	10	10	20	5	40	
Property	39,000	51	4	3	2	0	8	4	4	8	1	16	
Services	92	0	1	1	0	0	2	0	0	1	0	1	
Risk to Economic Activity													
Non Residential Properties	5607	4	5	1	2	0	15	1	2	1	1	14	
Primary/Trunk Roads (Km)	35.6	1	0	1	1	0	1	0	0	0	0	0	
Railway – Main Line (Km)	13	0	0	0	0	0	0	0	0	0	0	0	
Agricultural Land Grades 1-3	19	0	0	0	0	0	0	0	1	0	0	0	
Risk to Natural and Historic Environments													
Bathing Waters	0	0	0	0	0	0	0	0	0	0	0	0	
Environmental Permitting Regulations (EPR) Installations	30	0	0	0	0	0	1	0	0	0	0	0	
Special Areas of Conservation (SAC)	0	0	0	0	0	0	0	0	0	0	0	0	
Special Protection Areas (SPA)	0	0	0	0	0	0	0	0	0	0	0	0	
Ramsar Sites	0	0	0	0	0	0	0	0	0	0	0	0	
World Heritage Sites	1	0	0	0	0	0	0	0	0	0	0	1	
Sights of Special Scientific Interest (SSSI)	4	0	0	0	0	0	0	0	1	0	0	1	
Parks and Gardens	132	0	0	1	0	1	0	0	0	0	0	0	
Scheduled Ancient Monuments	38	0	0	0	0	0	0	0	0	0	0	9	
Listed Buildings	164	0	2	1	0	0	0	1	1	0	0	2	
Licensed Abstractions	21	0	0	0	0	0	0	0	0	0	0	1	

Table 3: Medium risk results of the spatial analysis, representing the individual wards and the risk to; People, Economic Activity, Natural and Historic Environments, produced from the Data supplied by JBA, NRW and verified by TCBC analysis.

Table Identifying the Levels of High Risk Surface Water Flooding at Ward Level

Risk to People and Property	Total in Defined Area	Abersychan	Brynwern	Coed Eva	Croesyceiliog North	Croesyceiliog South	Cwmyncyoy	Fairwater	GreenMeadow	Liantarnam	Llanyravon North	Llanyravon South	New Inn	Panteg
Risk to People		In Flood Risk Area												
People	79,815	10	0	10	0	0	50	0	10	10	0	20	5	0
Properties	39,000	4	0	3	0	0	20	0	3	3	0	9	2	0
Services	92	2	0	0	0	0	0	0	0	2	0	0	1	1
Risk to Economic Activity														
Non Residential Properties	5607	0	0	0	0	0	2	0	0	4	0	1	1	0
Primary/Trunk Roads (Km)	35.6	0	0	0	0	0	0	0	0	0	0	1	0	0
Railway – Main Line (Km)	13	0	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural Land Grades 1-3	19	0	0	0	0	0	0	1	0	1	1	1	1	0
Risk to Natural and Historic Environments														
Bathing Waters	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Permitting Regulations (EPR) Installations	30	0	0	0	0	0	0	0	0	0	0	0	0	0
Special Areas of Conservation (SAC)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Special Protection Areas (SPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ramsar Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0
World Heritage Sites	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Sights of Special Scientific Interest (SSSI)	4	0	0	0	0	0	0	0	0	1	0	0	0	0
Parks and Gardens	132	0	0	0	0	0	0	0	0	1	0	0	0	0
Scheduled Ancient Monuments	38	0	0	0	0	0	0	0	0	0	0	0	0	0
Listed Buildings	164	0	0	0	0	0	0	0	0	0	0	0	1	0
Licensed Abstractions	48	0	0	0	0	0	0	0	0	0	0	0	0	0

Risk to People and Property	Total in Defined Area	Pontnewydd	Pontnewynydd	Pontypool	Snatchwood	St Cadoc's Penygran	St Dials	Trevethin	Two Locks	Upper Cwmbrian	Wainfelin	Blaenavon
Risk to People		In Flood Risk Area (FRA)										Not in FRA
People	79,815	75	0	5	5	0	5	0	0	15	0	20
Property	39,000	32	0	2	2	0	1	0	0	6	0	9
Services	92	0	0	0	0	0	0	0	0	1	0	1
Risk to Economic Activity												
Non Residential Properties	5607	0	2	0	1	0	2	1	0	1	0	6
Primary/Trunk Roads (Km)	35.6	1	0	0	0	0	0	0	0	0	0	0
Railway – Main Line (Km)	13	0	0	0	0	0	0	0	0	0	0	0
Agricultural Land Grades 1-3	19	0	0	0	0	0	0	0	1	0	0	0
Risk to Natural and Historic Environments												
Bathing Waters	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Permitting Regulations (EPR) Installations	30	0	0	0	0	0	0	0	0	0	0	0
Special Areas of Conservation (SAC)	0	0	0	0	0	0	0	0	0	0	0	0
Special Protection Areas (SPA)	0	0	0	0	0	0	0	0	0	0	0	0
Ramsar Sites	0	0	0	0	0	0	0	0	0	0	0	0
World Heritage Sites	1	0	0	0	0	0	0	0	0	0	0	1
Sights of Special Scientific Interest (SSSI)	4	0	0	1	0	1	0	0	0	0	0	0
Parks and Gardens	132	0	0	1	0	1	0	0	0	0	0	0
Scheduled Ancient Monuments	38	0	0	0	0	0	0	0	0	0	0	7
Listed Buildings	164	0	2	0	0	0	0	1	1	0	0	2
Licensed Abstractions	48	0	0	0	0	0	0	0	0	0	0	0

Table 4: High risk results of the spatial analysis, representing the individual wards and the risk to; People, Economic Activity, Natural and Historic Environments, produced from the Data supplied by JBA, NRW and verified by TCBC analysis.

Tables 2-4 outline the flood risk counts for People, Property, Business and Environmental and Historic sites. The tables outline the prioritisation of risk through the identification of high, medium and Low risk by Ward areas. Table 4 identifies the highest risk areas as Pontnewydd and Cwmynyscoy in regards to People, Property and businesses during a 3% (1 in 30) storm event. There is low risk for Critical infrastructure, environmental and Historic sites throughout the 24 wards during a 3% storm event.

Table 3 outlines; Pontnewydd, Llantarnam, Llanyravon South and Cwmynyscoy as the most significant flood risk areas within the outlined FRA. The exception within the medium risk 1% (1 in 100) storm event is the area of Blaenavon. Under the PFRA the Cwmbran and Pontypool area was identified as the Flood Risk Area; excluding the ward of Blaenavon. Through the detailed uFMfSW flood modelling it has been established that Blaenavon will be incorporated into the Flood risk area and considered a significant risk based on Tables 2, 3.

The low risk 0.1% (1 in 1000) storm event (Table 2) identifies the wards; Pontnewydd, Llantarnam, Snatchwood, Llanyravon South, and Blaenavon as having the highest number of people and property at risk. Businesses are confined to Blaenavon, St Dials, Pontnewydd, Llantarnam and Pontnewydd. Similarly for the low, medium and high risk flood models the Critical infrastructure, environmental and historic sites indicate a low risk across the authority resulting in the prioritisation process incorporating People, Property and businesses as the primary risk.

5. How we currently manage flood risk in Torfaen County Borough Council

TCBC has been managing the flood risk for the area since its formation in 1996; later developments within the statute have resulted in TCBC developing the PFRA, LFRMS and finally Flood Risk Management Plan. The LFRMS have been produced following the four overarching objectives of the National Strategy for Flood and Coastal Erosion Risk Management in Wales (FCERM). From the four objectives TCBC identified 17 measures and refined them down to 7 after they were determined to bring multiple benefits if achieved. They were set against three types of time scales; short (0-20 years), Medium (20-50 years), long (50-100 years).

The FWMA 2010 brought with it several duties for which LLFA's are responsible which include a duty to:

- To develop, maintain, apply and monitor a strategy for local flood risk management in its area.
- To establish and maintain a register and record of structures or features which are likely to have a significant effect on flood risk in its area.
- On becoming aware of a flood (that satisfies trigger levels within LFRMS) in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate.

Allied to the duties LLFA have been granted permissive powers through the FWMA 2010 and others including but not restricted to:

- Do works to manage flood risk
- To Investigate flooding incidents
- To designate structures/features which affect flood risk
- To Request information from a person in connection with our flood risk management functions
- Consenting organisation for land drainage consent as required under Section 23 of the Land Drainage Act 1991.
- Power to serve notice on riparian landowners along ordinary watercourses who need to carry out maintenance to reduce flooding.
- Power to serve notice on a person to abate a nuisance in relation to an ordinary watercourse where that nuisance is an obstruction erected, raised or altered or any culvert erected or altered without prior consent as required under Section 23 of the Land Drainage Act 1991.

5.1 How we prioritise our work

Prioritisation of work is based around a cost benefit analysis established by Welsh Government; this is a requirement for any works above the maintenance budget. The cost benefit analysis is used to determine the suitability and sustainability of capital projects to reduce risk. Welsh government have set a range of factors which will need to be considered:

- Risk to life;
- Longer term sustainability of the community, the approach taken and the wider environment;
- Economic impacts, costs and benefits;
- Impacts of flooding on the operational capacity of critical infrastructure;
- Social impacts, costs and benefits;
- Frequency of flooding;
- Environmental costs and benefits derived from the work;
- Availability of appropriate compensation sites where work impacts designated habitats;
- Impacts on our wider cultural heritage; and
- Multiple benefits in relation to human health and wellbeing.

When conducting a cost benefit analysis the risk to life is regarded as the most significant factor in determining priority of investment. This system has been set in place to ensure the sustainability of flood risk management throughout Wales.

5.2 Who we work with to manage flood risk in Torfaen County Borough Council

As described flood risk management has been established through the Flood Risk Regulations 2009 and supplemented by the FWMA 2010. Within the Act there are designated risk management authorities that have direct responsibilities in terms of flood risk management; Torfaen County Borough Council has been designated as a Lead Local Flood authority responsible for the flood risk from:

- 1 Ordinary watercourses (this is a watercourse that does not form part of a main river and includes a lake, pond or other area of water, which flows into an ordinary watercourse).
- 2 Surface runoff (this is rainfall or other precipitation which is on the surface or ground and has not entered a watercourse drainage system or public sewer).
- 3 Ground water (this is water which has percolated into the ground and may form underground ponds or stream which may discharge above ground but lower down the catchment).

The Act also designates Water undertakers, in TCBC's area DCWW take responsibility to provide fresh and foul water to and from properties; DCWW is responsible for the risk of flooding from public foul and storm sewer lines. Natural Resources Wales has an operational responsibility for flooding from main rivers, the sea and coastal erosion and an oversight responsibility in relation to all flood and coastal erosion risk management in Wales.

There are secondary risk management authorities that have an obligation to develop partner working to manage the risk of flooding, the authorities that operate within TCBC are; Welsh Government (CADW), SWTRA – South Wales Trunk Road Agency, Network Rail, Melin Homes, Bron Afon, Public Health Wales, Aneurin Bevan Local Health Board, Police, Welsh Ambulance Service NHS Trust, South Wales Fire & Rescue Service (further detailed within Appendix 3). Their primary roles and operational areas are detailed within Table 5.

Table Outlining the Primary Roles of Risk Management Authorities Operating Within TCBC

Authority	Operational Area	Primary Roles
Primary Risk Management Authorities		
Gwent Police	Monmouthshire, Newport, Torfaen, Caerphilly, Blaenau Gwent	Protecting and reassuring the public within the operational area of Gwent. Operating primarily in a responsive role to incidents.
Natural Resources Wales	Wales	Primary role is to ensure that the environment and natural resources of Wales are sustainably maintained, sustainably enhanced and sustainably used, now and in the future.
South Wales Fire and Rescue	Blaenau Gwent, Bridgend, Caerphilly, Cardiff, Monmouth, Merthyr, Newport, Rhondda Cynon Taff, Torfaen and the Vale of Glamorgan.	Responsible for reducing risk through education, enforcement and response. The fire service operates in a response role to incidents.
Welsh Ambulance Service	Wales	The Welsh Ambulance Service provides pre-hospital emergency care and treatment throughout the Borough
Welsh Water/Dwr Cymru	Wales	Responsible for providing over three million people with a continuous, high quality supply of drinking water and for taking away, treating and properly disposing of the wastewater that is produced
Secondary Risk Management Authorities		
Aneurin Bevan Local Health Board	Blaenau Gwent, Caerphilly, Monmouthshire, Newport, Torfaen and South Powys.	Primary agency responsible for the health and wellbeing of residents.
Bron Afon Community Housing	Torfaen County Borough Council	Responsible for energy efficient, affordable homes within Torfaen County Borough Council acting as a responsible landlord
Melin Homes	Blaenau Gwent, Monmouthshire, Torfaen, Newport and Powys.	Responsible for energy efficient, affordable homes within Torfaen County Borough Council acting as a responsible landlord
Network Rail	Operates throughout England and Wales	Aim to provide a safe, reliable and efficient railway
Public Health Wales	Wales	Provides professionally independent public health advice and services to protect and improve the health and wellbeing of the population of Wales.
South Wales Trunk Road Agency	South Wales	Responsible for managing, maintaining and improving the motorways, trunk roads and associated assets throughout the South Wales region on behalf of the Welsh Government.
Welsh Government	Wales	Political body responsible for the allocation of funding and the setting of devolved laws within Wales

Table 5: Identifies all Flood Risk Management Authorities that operate within TCBC.

5.3 How this FRMP has been co-ordinated

The FRMP has been developed in partnership with several risk management agencies throughout south east Wales (NRW, DCCW, partner Local Authorities), the main focus of research has been directed through the Welsh Local Government Association that has directed LLFA's throughout south east Wales in the 'South East Wales Flood Risk Management Group' (SEWFRMG). This has been a platform to develop working groups, to target the best practice approaches required to accurately advance flood risk management plans; whilst utilising the latest technological advances to develop a comprehensive understanding of the risk to communities. The work has been further supported by the involvement of all LLFA's within South East Wales, accompanied by Welsh Water, Welsh Local Government and Natural Resources Wales representatives. The partnership working

has been piloted through regional groups however it was Natural resources wales with JBA Consultancy that have provided high level flood risk models from which the hazard and risk maps presented within this report have been developed.

The detailed analysis of the flood models have been carried out by TCBC officers from various departments within Neighbourhood Services. The assessment of which has taken into account the suitability of the model compared to existing local knowledge and experiences of flooding during previous events.

5.4 Measures already underway in Torfaen County Borough Council to manage flood risk

TCBC have a number of measures in place to mitigate the risk of flooding throughout the authority. The schemes are typically small scale aimed to reduce the impact upon a specified number of properties with historically significant flooding, which have justified a cost benefit for work; these range from landscaping green spaces, instigating trash/security screens and dragon teeth around culverts and designated overland flood routes. Within the County Borough there is a large scheme aimed at managing flood risk, the Two Locks flood ponds was designed to manage the flow of water and reduce flooding along the Nant Y Milwr and Dowlais Brook. This structure was constructed by the Cwmbran Development Corporation adopted by TCBC whom currently maintain the structure.

Highway Drainage regimes have been developed to address the risk of flooding on the highway from both culverts and gullies. A culvert maintenance schedule is carried out where each culvert has been assigned a risk priority, which has three risk grades:

1. Highest Risk, (has caused flooding in the past)
2. Medium Risk (has not caused flooding in the past but could flood properties if blocked)
3. Low Risk (has not caused flooding in the past but is unlikely to flood properties if blocked)

Highway Drainage on the adopted network is managed on a risk based approach; there are approximately 17,500 road gully drains with additional system planned to be adopted by TCBC. The gullies on roads maintained at the public expense are inspected annually and those drains found to have debris in them (that would cause water to flood onto the highway) are programmed to be cleansed during this period. Any road gully drains or their associated pipe work that are found to be damaged or blocked outside the annual schedule are addressed on an ad hoc basis as and when they are picked up by inspection, or reported to the Highway Authority, this may include blocked pipework which require a complete removal of the blockage and replacement pipe to be laid.

Community engagement programmes have been developed collaboratively with Natural Resources Wales. The scheme is based within Llanyravon south centred on the village of Ponthir. The scheme was aimed at raising awareness of flood risk and to develop flood warnings for property's at risk of riverine flooding. More recent engagement has taken place regarding the responsibility of Torfaen County Borough Council in relation to flooding; which was distributed to the general population of TCBC through the authority's Torfaen Talks newspaper which is delivered quarterly to residents. The information mirrored the updated advice related to severe weather and flooding on the authority's website.

<http://www.torfaen.gov.uk/en/CommunityLiving/EmergencyManagement/EmergencyPlanning-flooding/Flooding.aspx>

6. Co-ordination with the Severn River Basin Management Plan and Severn River Basin District Flood Risk Management Plan

Severn River Basin Management Plan

Torfaen County Borough Councils FRMP has been directly coordinated with the Severn River Basin Management Plan (SRBMP) developed jointly by Natural Resources Wales and the Environment Agency. The SRBMP has been focused on the protection, improvement and sustainable use of the water environment. This plan has been prepared under the Water Framework Directive, which requires all countries throughout the European Union to manage the water environment to consistent standards. Each country has to:

- Prevent Deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- Aim to achieve at least good status for all water bodies by 2015. Where this is not possible and subject to the criteria set out in the directive, aim to achieve good status by 2021 or 2027;
- Meet the requirements of water framework directive protected areas;
- Promote sustainable use of water as a natural;
- Conserve habitats and species that depend directly on water;
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to aquatic environment;
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants;
- Contribute to mitigating the effects of floods and droughts.

Flood risk management is one of the top reasons why a waterbody fails to meet the objective set under the WFD in Wales. This is why it is important to ensure that where action is needed to manage the risk of flooding, an option is selected that does not lead to further deterioration of the water environment but instead seeks opportunities for improvement and delivers joint benefits.

Severn River Basin District Flood Risk Management Plan

The Severn River Basin District Flood Risk Management Plan (SFRMP) has set out 13 strategic objectives to manage the flood risk throughout the catchment. The objectives have been strategically designed to incorporate the overarching principals of the National Strategies for Flood and Coastal Erosion Risk Management for England and Wales. The objectives account for the social, economic and environmental factors affected by flood risk:

- Manage flood and coastal erosion risks, taking account of the needs of communities businesses and the environment
- Reduce the risk from flooding for more households
- Develop and promote a better understanding of flood and coastal risk and use this to prioritise investment in risk management
- Ensure that investment in flood and coastal risk management provides environmental, social and economic benefits wherever possible
- Target resources to reduce the risk of flooding to communities with the highest flood risk

- Set out a clear and consistent plan for flood risk management so that communities and businesses can make informed decisions about the management of their risk
- Raise awareness of and engage people on flood and coastal erosion risk to encourage them to take action to manage the risks they face
- Provide an effective and sustained response to flood and coastal erosion events
- More households and businesses at high risk of flooding can receive flood warnings
- Encourage emergency plans and responses to flood incidents to be effective and communities to respond effectively to flood forecasts, warnings and advice
- Facilitate decision-making and action at the appropriate level - individual, community, or local council, river catchment, coastal cell or national
- Maintain our flood and coastal risk management assets at or above required condition
- Reduce the risk of flooding from reservoirs to people, property, infrastructure and the environment.

In selecting the measures for Torfaen County Borough Councils Flood Risk Management Plan consideration has been given to the 13 proposed objectives within the SFRMP to ensure that documents reflect holistic management and schemes of multiple benefits. Further to the objectives within the SFRMP; 22 measures have been outlined within TCBC FRMP that identifies ongoing measures of flood risk management (Appendix 4). These are managed predominantly through Preventative and Preparative measures.

Where there is an obvious opportunity to deliver against the Water Framework Directive and the Flood Risk Regulations, TCBC have endeavoured to include it. The measures detailed within section 8 set out an engagement approach to flood risk; improving communication and the knowledge base to develop understanding. The outcome of this plan is behavioural change within communities; designed to prevent further deterioration of the watercourses by targeting polluters (i.e. litterers, fly-tippers and unapproved discharges). Whilst promoting sustainable water through source point control to mitigate the impacts of flooding.

Wales River Basin Districts Management Catchments

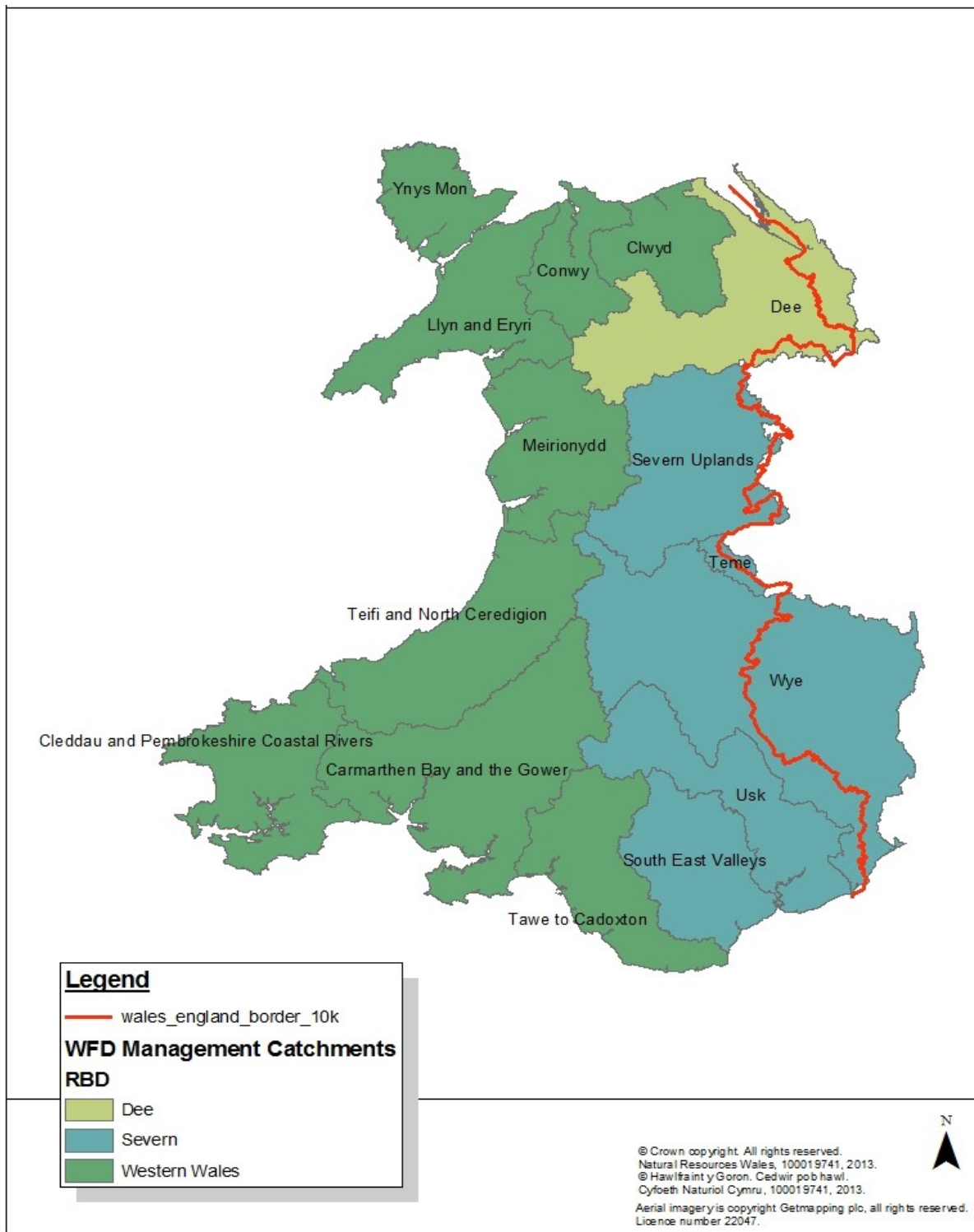


Figure 6: Natural Resources Wales Operational management areas of the River basins within Wales.

Extent of the Severn River Basin District

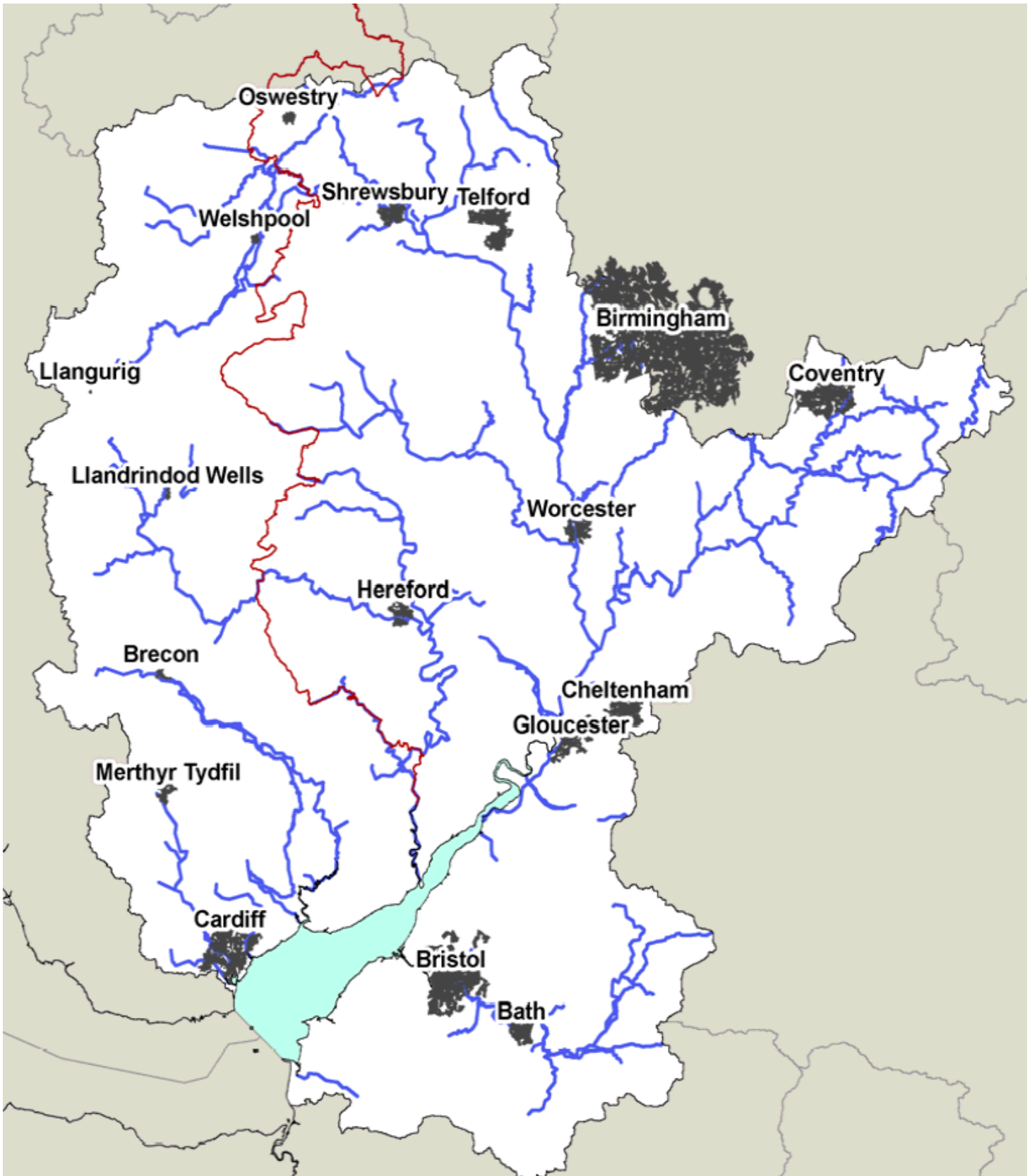


Figure 7: Severn River Basin as determined by Natural Resources Wales and Environment Agency.

7. Torfaen County Borough Council Flood Risk Management Plan Objectives

Flood risk management has been developed at national and local government level; following the production of the Flood risk Regulations 2009 and FWMA 2010. The Welsh Government published its high level strategy for managing flooding and coastal erosion risk in 2011. Within the report a strategy was put forward:

“Reduce flood risk in all of the areas identified as being subject to significant risk”

To satisfy the requirements of the strategy the Welsh government set out four overarching objectives (Clause 2.8 in Guidance):

1. **Reducing the impacts** on individuals, communities businesses and the environment;
2. **Raising awareness** of and **engaging people** in the response to flood and coastal erosion risk;
3. Providing an effective and **sustained response** to flood and coastal erosion events; and
4. **Prioritising investment** in communities most at risk.

Following the production of the National strategy TCBC published the LFRMS that takes forward the national strategies objectives. The 4 overarching objectives from the national plan take into account the social, economic and environmental risks associated with flooding. The local strategy follows the framework of the national strategy and objectives but manages this at a local level, factoring in experiences of overland flows and drainage mechanics to effectively determine a local strategy for flood risk. This was done by the creation of 17 detailed local objectives that satisfy the National overarching strategy, they have been designed to manage the risk of flooding; where each objective has been based upon social, economical and environmental feasibility detailed within Table 6.

The Local Flood Risk Management Strategy was formally adopted as policy in 2011. Fulfilling the requirement of the Flood and Water Management Act 2010

The objectives set out within the LFRMS have been fully adopted by the FRMP; they represent the FRMP objectives for managing flood risk. The objectives set out by the LFRMS and adopted by the FRMP create a link to the detailed measures outlined in Section 8 of the FRMP. The overarching National and Local strategies have provided the backbone to the production of the FRMP. The initial Strategic Environmental Assessments (SEA) used for the scoping of the LFRMS has been adopted for both the LFRMS and the FRMP. The SEA has not undergone a review due to the scope of the original document and the adoption of the LFRMS objectives as the FRMP objectives for managing flood risk.

Strategic Environmental Assessment:

<http://www.torfaen.gov.uk/en/RoadsTravelParking/RoadsAndPavements/FloodRiskManagement/StrategicEnvironmentalAssessment.aspx>

Local Flood Risk Management Strategy Objectives Adopted as FRMP Objectives

	Objective	Social	Economic	Environmental
1	Reduce risk to life by reducing the number of people exposed to risk of flooding of significant depth and velocity.	√	√	
2	Reduce community disruption by reducing the number of residential and commercial properties affected by the risk of flooding	√	√	
3	Reduce disruption to critical infrastructure or prepare plans to allow the operations to be maintained.	√	√	
4	Reduce distress by reducing the number of people exposed to the risk of flooding.	√	√	
5	Provide systems to give early warning of potential flooding to individuals and communities.	√	√	
6	Provide efficient systems for the management and maintenance of surface assets.	√	√	
7	Reduce economic damage	√	√	
8	Reduce cost of management		√	
9	Contribute to the climate change adaptation response for Torfaen.	√	√	√
10	Protect and improve Sites of Special Scientific Interest (SSSIs) and Sites of Importance for Nature Conservation (SINCs)			√
11	Contribute to the delivery of Torfaen County Borough Biodiversity Action Plan			√
12	Create natural channels and water bodies with minimal modifications			√
13	Protect and Improve water quality	√		√
14	Provide Flood Risk management Plans for each area subject to flood risk	√	√	√
15	Ensure that measures are designed and constructed in a sustainable way		√	√
16	Ensure that TCBC works in partnership with all other Risk Partners and works collaboratively with adjacent Authorities	√	√	
17	Ensure that investment decisions for the implementation of flood risk management schemes are made on a consistent, defensible basis and are subject to cost benefit analysis.		√	

Table 6: Sets out 17 detailed objectives within the LFRMS adopted by the FRMP; that satisfy the National Strategy's objectives to manage Social, Economic and Environmental Factors.

8. How TCBC will manage flood risk at a local level

Flood risk will be managed on a ward scale basis using the total counts for Property, commercial and critical services to a depth of 0.2m under a storm return period of 1 in 30 ((High risk) Appendix 7), 1 in 100 ((Medium Risk) Appendix 8), 1 in 1000 ((Low Risk) Appendix 9) with the combined results spatially represented within Appendix 10. The planning will form three stages on timescales short (0-2 years), medium (0-6 years) and long term (0-12 years). These timescale have been set to ensure that they comply with the shelf life of the first iteration of the FRMP and into the next 6 year cycle leading to 12 year period.

The FRMP will deliver 20 measures to achieve the objectives outlined within Table 6. The measures are county borough wide schemes that will prioritise the work based on the information within Tables 2-4. Blaenavon was previously excluded by the PFRA and not included within a Flood Risk Area defined as 'Cwmbran and Pontypool'. The measures detailed 1-20 will deliver flood risk management to the whole authority; due to the nature of the perceived risk outlined by the flood modelling.

The measures detailed will be delivered by Torfaen County Borough Council in partnership with risk management authorities, and the support of local communities; to ensure long term sustainable management that incorporates the holistic sustainable practices outlined within the Future Generations Bill.

Measure 1. Informing Residents Subject to the Risk of Flooding

Timescale – 0 – 2 years (short term)

European Reporting Code: M43

Plan

Residential properties that are subject to high, medium and low risk of flooding will be informed of their calculated risk through an engagement process. This will be carried out in three stages; the first stage will target high risk properties determined as a 1 in 30 year storm to a depth of 200mm. The second phase will involve engaging with resident with a medium risk determined as 1 in 100 year storm to a depth of 200mm. The final stage will involve engaging with residents with a Low risk determined as 1 in 1000 year storm to a depth of 200mm.

The engagement phase will detail the relevant capabilities of the authorities infrastructure based on the relevant storm return period. The aim of the engagement is to increase awareness of flood risk and increase the personal resilience of residents. The engagement phase will detail suitable measures that residents can take to reduce their risk.

The residential counts conducted by the high level assessments have been carried out and 1064 properties within 23 wards are subject to the risk of flooding of High, Medium or Low risk to a depth of 0.2m. This information has been assessed at a property scale, which allows for quantified counts.

The implementation of this plan will involve the construction of an information pack detailing the responsibilities of risk management authorities, and how best to obtain advise regarding flood risk reduction measures at property level. This pack will include a copy of their flood risk specific to their ward to highlight the risk. This will be done ward by ward with a corresponding workshop event in which officers will be available to answer specific questions for each area.

Benefits

Informing residents to the risk of flooding encourages the relationship between both residents and the authority; it will allow the residents to understand the key roles and responsibilities of the authority and risk management agencies. Increasing perception and

awareness will allow those residents time to prepare; by developing personalised flood plans and the purchase of preventative equipment.

Measure 2. Informing Businesses Subject to the Risk of Flooding

Timescale: 0 – 2 Years (Short Term)

European Reporting Code: M44

Plan

Businesses that are subject to high, medium and low risk of flooding will be informed of their calculated risk through an engagement process. This will be carried out in three stages; the first stage will target high risk businesses determined as a 1 in 30 year storm to a depth of 200mm. The second phase will involve engaging with businesses with a medium risk determined as 1 in 100 year storm to a depth of 200mm. The final stage will involve engaging with businesses with a Low risk determined as 1 in 1000 year storm to a depth of 200mm.

The engagement phase will detail the relevant capabilities of the authorities infrastructure based on the relevant storm return period. The aim of the engagement is to increase awareness of flood risk and increase the resilience of businesses. The engagement phase will detail suitable measures that businesses can take to reduce their risk.

The Business counts conducted by the high level assessments have been carried out and 279 Businesses within 21 wards are subject to flooding during a 1 in 30 year storm to a depth of 200mm.

The implementation of this plan will involve the construction of an information pack detailing the responsibilities of risk management authorities, and how best to obtain advice regarding flood risk reduction and business continuity measures. This pack will include a copy of their flood risk specific to their area to highlight the risk. This will be done ward by ward with a corresponding workshop event in which officers will be available to answer specific questions for each area.

Benefits

Informing businesses to the risk of flooding encourages an awareness and engagement programme that allows the authority and businesses to understand the key roles and responsibilities of risk management agencies. Increasing perception and awareness will allow those businesses time to prepare; such as developing personalised flood plans, the purchase of preventative equipment and the production of suitable continuity plans to ensure the sustainability of businesses.

Measure 3. Informing Critical Services Subject to the Risk of Flooding

Timescale: 0 – 2 Years (short term)

European Reporting Code: M44

Plan

Critical Services that are subject to high, medium and low risk of flooding will be informed of their calculated risk through an engagement process. This will be carried out in three stages; the first stage will target high risk critical services determined as a 1 in 30 year storm to a depth of 200mm. The second phase will involve engaging with critical services with a medium risk determined as 1 in 100 year storm to a depth of 200mm. The final stage will involve engaging with critical services with a Low risk determined as 1 in 1000 year storm to a depth of 200mm.

The engagement phase will detail the relevant capabilities of the authorities infrastructure based on the relevant storm return period. The aim of the engagement is to increase

awareness of flood risk and increase the resilience of critical services. The engagement phase will detail suitable measures that critical services can take to reduce their risk.

The critical service counts conducted by the high level assessments have been carried out and 45 services within 17 wards are subject to the risk of flooding of High, Medium or Low risk to a depth of 200mm. This information has been assessed at a property scale, which allows for quantified counts.

The implementation phase will involve joint working with operators of critical services throughout the borough; TCBC would provide the flood risk maps and the corresponding risk for the operator's infrastructure and engage with them to determine any cost benefit for partnership schemes.

Benefits

Informing critical services to the risk of flooding encourages the relationship between both operators and the authority; it will allow the operators to understand the key roles and responsibilities of the authority and risk management agencies. Increasing perception and awareness will allow those operators time to prepare; by developing flood plans, purchase of preventative equipment and the production of suitable continuity plans to ensure the sustainability of critical services.

Measure 4. Informing Natural and Historic Environment Sites Subject to the Risk of Flooding

Timescale: 0 – 2 Years (Short Term)

European Reporting Code: M44

Plan

Natural and Historic environments (NHE) that are subject to high, medium and low risk of flooding will be informed of their calculated risk through an engagement process. This will be carried out in three stages; the first stage will target high risk NHE's determined as a 1 in 30 year storm to a depth of 200mm. The second phase will involve engaging with NHE's with a medium risk determined as 1 in 100 year storm to a depth of 200mm. The final stage will involve engaging with NHE's with a Low risk determined as 1 in 1000 year storm to a depth of 200mm.

The engagement phase will detail the relevant capabilities of the authorities infrastructure based on the relevant storm return period. The aim of the engagement is to increase awareness of flood risk and increase the resilience of NHE's. The engagement phase will detail suitable measures that NHE's can take to reduce their risk.

The NHE counts conducted by the high level assessments have been carried out and 45 services within 17 wards are subject to the risk of flooding of High, Medium or Low risk to a depth of 200mm. This information has been assessed at a property scale, which allows for accurate counts.

The implementation phase will involve joint working with operators of Natural and Historic Environments throughout the borough, TCBC would provide the flood risk maps and the corresponding risk for the operator sites and engage with them to determine any cost benefit for partnership schemes.

Benefits

Informing NHE's to the risk of flooding encourages the relationship between both NHE's and the authority; it will allow the operators to understand the key roles and responsibilities of the authority and risk management agencies. Increasing perception and awareness will allow

those operators time to prepare; by developing personalised flood plans and the purchase of preventative equipment.

Measure 5. Database of Existing Flood Defences and any New Flood Plans Developed from Plans 1-4

Timescale: 0 – 6 (Medium term) European Reporting Code: M43, M44

Plan

Throughout TCBC there are properties, businesses, critical infrastructure and environmental sights that have pre-existing risk reduction measures, a data capture exercise is being carried out to determine what properties have such infrastructure in place and what uptake the first 4 objectives have on 'at risk areas.'

This will be carried out alongside the first 4 objectives monitoring the levels of pre-existing infrastructure and will continue after the final stages of the projects to ensure the continued update of the database. This database will be reviewed yearly to ensure the data captured is accurate and can be transferred into future iterations of the flood risk plans.

Benefit

The benefit of this system is to determine the accuracy of flood risk modelling; ensuring properties that have sufficient protective measures are removed from counts, to ensure the prioritisation of future strategies and plans have the greatest cost benefit for the residents of TCBC.

Measure 6. Encourage Property Level Protection Scheme within the Authority

Timeline 0 – 6 (Medium Term) European Reporting Code: M43

Plan

Property Level protection is a readily available method for protection at property level. The objective would consider high risk communities and identify the potential to run PLP workshops to develop community resilience. The workshops would likely bring in consultancy agencies that can provide specialist information regarding property level protection.

The implementation phase would rely on the collaboration of risk management authorities such as NRW and Welsh water and involve an intermediary flood risk consultancy firm that specialised in property level protection to involve local residents of the risk and potential gain of property level protection during workshop events throughout the authority (1 in each principal town).

Benefit

The uptake of property level protection could significantly increase the resilience of the community and reduce the risk to residents. The workshops would allow residents to take expert advice from outside of the council from professionals who specialise in the field. This process if adopted by residents would allow for further work shops throughout the Borough to significantly reduce the risk of flooding. The purpose of this objective would be to encourage the knowledge base around who is responsible for protecting properties through intermediary's, encouraging confidence between the authority and residents.

Measure 7. Identify Watercourse that Provide A Significant Risk (Source Point) of Flooding.

Timeline: 0 – 2 (Short Term)

European Reporting Code: M24

Plan

Through the detailed flood modelling an assessment of the source point for flood events can be captured. This information can be utilised to identify areas that require investigation to determine the reasons behind the risk.

The identification process will be the first stage of the objective in which the high risk areas have already been mapped during the modelling phase of this documents development. The next step will be to investigate the high risk areas that provide risk to all four aspects of the Borough (Residents, Businesses, Critical services and NHE's). The investigation will identify the social, economical and environmental factors behind the reasons of the flood risk. This can be used as a tool to identify areas throughout TCBC that could be sensitive to climate change affecting the flood risk in the future.

Benefit

This research will allow the Borough to assess the reasons behind changing flood risk and what factors play the most pivotal roll in determining the risk. This can be used to identify 'Hotspot' areas within the Borough and can be used to determine future changes that could lead to changes both positive and negative in terms of flood risk. This will be used to allocate funding to the at risk and potential high risk areas of the future.

Measure 8. Review of Current TCBC Maintenance Schedules of Flood Risk Assets.

Timeline: 0 – 12 (Long Term)

European Reporting Code: M24, M53

Plan

The flood risk assets within TCBC have been given an engineering risk priority based on the risk of past and possible future flooding. The objective will allow TCBC to investigate the suitability of these priorities based upon the evidence of the hydrological models produced for this report. The culverts owned and maintained by TCBC are maintained on a three stage priority system based on:

1. Highest Risk, (has caused flooding in the past)
2. Medium Risk (has not caused flooding in the past but could flood properties if blocked)
3. Low Risk (has not caused flooding in the past but is unlikely to flood properties if blocked)

The priorities will undergo a review with the addition of flood risk information provided by recent flood events and the spatial information provided by the hydrological modelling and hotspot analysis of watercourses.

Benefits

Conducting a review of current prioritisation methods will provide the Borough with a comprehensive review of flood risk through physical assets. The current priorities have been assessed utilising engineering risk criteria and past flood events. A cyclical process will provide opportunities to factor in new developments in flood risk through updated hydrological modelling and flood risk reduction schemes that may influence these areas. The

review process will allow the authority to plan for future changes within the climate insuring maintenance schedules will keep pace with the climate.

Measure 9. Review Asset Management Systems with all Risk Management Authorities Operating within TCBC

Timeline: 0 – 2 (Short Term)

European Reporting Code: M24, M53

Plan

Reviewing all risk management authorities working within TCBC. The review will focus upon their infrastructure and maintenance regimes that are in place. The review will ensure that the flood risk asset database compiled by TCBC has captured all flood risk assets within the authority.

The objective of the plan is to firstly determine the level of precision of the flood risk asset database and establish a cross reference to ensure the accuracy of data. The second phase of the plan is to determine the suitability of existing maintenance regimes through the authority, this will involve partner working and will determine where the authority can work in partnership to ensure that all flood risk assets are maintained and logged within a database.

Benefit

The benefit of the plan is to ensure that the data captured by TCBC is accurate as well as up to date. The plan will allow risk management authorities a combined list of assets within various ownerships as well as a policy for maintenance. This can be used to ensure that communication is maintained between the risk management agencies. This will provide opportunities to work collaboratively to reduce the cost of maintenance between agencies.

Measure 10. Collaborative Work with Risk Management Authorities: Asset Management Plan Consultation between Authorities.

Timeline 0 – 6 (Medium Term)

European Reporting Code: M24

Plan

An effective partnership between all risk management agencies is an essential tool to develop the capacity building within the Borough. The principal way to manage this is to foster partnerships and encourage joint discussions when developing asset management plans. The objective would set out a staged approach to developing asset management plans to ensure that relevant agencies are present during the key phases of the plans development.

Benefit

The benefit of this is to ensure that all agencies are maintaining the relevant assets within the Borough; this will ensure that ownership issues are cleared up and defined to ensure operatives have the relevant information within each department when dealing with residents. This system will ensure that all partners are represented during the development of asset management plans to ensure plans operate efficiently. Any cost reduction measure that can be shared between the agencies maintenance regimes could be shared to ensure a cost benefit for the partnership.

Measure 11. Research the Potential for Technology that Could Provide A Real Time Update of Local Weather and Early Warning Systems.

Timeline 0 – 12 (Long Term)

European Reporting Code: M41

Plan

This objective would look at current research into local early warning systems already in place throughout the scientific community. The aim would be to determine the cost benefit of introducing this technology into high risk areas that would provide a significant early warning for residents to take preventative measures. The objective would also look to increase the capacity within the highway networks local weather monitoring stations; this will develop a local record of rainfall levels to accurately predict return periods within the Borough.

Benefit

The potential for early warning systems within the Borough could provide residents with time to prepare their properties or even evacuate depending upon the severity of the storm. This would allow the authority to prioritise the response within the high risk areas more efficiently. The weather monitoring station could be utilised to improve the local records for rainfall. The rainfall records could be compiled and used to update existing return period statistics and would provide a baseline for rainfall events on a localised scale. Any new weather station would have a secondary benefit to the winter maintenance service within the highways department.

Measure 12. Encourage Partnership Work Between Constituted Community Groups and Risk Management Authorities.

Timeline: 0 – 2 (Short Term)

European Reporting Code: M43

Plan

Constituted community groups can be used to successfully communicate relevant information from risk management authorities and residents. The aim of the objective would be to encourage the establishment of such groups within the authority, on the basis that the support is used to further partnership working between groups with; a structured committee working from a constituted framework to encourage the resilience within the community. The plan would encourage the establishment and pilot the programme until such time as the group can be run independent of the authority.

Benefit

Community groups have at times been a successful initiative when dealing with flood risk throughout the UK. Having a structured constituted group would develop the resilience within the community and would allow residents who are willing to work with authorities to develop the knowledge required to operate a self sustaining group. This partnership would likely improve the communication between authorities and local residents.

Measure 13. Involvement throughout the Planning stages of new developments, to Increase the Opportunity for Source Point Control and SuDS Schemes

Timeline: 0 – 12 (Long Term)

European Reporting Code: M34

Plan

The aim of this measure would be to develop the working relationships between departments and agencies involved with the planning process of new and existing sites. The purpose of this measure is to identify the potential for source point controls and green

infrastructure that could be incorporated into the design features (SuDS). The 21st Century schools could be used as a pilot project to ensure the best form of engagement between planning partners, however this process will not be limited to school planning but to all future development (Residential, Business, Services, Environmental sites) within TCBC. This process has been started through the developments within the Local Development Plans i.e Policy S3 and is further highlighted within Planning Policy for Wales 7th Edition and Technical Advice Notes 15 and 12.

The idea of 21st Century schools has been highlighted as a potential pilot project. The project would be designed as a measure of best practice highlighting TCBC's adaption to climate change and sustainable planning. Whilst identifying a showcase site that promotes the use of SuDs schemes that can be applied to developments within the local area. The initiative of 21st Century schools is aimed at the long term and strategic capital investment programme that aims to deliver:

- Learning environments designed to improve better education outcomes
- Greater economy and efficiency for learning environments through resource management
- Sustainable education system that meet building standards and reduces recurrent cost

Benefit

Utilising a capital investment programme that is already in place could provide an avenue for developing better resilience within the initial infrastructure of buildings. There is potential to develop ecological assets within the grounds that would encourage education of environmental sustainability whilst developing flood risk reduction initiatives throughout the site. This would reduce the impact to the surrounding area whilst reducing the impact of flooding at schools. The pilot scheme would provide the authority a showcase site that can highlight to developers the best practice in use and its applications within the local area.

Measure 14. Develop Education Workshops within Schools

Timeline: 0 – 6 (Medium Term) European Reporting Code: M43

Plan

Education workshops would target the schools with pupil catchments within high risk communities. The objective of the plan would be to develop knowledge of the hazard of flooding within the community, whilst developing the knowledge of existing flood routes that could pose a risk to health during times of heavy rainfall. This plan would target the Education for Sustainable Development and Global Citizenship Coordinators (ESDGC) within schools.

Benefit

Increasing the level of knowledge and involvement of the younger generations can develop a 'bottom up scheme' of flood resilience in which knowledge transfer can migrate up through family units. There are several flood mitigation measures in place that allow overtopped watercourses a dedicated overland route to re-enter into the watercourse. Providing the younger generations with these risk points, will develop resilience and awareness within the community during the event. There is likely a benefit to develop changing attitudes towards environmental management within the community whilst encouraging younger generations to take responsibility for the environment.

Measure 15. Flood Reduction Asset Inspections.

Timeline: 0 – 2 (Short Term)

European Reporting Code: M24

Plan

Developing a structured inspection carried out by officers above regular maintenance regimes. This will be in addition to regular inspections carried out by operatives. The aim will be to ensure the sustainability of flood reduction assets in the long term. Detailed inspections will be carried out to determine what if any works need to be carried out to maintain the structure or feature. This will also reflect any changes to the area that would contribute negatively or positively to flood risk.

Benefit

Additional inspection regimes running yearly to insure the relevant flood reduction assets are maintained adequately. Conducting further inspections will take into account changes within the surrounding area that could affect flood risk; which could require an increase in maintenance or up scaling of measures, or reducing maintenance and removing the asset all together.

Measure 16. Review of Existing Emergency Plans within Risk Management Authorities

Timeline: 0 – 12 (Long Term)

European Reporting Code: M42, M53

Plan

Reviewing the existing emergency plans within risk management authorities; will require furthering the partnerships between agencies to ensure that each authority has the capacity to respond to flood events. This level of planning is managed within the Gwent Local Resilience Forum (GLRF). Currently the forum works on reviewing and testing existing plans on a regular basis. The flood modelling used to develop this document will be considered when reviewing these plans to insure the highest level of accuracy.

Benefit

The review process will benefit from the consideration of up to date modelling based at property level scales. Providing the GLRF the opportunity to further develop partnership working between risk management agencies; through the review of current plans set against the updated models, to accurately identify the high risk areas.

Measure 17. Develop an exercise to Test the Capabilities of TCBC Responders

Timeline: 0 – 12 (Long Term)

European Reporting Code: M42

Plan

This objective will set in place a validity exercise to ensure the suitability of existing response plans; enacted during a flooding event. The testing process would utilise the newly identified flood risk property counts to reflect the current understanding of at risk areas within the county borough whilst incorporating past flood events.

Benefit

The benefit of the exercise will allow the front line services who respond to flood events to become more familiar with current model outputs. The exercise would utilise the current modelled results and past events to represent a realistic flood event to prepare the response

teams to be as efficient as possible. It would allow a review of current procedures and policies for responding to flooding ensuring their suitability.

Measure 18. Develop and Maintain a Database for Green Infrastructure

Timeline: 0 – 2 (Short Term)

European Reporting Code: M24

Plan

Developing a database of existing green infrastructure and existing SuDS features will be conducted through a knowledge gathering exercise within TCBC departments. A policy will be established which ensures any new development that proposes green infrastructure will report this to the relevant department for data capture purposes.

Benefit

Developing a database of existing green infrastructure will allow the authority to factor this into future iterations of flood risk management plans. The data will allow an analysis of the influences that these measures have on the existing flood risk. Updating the register will ensure that storage within the authority is accurately recorded.

Measure 19. Reviewing the Local Development Plans regarding the Outputs of Flood Risk Modelling

Timeline: 0 – 12 (Long Term)

European Reporting Code: M21

Plan

The Local Development Plan will include a sustainable planning system that incorporates source point control and SuDS designs to develop a resilient community that focuses on long term sustainability and ecological proficiency. These fundamental aims are incorporated into the current LDP through policy S3 and the overarching policies of PPW and TAN 12, 15.

From the production of the hydrological modelling an assessment of high level flood risk has been developed. The outputs are significantly more detailed than the flood models used within Technical Advice Note 15 and could be incorporated into the local development plan during the review stage. This will ensure the accuracy of flood risk is captured and suitable plans are developed and reviewed, to certify a sustainable local development plan that reduces the risk of flooding. Before the initial review stage a data sharing exercise will be established between relevant departments within the authority to ensure the most up to date and accurate flood risk maps are available for decision making purposes.

Benefit

Local Development plans set out long term development initiatives that aim to develop a sustainable expanding community, and provide residential and commercial properties to develop TCBC. Increasing the evidence to base flood risk against allows planners to identify risk more effectively. Incorporating high level flood risk information into future planning stages will allow more accurate vetting of housing development contracts ensuring that capacity and resilience measures are incorporated into the base design of the projects, creating a proactive resilience programme.

Measure 20. Investigating the Need and Sustainability of Engineering Works.

Timeline: 0 – 12 (Long Term)

European Reporting Code: M32, M33

Plan

This objective will look at the suitability of engineering works and the long term sustainability and cost benefit of such schemes. The plan will aim to develop engineering works to reduce flood risk where; all possible avenues of flood risk have been explored by the authority and residents, and the cost benefit analysis satisfies the requirements of Welsh government. Only at this point will any engineering works be carried out by the authority.

The authority regards engineering solutions as a last resort in terms of flood risk mitigation. However the authority does regard its use as part of an integrated approach to flood risk management. It is the intention of this document to redirect flood risk management within TCBC through sustainable planning and proactive preparation. Typically engineering work to mitigate flood risk comes at a substantial cost. The authority has identified limited cost benefit for conducting large scale works when there are multiple benefits involved with engaging the public and creating a sustainable and resilient community that is prepared for the eventuality of a flood event.

Benefit

The authority will look into engineering works where it is deemed necessary to reduce the risk of flooding to properties; where all possible avenues of flood risk have been explored, and the cost benefit is satisfied. The benefit of this system will ensure that any natural risk reduction measure that could be carried out are implemented to reduce the cost of large scale engineering works which prevents the change to the hydrodynamics and ecological stability of watercourses. The secondary benefit will come from the ability to accurately plan and record the development from the proposals to the finished product ensuring data capture is maintained.

9. Coordination with the National Strategy for flood and Coastal Erosion risk management

TCBC has set out 20 measures to satisfy the local and national strategy's four overarching objectives, they have been set out against social, economical and environmental factors to reflect a holistic plan for the authority. Table 7 identifies the plans objectives that satisfy the four overarching objectives of the national strategy for flood and coastal erosion risk management. The work of the local flood risk management strategy took on board the 4 overarching objectives of the national strategy and detailed 17 objectives in Table 6. The relationship between the local strategy and the FRMP has been depicted within Appendix 5 which identifies the FRMP measures that are designed to implement the strategic measures outlined within the Local Strategy.

The delivery of the FRMP measures detailed within Section 8 identifies specific benefits for the implementation of the Water Framework directives outlined within the SRBMP. Specifically measures 10, 11, 12 and 13; measures 10 and 12 will deliver improved partner working with risk management authorities and constituted community groups. The transfer of local and catchment level information will develop and improve the prioritisation of work within the high risk areas. Measure 11 aims to deliver consistent and viable early warning for ordinary watercourses subject to pluvial flooding. Advanced warning allows community's to activate flood plans to mitigate the impact of a flood event. Measure 13 will deliver source point control through the medium of SuDs; providing benefits to the drainage capacity and lag time within the authority whilst providing filtration to overland flows reducing the pollution entering watercourses. The delivery of the 20 measures will ensure the long term holistic sustainability and potential for delivering multiple benefits that support the well-being of future generations and water framework directive.

Torfaen's Flood Risk Plans set against the National Strategy's four overarching objectives

Flood risk Management Plans	Timescale	National Strategy for flood and coastal erosion risk management Objectives				Risk Management; Prevent, Protect, Prepare, Recover and Review
		Reduce Impacts	Awareness and Engagement	Sustained Response	Prioritisation	
Informing Residents Subject to the Risk of Flooding	Short	✓	✓	✓	✓	Prepare
Informing Businesses Subject to the Risk of Flooding	Short	✓	✓	✓	✓	Prepare
Informing Critical Services Subject to the Risk of Flooding	Short	✓	✓	✓	✓	Prepare
Informing Natural and Historic Environment Site Subject to the Risk of Flooding	Short	✓	✓	✓	✓	Prepare
Database of Existing Flood Defences and any New Flood Plans Developed from Plans 1-4	Medium	✓	✓	✓	✓	Prepare
Encourage Property Level Protection Scheme Within the Authority	Medium	✓	✓	✓	✓	Prepare
Identify Watercourse that Provide A Significant Risk (Source Point) of Flooding	Short	✓		✓	✓	Prevent
Review of Current TCBC Maintenance Schedules of Flood Risk Assets.	Long	✓		✓	✓	Prevention / Recover and Review
Review Asset Management Systems with all Risk Management Authorities Operating Within TCBC	Short	✓		✓	✓	Prevention / Recover and Review
Collaborative Work with Risk Management Authorities: Asset Management Plan Consultation between Authorities.	Medium	✓		✓	✓	Prevent
Research the Potential for Technology that Could Provide A Real Time Update of Local Weather and Early Warning Systems.	Long	✓		✓	✓	Prepare

Torfaen's Flood Risk Plans set against the National Strategy's four overarching objectives (Continued)

Flood risk Management Plans	Timescale	Reduce Impacts	Awareness and Engagement	Sustained Response	Prioritisation	Risk Management; Prevent, Protect, Prepare, Recover and Review
Encourage Partnership Work Between Constituted Community Groups and Risk Management Authorities.	Short	✓	✓	✓	✓	Prepare
Involvement throughout the Planning stages of new developments, to Increase the Opportunity for Source Point Control and SuDS Schemes	Long	✓		✓		Protect
Develop Education Workshops within Schools.	Medium	✓	✓	✓	✓	Prepare
Flood Reduction Asset Inspection.	Short	✓		✓	✓	Prepare
Review of Existing Emergency Plans within Risk Management Authorities.	Long	✓		✓		Prevention / Recover and Review
Develop an exercise to Test the Capabilities of TCBC Responders.	Short	✓		✓		Prepare
Develop and Maintain a Database for Green Infrastructure.	Short	✓		✓	✓	Prevention
Updating Local Development Plans from the Outputs of Flood Risk Modelling.	Long	✓	✓	✓	✓	Prevent
Investigating the Need and Sustainability of Engineering Works.	Long	✓		✓		Protecting

Table 7: Flood risk management plans based against National strategy's four over reaching objectives

9.1 Flood Risk Management plan Conclusions

The plans set out within this document have been based upon the national and local strategies to reflect work already in place throughout the authority to manage flood risk. The plans (Table 5) aim to develop the awareness of the residents to their risk of flooding by engaging the perception of risk. This process requires the knowledge of local hydrodynamics to be explored thoroughly, which is reflected within the early stages of the plans; the knowledge gathering exercises will be used to support the engagement phases to emphasise the need for protection and preparation by residents and businesses. With the oversight of continual review to ensure that any developments within flood risk are recorded and applied to the prioritisation of future works.

The effects of 'Climate Change' in the past have been hard to recognise and manage, however with the latest publication by the Intergovernmental Panel on Climate change: Fifth Assessment review (IPCC) confirming with a 99.9% certainty that human forces are exacerbating natural climate forcing's, there is no doubt that the phenomenon requires serious attention. The result of climate change is predicted to bring with it warmer drier summers, milder wetter winters, and more frequent extreme weather events especially during summer months. This change in climate has been documented year after year with the increasing frequency of extreme events impacting Europe and the UK (2002 Danube and Elbe, 2004 Boscastle, 2007 Gloucestershire, 2013/14 UK wide flooding). The plans set out within this report will look to establish a baseline for flood risk and develop the information and knowledge surrounding all aspects of flood risk and the mechanics of flooding. This will involve full involvement from all RMA's, residents and businesses. Full involvement will allow TCBC to manage the changing flood risk more sustainably and economically, whilst improving the carbon footprint of the authority by maintaining the biodiversity.

The outcome of the FRMP is to reduce the number of properties, businesses, critical services and natural and historic environments at risk of flooding. This can be accomplished if the authority is able to communicate the responsibility of flood risk and protection to those at risk. As the LLFA and Highway authority TCBC has the responsibility to ensure the adequate working of the land drainage network (surface water systems) and the flood risk assets within Ordinary Watercourses (Culverts, Bridges) through the County Borough, The land drainage network is not a flood defence, they have been purpose built to drain the highways not to protect properties. The flood risk assets within ordinary watercourses have been designed to 'at the time current design standards,' whilst there are flood defences in place to minimise risk (Trash screens, Dragons Teeth) these are designed to 1 in 100 storm return periods +20% for climate change based on 'at the time' specific hydrological modelling (Flood estimation handbook). The use of future engineered defences will only be taken forward where; all other options of flood risk reduction have been explored and there is a significant risk of flooding that supports a cost benefit analysis for the area.

The first iteration of the FRMP focuses on identifying the baseline to manage flood risk over a longer term. The plans in place will bring together information from throughout the borough to effectively identify the suitability of current hydrological modelling and the identification of areas in which flood risk can be sustainably improved whilst maintaining the ecological significance of the environment. This document will work hand in hand with the Severn River Basin Management Plan and Severn Flood Risk Management Plan to reduce the risk of flooding whilst improving the environmental stability of the area. The longer term outlook of the plan will be to develop a continuous data entry process into aspects of flood risk, building on the pre-existing knowledge to develop the sustainability and resilience of the communities through preventative and preparative measures to manage flood risk.

Summary of the Flood Risk Management Plans Developed to Manage Flood Risk within TCBC



Figure 8: Flood Risk Management Plans summarised to effectively communicate the directions of TCBC's floor risk strategy.

10. Public Consultation

The public consultation took place on 6th February 2015 and was open for 6 weeks finishing on 23rd March. The consultation was hosted through the TCBC website and was transmitted to elected members, community councils and risk management authorities that operate within TCBC. The consultation report has been attached in Appendix 11. The formal review carried out by NRW has been completed with minimal changes; proposed to streamline the FRMP with the EU reporting standard.

Details of the consultation phases required before full publication of the Flood Risk Management Plans

Consultation Phase	Dates	Consultation
First Stage	February 2014 – March 2015	All Stakeholders, Risk Management Authorities and Citizens
Second Stage	June 2015	Consultation Report
Third Stage	July 2015	Natural Resources Wales Formal Review.
Publication	December 2015	European Union

Table 8: Timescale for consultation and the consultants involved before final publication

11. Monitoring and review

Following the completion of this first 6 year cycle in December 2015 the monitoring and review process will take an integral part of the next cycle. The actions put forward within this plan will have an annual review to address the effectiveness of the plans and the future needs of any completed initiatives. Any Ad Hoc works that arise during the cycles will be dealt with as and when they occur.

The Welsh Government Commission on Public Service Governance - 'The Williams Commission' published a series of recommendations about the future make up of local authorities back in early 2014. The report recommended a merger of Caerphilly, Torfaen and Blaenau Gwent as its preferred option for this area. Recently Welsh Government in its White Paper - Reforming Local Government set out the timescales for mergers based on the Williams' Commission findings and asked for stakeholder's views on the proposals. Any future iteration of the FRMP's will reflect the outcome of proposals of voluntary and mandatory mergers.

This first iteration of the FRMP has been coordinated through the SEWFRMG in which Torfaen, Caerphilly and Blaenau Gwent are represented. Officers from the authorities have investigated the possibility of coordinating the first iterations of FRMPs. At this time the authorities have agreed that the documents are too mature to begin anew whilst maintaining the publication deadlines. The FRMP's are reliant on existing Flood Risk Management Strategies and a merger of the FRMP would require amendments to existing strategies.

It is considered more appropriate to undertake the review of the first iterations and the development of the second cycle through full involvement from the approved merged authority; to produce one single document identifying the flood risk management of both authorities ahead of the proposed mergers.

References

Adopted Torfaen Local Development Plan (2013) In particular Objective 3, Policy S3, BW1: <http://www.torfaen.gov.uk/en/Related-Documents/Forward-Planning/ADOPTED-Torfaen-LDP-inc-Appendices-v2.pdf>

EU Floods Directive: http://ec.europa.eu/environment/water/flood_risk/

Flood and Water management Act 2010:
<http://www.legislation.gov.uk/ukpga/2010/29/contents>

Flood Risk Regulations 2009:
<http://webarchive.nationalarchives.gov.uk/20140328084622/http://www.legislation.gov.uk/uksi/2009/3042/contents/made>

IPCC Fifth assessment Review: <http://www.ipcc.ch/>

LDP Supporting Document SD32 – Broad Level Assessment of Flood Risk (2012):
<http://www.torfaen.gov.uk/en/Related-Documents/Forward-Planning/SD32-LDPBroadLevelAssessmentofFloodRisk.pdf>

Local biodiversity action plan: <https://mysay.torfaen.gov.uk/consult.ti/Biodiveristy>

Local strategy for flood risk management:
<http://www.torfaen.gov.uk/en/RoadsTravelParking/RoadsAndPavements/FloodRiskManagement/Local-Flood-Risk-Management-Strategy.aspx>

National strategy for flood and coastal erosion risk management:
<http://wales.gov.uk/topics/environmentcountryside/epq/flooding/nationalstrategy/strategy/?lang=en>

Planning Policy Wales Edition 7 (2014) In particular 13.2-13.4:
<http://www.torfaen.gov.uk/en/Related-Documents/Forward-Planning/SD32-LDPBroadLevelAssessmentofFloodRisk.pdf>

Severn River Basin Management Plan: <https://www.gov.uk/government/publications/river-basin-management-plan-severn-river-basin-district>

Strategic Environmental Assessment:
<http://www.torfaen.gov.uk/en/RoadsTravelParking/RoadsAndPavements/FloodRiskManagement/StrategicEnvironmentalAssessment.aspx>

Technical Advice Note 15 (Wales), ‘Development and Flood Risk’ (2004):
<http://wales.gov.uk/docs/desh/publications/040701tan15en.pdf>

Well-being of Future Generations (Wales) Act 2015:
<http://www.legislation.gov.uk/anaw/2015/2/contents/enacted>

Water Framework Directive: http://ec.europa.eu/environment/water/water-framework/index_en.html

Appendices

Appendix 1: Requirement of the EU Floods directive

Directive 2007/60/EC on the assessment and management of flood risks

The directive was proposed by the European Commission on 18/01/2006, and was finally published in the Official Journal on 6 November 2007. Its aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive requires Member States to first carry out a preliminary assessment by 2011 to identify the river basins and associated coastal areas at risk of flooding. For such zones they would then need to draw up flood risk maps by 2013 and establish flood risk management plans focused on prevention, protection and preparedness by 2015. The Directive applies to inland waters as well as all coastal waters across the whole territory of the EU.

The directive shall be carried out in coordination with the water framework directive, most notably by flood risk management plans and river basin management plans being coordinated, and through coordination of the public participation procedures in the preparation of these plans. All assessments, maps and plans prepared shall be made available to the public.

Member states shall furthermore coordinate their flood risk management practices in shared river basins, including with third counties, and shall in solidarity not undertake measures that would increase the flood risk in neighbouring countries. Member States shall in take into consideration long term developments, including climate change, as well as sustainable land use practices in the flood risk management cycle addressed in this Directive.

Appendix 2: Flood Risk Regulations and Flood and Water Management Act 2010

The Flood Risk Regulations 2009 provided a statutory requirement for all risk management agencies across the European Union and UK to establish a flood risk management through the production of preliminary assessments, flood hazard and risk maps culminating in a prioritised flood risk management plan to deal with flood risk management.

- **Section 17 Review of PFRA** – The first review of the PFRA is due by December 2017 and will be significantly impacted by 50% reduction
- **Section 24 Review of Flood Hazard Maps** - The first review of the Flood Hazard Maps is due by June 2019 and will be significantly impacted by 50% reduction
- **Section 26 Duty to produce FRMP** – The authority is on target to meet this deadline however a loss of funding and potential office will result in a slowing down of the final process and any changes required under NRW review.
- **Implementation of the FRMP** – The Measures proposed by the authority within the FRMP are already underfunded and will result in the potential redrafting of the report and measures to reflect the changes in grant funding
- **Section 30 Review of FRMP** - The first review of the FRMP is due by June 2021 and will be significantly impacted by 50% reduction
- **Section 35 Duty to Cooperate** – The authority will find it significantly difficult to cooperate with NRW in the future on any joint scheme that may provide a joint benefit under their Severn Flood risk management plan and Severn River basin management plans.

The flood and water Management Act 2010 brought about statutory duties under the designation of the flood risk management authorities. Under the act TCBC was designated as a Lead Local Flood Authority and with it came statutory responsibilities to manage the risk of flooding from Surface Water, Ordinary Watercourses and Groundwater sources:

- **Section 10 Local Flood Risk Management Strategy** – Under the act an LLFA was required to produce a Local Flood Risk Management Strategy.
- **Section 19 Local Authorities Investigations** – On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate.
- **Section 21 Duty to Maintain a Register** – An LLFA must establish and maintain a register of structures and features which, in the opinion of the authority are likely to have a significant effect on a flood risk.
- **Schedule 1 Designating Features** – The risk management authorities as identified within the FWMA 2010, are responsible for the designation of structures or natural or man-made feature of the environment that the authority considers a flood risk.
- **Schedule 3 Sustainable Drainage** – This section of the Act requires risk management agencies to establish an approving body subject to the production of ministerial direction regarding the national standards.

Appendix 3: Contact details for Risk management authorities

Natural Resources Wales.
Head Office
Tŷ Cambria House
29 Newport Road
Cardiff CF24 0TP

South East Area Office
Rivers House
St Mellons Business Park
Cardiff CF3 0EY

Phone Number: 08708 506506
Email: enquiries@environment-agency.gov.uk
Website: www.environment-agency.gov.uk

Floodline
Phone Number: 0845 988 1188 (24 hour service)
Type Talk: 0845 602 6340

Lead Local Flood Authority in Wales
Torfaen County Borough Council
Civic Centre
Pontypool
Torfaen NP4 6YB

Torfaen County Borough Council
Neighbourhood Services Department
Network Management Section
Ty Blaen
Panteg Way
New Inn
Pontypool NP4 0LS

Water Company
Dŵr Cymru – Welsh Water
Pentwyn Road
Nelson
Treharris CF46 6LY

Head Office Phone Number: 01443 452300
Customer Services: 0800 052 0140
Website: www.dwrcymru.co.uk

South Wales Fire & Rescue Service
Forest View Business Park
Llantrisant CF72 8LX

Welsh Ambulance Service NHS Trust
Vantage Point House
Vantage Point Business Park
Ty Coch Way
Cwmbran NP44 7HF

Gwent Police
Gwent Police Headquarters
Croesyceiliog
Cwmbrân NP44 2XJ

Aneurin Bevan Local Health Board
Mamhilad House
Block A
Mamhilad Park Estate
Pontypool
Torfaen NP4 0YP

Public Health Wales
14 Cathedral Road
Cardiff CF11 9LJ
Bron Afon Community Housing
William Brown Close
Llantarnam Industrial Park
Cwmbran NP44 3AB

Melin Homes
Ty'r Efail
Lower Mill Field
Pontypool
Torfaen NP4 OXJ

Network Rail
Western House
1 Holbrook Way
Swindon SA1 1BD

SWTRA – South Wales Trunk Road Agency
12A Llandarcy House
The Courtyard
Llandarcy
Neath SA10 6EJ

CADW
Unit 5-7 Cefn Coed
Nantgarw
Cardiff

Bron Afon – Community Housing
Tŷ Bron Afon
William Brown Close
Llantarnam Industrial Park
Cwmbran
NP44 3AB

Appendix 4 Severn River Basin District Flood Risk Management Plan Measures

Preventing risk: There are 9 measures already in place to prevent flood risk at the RBD level.

- working with others to avoid inappropriate development in the floodplain;
- ensuring appropriate flood plain compensation to mitigate for development;
- supporting the implementation of sustainable urban drainage systems;
- advising how new development can be more resilient to flooding;
- ensuring works in, over and next to main rivers do not increase flood risk or cause pollution through effective consenting;
- increasing awareness and encouraging landowners to fulfil their riparian landowner responsibilities;
- undertaking mapping and modelling to ensure flood risk information remains up to date and fit for purpose;
- ensuring a robust maintenance programme;
- Promoting flood resilience and flood proofing.

Preparing for risk: There are 7 measures already in place to prepare for flood risk at the River Basin District level.

- providing advice and information to Local Resilience Fora to enable them to reduce the impact of flooding;
- providing advice and information to local communities to enable them to reduce the impact of flooding;
- raising awareness with key partners of their roles in flood risk management and exploring opportunities for joint outcomes;
- maintaining and improving the flood forecasting, flood warning and flood incident management service;
- providing flood incident response service 24 hours a day;
- ensuring all 'high risk' reservoirs have on-site reservoir plans in place;
- Natural Resources Wales and Environment Agency working closely to consider the benefit or detriment to the whole river basin in all decision making and activity.

Protecting from risk: There are 5 measures already in place that protect from flood risk at the River Basin District level.

- reviewing Asset System Management Plans;
- encouraging best farming practices to reduce rapid surface water run-off and soil erosion;
- identifying opportunities for floodplain restoration;
- delivering emergency works where needed for flood risk management assets;
- Ensuring all 'high-risk' reservoirs are regulated in accordance with the Reservoirs Act 1975.

Recovery and review of risk: There is 1 measure in place to recover and review following flooding at the River Basin District level.

- Improve and develop our services based on lessons identified following flood events.

Summary of the Measures outlined within the Severn River Basin District Flood Risk Management Plan

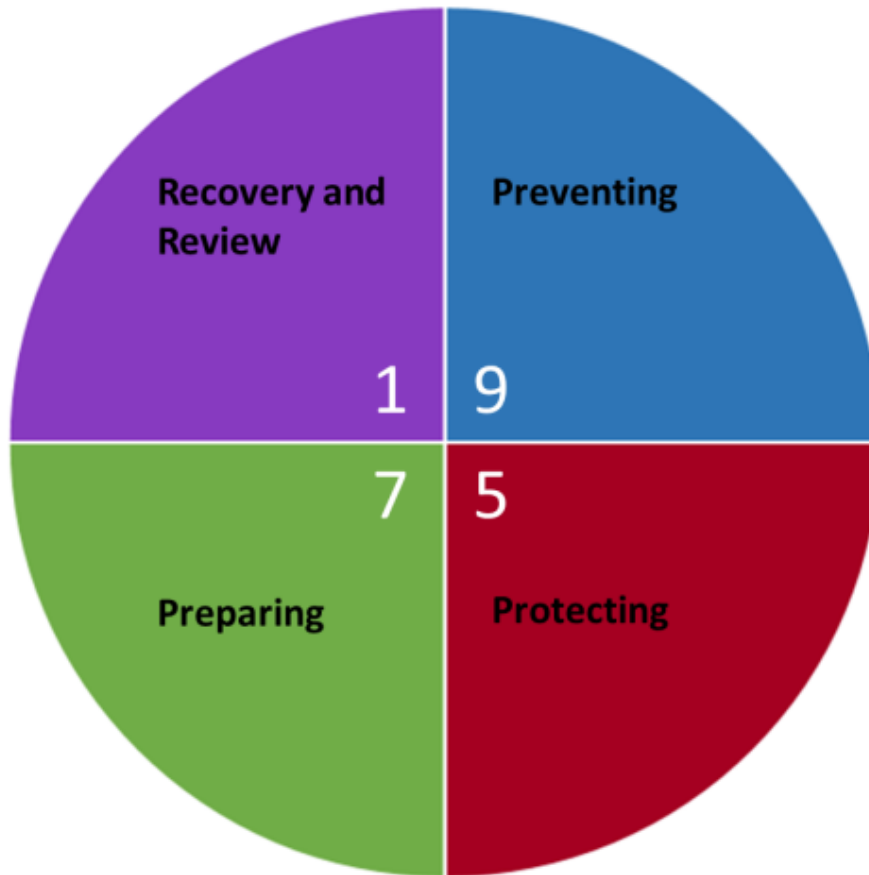


Figure 10: Severn River Basin District: Flood Risk Management Plans measures summarised to effectively compare with TCBC FRMP measures (Figure 8).

Appendix 5 The Local Flood Risk Management Strategy/Plan Objectives

	Local Flood Risk Management Strategy Objectives	Flood Risk Management Plan Measures
1	Reduce risk to life by reducing the number of people exposed to risk of flooding of significant depth and velocity.	1, 5, 6, 7, 8, 9, 10, 11, 12, 13,14,15,16,17,18,19,20
2	Reduce community disruption by reducing the number of residential and commercial properties affected by the risk of flooding	1, 2, 3, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20
3	Reduce disruption to critical infrastructure or prepare plans to allow the operations to be maintained.	3, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20
4	Reduce distress by reducing the number of people exposed to the risk of flooding.	1, 5, 6, 7, 8, 9, 10, 11, 12, 13,14,15,16,17,18,19,20
5	Provide systems to give early warning of potential flooding to individuals and communities.	11
6	Provide efficient systems for the management and maintenance of surface assets.	5, 6, 7, 8, 9, 10, 13, 15, 18, 19
7	Reduce economic damage	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13,14,15,16,17,18,19, 20
8	Reduce cost of management	5, 6, 7, 8, 9, 10, 12, 13, 15,16,17, 18,19
9	Contribute to the climate change adaptation response for Torfaen.	1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 18, 19
10	Protect and improve Sites of Special Scientific Interest (SSSIs) and Sites of Importance for Nature Conservation (SINCs)	4, 7, 10, 12, 13, 14, 16, 18, 19
11	Contribute to the delivery of Torfaen County Borough Biodiversity Action Plan	4, 7, 10, 12, 13, 14, 16, 18, 19
12	Create natural channels and water bodies with minimal modifications	7, 10, 12, 13, 14, 18, 19, 20
13	Protect and Improve water quality	5, 6, 7, 8, 9, 10, 13, 15, 18, 19
14	Provide Flood Risk management Plans for each area subject to flood risk	1, 2, 3, 4, 6, 10, 12, 13, 14
15	Ensure that measures are designed and constructed in a sustainable way	7, 8, 9, 10, 13, 15, 18, 19, 20
16	Ensure that TCBC works in partnership with all other Risk Partners and works collaboratively with adjacent Authorities	1, 2, 3, 4, 6, 9, 10, 12, 14, 16, 19, 20
17	Ensure that investment decisions for the implementation of flood risk management schemes are made on a consistent, defensible basis and are subject to cost benefit analysis.	1 – 20

Table 9: identifies the lineages between the local flood risk management strategy and the flood risk management plan objectives.

Appendix 6: Ward Boundary locations

Torfaen County Borough Council Ward Boundaries



Figure 11: Torfaen County Borough Council Electoral Wards

Appendix 7: TCBC updated Flood Map for Surface Water High Risk Flood Models

TCBC High Risk Flood Map for Surface Water Flooding

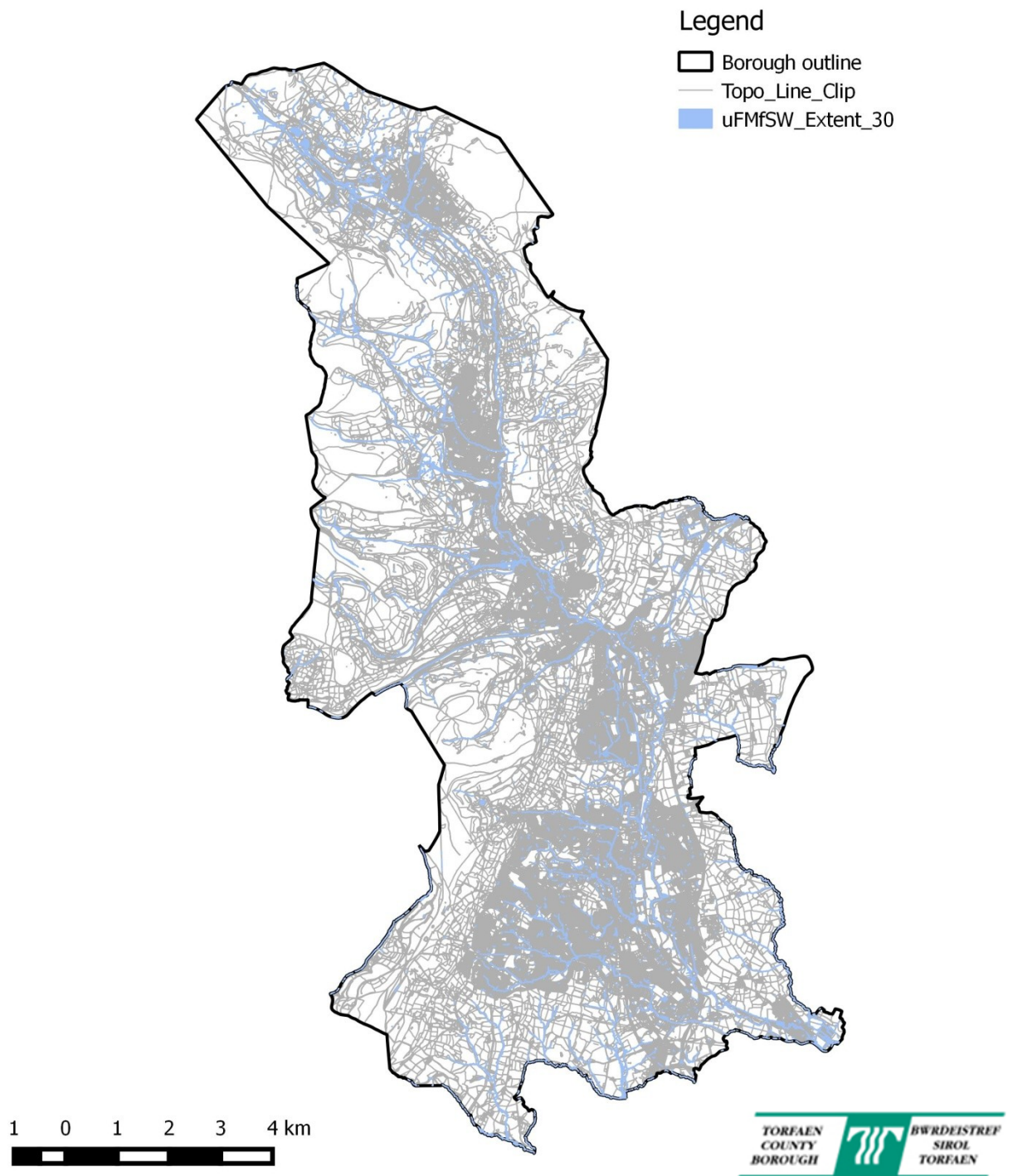


Figure 12: Torfaen County Borough Council High risk Flood Map

Appendix 8: TCBC updated Flood Map for Surface Water Medium Risk Flood Models

TCBC Medium Risk Flood Map for Surface Water Flooding

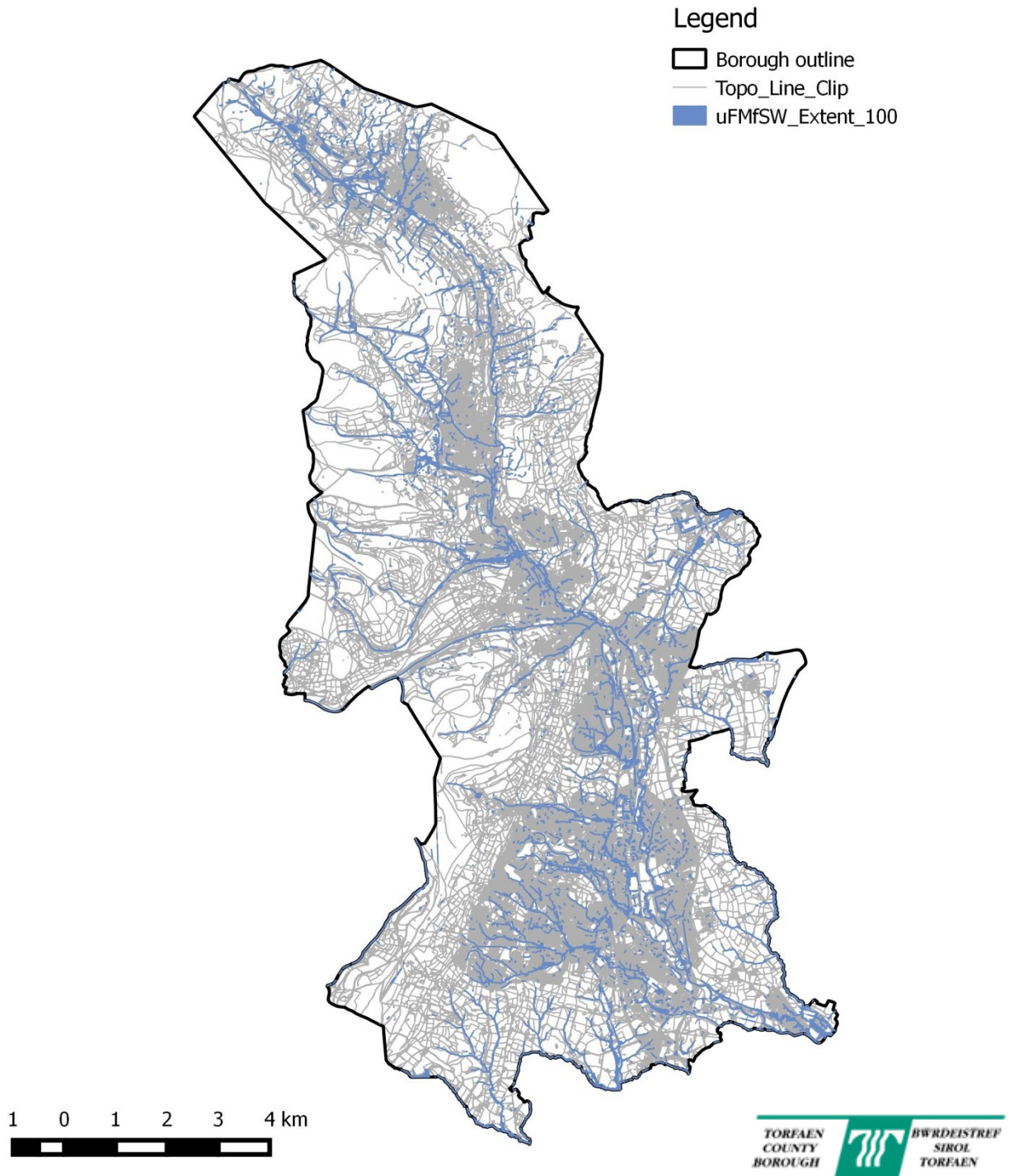


Figure 13: Torfaen County Borough Council Medium Risk Flood Map

Appendix 9: TCBC updated Flood Map for Surface Water Low Risk Flood Models

TCBC Low Risk Flood Map for Surface Water Flooding

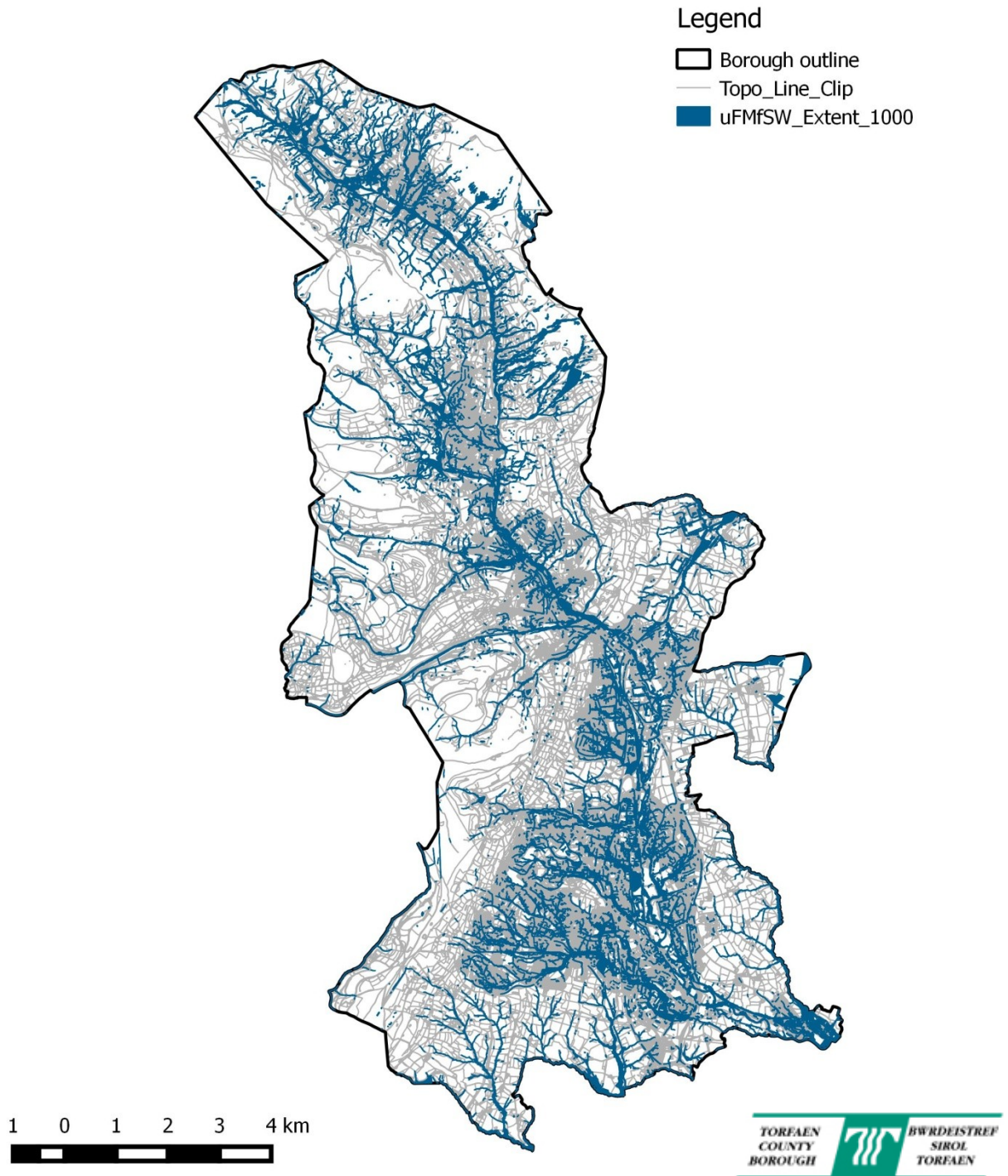


Figure 14: Torfaen County Borough Council Low Risk Flood Map

Appendix 10: TCBC combined Flood Map for Surface Water Low, Medium and High Risk Flood Models

TCBC Combined Flood Risk Maps for High, Medium and Low Risk

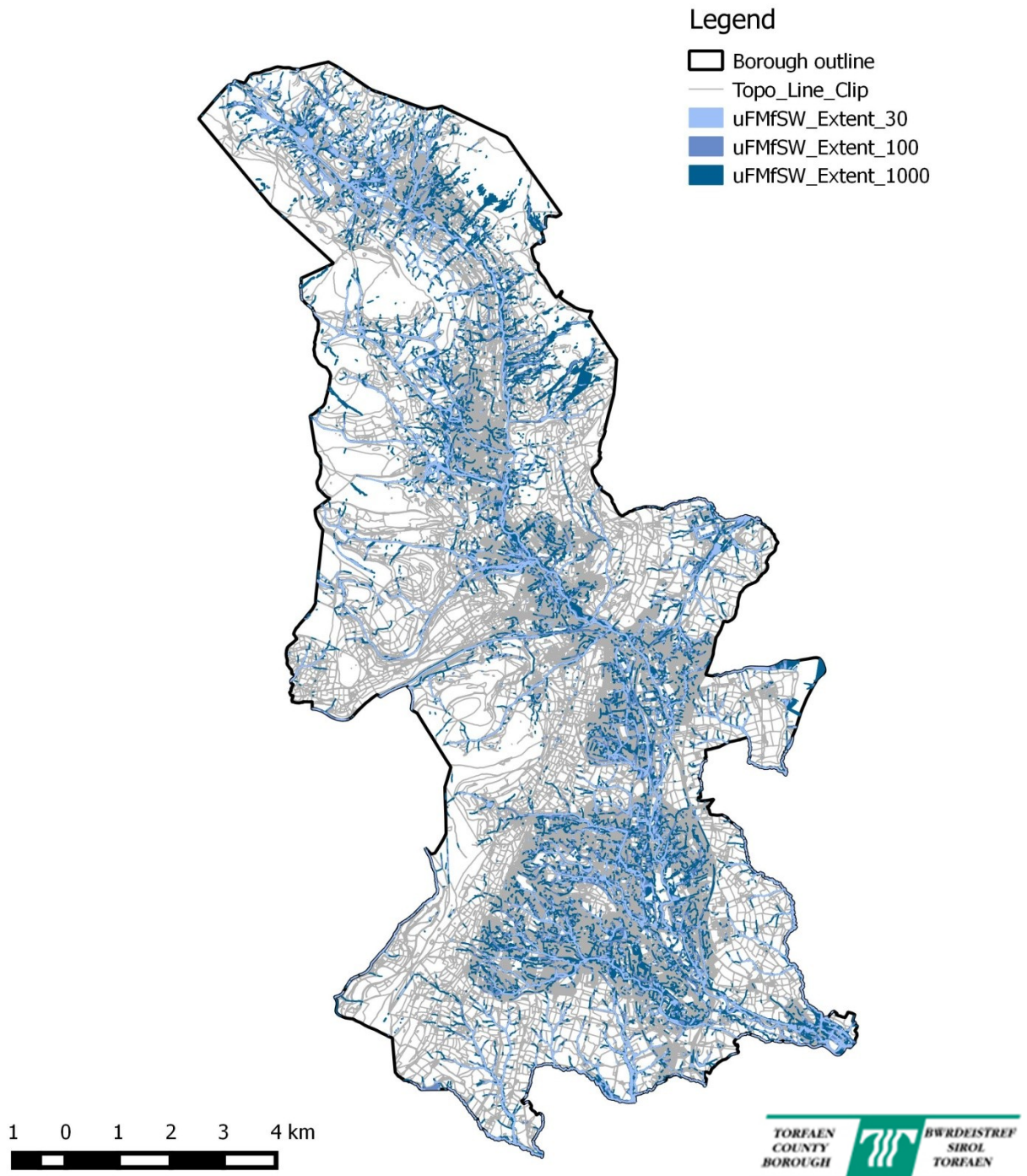


Figure 15: Torfaen County Borough Council Combined map for High, Medium and Low Risk Surface Water Flooding.

Appendix 11. Flood Risk Management Plan (FRMP) Report on Consultation

Area Affected

Torfaen County Borough Council.

Key Messages

Officers have drafted a Flood Risk Management Plan under the requirement of the Flood Risk Regulations 2009. Under the requirement of the Regulations the draft document has undergone public consultation with comments received from consultees. The changes made to the FRMP resulting from these comments have been summarised within this document.

Background

Flood risk management is a principal idea that has been brought to the forefront of international, national and local governments. The UK's focus on flooding was outlined by Sir Michael Pitt with the creation of the Pitt Review in 2008. The report was developed as a comprehensive review of the lessons to be learned from the summer floods of 2007. It is an inclusive report spanning 500 pages in which 92 recommendations were put forward to the UK government.

At an international level the Floods Directive (Directive 2007/60ec of the European Parliament and of the European Council on the assessment of flood risks) was designed to provide a universal management strategy for flood risk. The Directive was transposed into UK law by the Flood Risk Regulations 2009. The Regulations placed several requirements on Local Authorities identified as having a risk to flooding:

- Preliminary flood risk assessment (PFRA) maps and reports by 22 December 2011;
- Flood hazard maps and flood risk maps by 22 December 2013;
- Flood Risk Management Plans (FRMP) by 22 December 2015;
- All assessments, maps and plans to be reviewed and updated every 6 years.

Torfaen County Borough Council is 1 of 8 Local Authorities in Wales that fall into flood risk areas outlined by the PFRA's which have placed a statutory duty onto the Authority to complete the requirements of the Flood Risk Regulations. Further to the development of the Flood Risk Regulations the Flood and Water Management Act 2010 was produced to provide clarity, regarding the powers and responsibilities of Flood Risk Management Authorities.

The first requirements of the plan were to conduct and publish community based flood risk counts for People, Economic Activity, Natural and Historic Environments. This was done by utilising the Updated Flood Map for Surface Water Model which was created by JBA consulting as commissioned by EA and NRW. TCBC has conducted a sense check on the general figures and refined the counts by adding into it a buffer area; to take into consideration current building standards and the height of door frames, which would be the general depth of water needed to cause internal flooding.

The second requirement was to outline the objectives and measures that the Authority proposes to manage flood risk within its areas. TCBC has set out 20 detailed objectives that are aimed primarily at preparing the communities and preventing flooding, ensuring the Authority takes a holistic view on flood risk management that mirrors the work of the Severn River Basin District Flood Risk Management Plan as directed by the Welsh Local Government Association (WLGA).

Issues and Findings

The FRMP is the requirement of the Flood Risk Regulations and has a statutory date for the formal publication of the document of December 2015.

Currently TCBC has published two precursor documents; these are the Preliminary Flood Risk Assessments (requirement of Flood Risk Regulations 2009) and the Local Flood Risk Management Strategy (LFRMS) (Requirement of Flood and water Management Act 2010). These two documents have developed a large scale understanding of the flood risk areas, and developed 17 detailed objectives that satisfy the 4 overarching national strategy objectives. The objectives outline the direction in which TCBC plan to manage flood risk for surface water and ordinary watercourse flooding.

The FRMP has been developed in partnership with several risk management agencies throughout south east wales (Natural Resources Wales (NRW), Welsh Water (DCCW), partner Local Authorities), the main focus of research has been directed through the Welsh Local Government Association that has focused LLFA's in the South East Wales Flood Risk Management Group (SEWFRMG). This has been a platform to develop working groups, to target the best practice approaches required to accurately advance flood risk management plans; whilst utilising the latest technological advances to develop a comprehensive understanding of the risk to communities.

Through the working group the research and development of the FRMP has been coordinated, the output of which has been the construction of a draft template for all Lead Local Flood Authorities' to use; streamlining the way in which Authorities produce their FRMP's. Secondly the working group identified a methodology for creating spatial counts to represent the relevant risk areas (People, Economic Activity and Natural and Historic Environments).

The stage has been reached for TCBC where the FRMP was published for public consultation. The method and results of the consultation are detailed in section 5.

Consultation

Consultation during the preparation phase of this document has been coordinated through the South East Wales Flood Risk Management Group and Working Group which includes:

- Natural Resources Wales
- TCBC - internally
- Welsh Water
- Welsh Local Government Association
- Caerphilly County Borough Council
- Rhondda Cynon Taff County Borough Council
- Merthyr Tydfil County Borough Council
- Neath Port Talbot County Borough Council
- Swansea City Council
- Cardiff City Council
- Newport City Council
- Powys County Borough Council
- Monmouthshire County Borough Council
- Vale of Glamorgan County Borough Council
- Bridgend County Borough Council
- Blaenau Gwent County Borough Council

The consultation has led to the construction of the FRMP template in which all LLFA's have constructed their FRMPs with some small exceptions to the template based on individual Authority basis.

The consultation document was hosted online through the Torfaen 'My Say' webpage; which allows the public to download the document. TCBC broadcast the information publically through the website and subsidiary social media accounts. The social media sites broadcast the initial message whilst sending periodic reminder messages before the close of the consultation period. TCBC further delivered the FRMP to its flood risk partners within the SEWFRMG and contacted the 'Torfaen People Panel' with the consultation document.

The statutory 6 week public consultation phase ended on 23 March 2015 and the results collated within Appendix 1, the summary of the information has been provided within Table 1.

Table 1 Summary of the Consultation responses

Consultation Responses	Response Number (RN)	Tally
Supportive Comments	1, 2, 5, 6, 8, 15, 22, 42	8
Expand on Partner Documents	3, 9, 11, 24, 25, 57	6
Update Documents and Responsibilities	4, 7, 16, 17, 18, 29	6
European Reporting Format	12, 13, 14	3
Formatting and Structural Issues	10, 19, 20, 23, 35, 36, 48, 53	8
Feasibility and Issues	21, 31, 43, 44, 46, 47, 54, 55, 56	9
Queries and General Statements	26, 27, 28, 30, 32, 33, 34, 37, 38, 39, 40, 41, 45, 49, 50, 51, 52	17

Table 1: Outlines the Summarised results from statutory consultees and members of the public.

The feedback incorporated within the Appendices outlines the individual comments made by consultees; the greatest feedback was given by NRW, EA and Welsh Water. The feedback provided by all parties was generally positive reflected by the 'Supportive Comments' (Table 1). The general changes proposed to the FRMP lies within small updates and formatting issues to inline the FRMP more precisely to the European reporting templates whilst providing more clarity in terms of the relationships between existing documents i.e LFRMS and Local Development Plan (LDP).

The Measures outlined within the FRMP have generally been accepted with the exception of Objective 11, 13 and 19, suggestions have been made regarding the validity of the measures and indeed their delivery within the first cycle of the FRMP. In response to the comments it has been proposed to incorporate the Local Development Plan more specifically within the plan to mirror many of the points, however for each measure commented against the Authority will look to continue with the proposed methodology on the following principles.

Objective 11 – Early warning systems. (RN – 21, 31)

A pilot study may be undertaken following the completion of the FRMP. The pilot study would be established to create a logarithmic early warning messaging system using the Met Office weather warning data i.e. Yellow, Amber and Red. Each warning provides an estimated duration and intensity peaks. Mapping and logging will take place to query results based on warnings from the Met Office most likely targeting culverts.

Objective 13 – Planning and 21st Century Schools. (RN – 54, 55)

This objective has been tailored to incorporate the pre existing work of the LDP. The measure however identifies 21st Century Schools as a potential point of reference for best practice for future development. The principle is set behind the changes expected within the school infrastructure within Torfaen e.g. proposals for new schools could provide the Authority with a site to incorporate source point control SuDS; similarly to the Rainscape project within Llanelli undertaken by Welsh Water.

Objective 19 – Reviewing Local Development Plan. (RN – 54, 56)

The updating of the LDP would coincide with the formal review stages of the document. The flood mapping and spatial querying used to establish the counts within the FRMP are at a higher level than the flood maps available to planners through TAN 15. This objective would share the information of the flood maps to the planning departments to supplement the TAN 15 maps to ensure the most up to date flood data is present for decision makers, before the first review takes place.

The general queries and questions posed by residents have been individually responded to along with the rest of the consultees regarding the questions and issues raised by their responses. This includes the Cleaner Communities Overview and Scrutiny Committee and subsequent questions posed by a member of the public who liaised with the Committee.

The results of the FRMP consultation will mean minor editorial changes, updates and clarity provided into sections to address the comments. The Objectives detailed 1 – 20 will undertake no change other than the updating of European reporting classification, and further clarity provided to support the communication of the objectives.

Risks

The purpose of the FRMP was to analyse and report the number of people/property, economic activity and natural and historic environments at risk of flooding to low, medium and high risk events.

The measures and objectives within this document reflect the strategic objectives set out within the Local and National Flood Risk Management Strategies and aim to reduce the risk through preparative and preventative measures.

TCBC will not be able to remove the risk of flooding merely manage it and reduce where possible.

If the FRMP is not progressed there are reputational and legislative risks pertinent to the Authority under the Flood Risk Regulations 2009; which has the potential to result in a financial penalty administered by the Department for Environment, Food and Rural Affairs.

Conclusion/summary

This FRMP is a statutory requirement of TCBC, within which is detailed flood risk counts based around people, economic activity, natural and historic environments. The identified risk has been set against TCBC pre-existing LFRMS and further addressed with detailed objectives that look to prepare the flood risk areas and encourage community resilience. The objectives will provide clarity and detail to the review and processing of information for future iterations of the plans. The FRMP has been subjected to public and partner scrutiny and only minor editorial changes and re-classifications have been identified for change before the formal review by NRW in June.

Table 2: Consultation Results and Actions

Number	Organisation	Comments Made	Actions
1	Dwr Cymru	We Generally support the contents of the Draft FRMP and the Objectives set out. We are Keen to continue to work closely with you as the objectives in the plan are delivered and work in partnership where appropriate	None
2	Dwr Cymru	We are pleased that the FRMP Acknowledges the need to protect key infrastructure	None
3	Dwr Cymru	We are Pleased to see that the objectives on page 30 have clear links to those of WFD, but would like to see this reflected more in the body of the text, particularly page 26	Revise Page 26 and acknowledge WFD throughout FRMP where appropriate
4	Dwr Cymru	Current Volumetric threshold for large raised reservoirs is 25,000km ³ ; this is likely to change in Wales under Welsh Government proposals to reduce the threshold to 10,000m ³ , as set out in schedule 2 of the Flood and Water Management Act 2010.	Acknowledgement of Welsh waters responsibilities to Reservoirs and changes under schedule 2 to be incorporated within the FRMP
5	Dwr Cymru	We are Pleased to note the section on how you maintain your assets, particularly culverts and high network. It would be useful if we could receive information on your assets as part of our data sharing responsibilities in order for us to better understand the interaction between all drainage infrastructure in the county	Data sharing to take place during future SEWFRMG meetings
6	Dwr Cymru	We are keen to continue to develop the good working relationship we have and work with you to keep customers informed of responsibilities for flood risk in the county and also when responding to flood incidents	Continuation of 'Good Working Relationships'
7	Dwr Cymru	Design standards on p12. Since the introduction of the Welsh Ministers' Standards for gravity foul sewers in October 2012, the design and construction standard we work to is Sewers for Adoption 7th Edition. Although we expect new sewers to be designed and constructed to this standard, it does not account for maintenance.	Revise Page 12 to incorporate updated guidance related to sewers design and construction standards
8	NRW	Meets the requirement. Map showing the boundary of the Flood Risk Area included on page 14, figure 5.	None
9	NRW	It would be good to see a brief written conclusion in the plan that provides a description of where and what is most at risk to ensure the requirements are completely met and for user ease. I.e. there are 3 trunk roads at high risk of flooding across the area, etc.	Revise the FRMP and incorporate the idea of a brief conclusion of the hazard and risk map under the table of results
10	NRW	Flood risk maps included in Appendix 4 – 7 with the link to the interactive maps on page 8 (for information/awareness: the link from page 8 may change in the coming months as NRW develop their website. It is recommended that you check the link before publishing your final plan or instead of including a link, reference the page so it could be found in an internet search if it does change).	Revise Page 8 and the Links to EA/NRW interactive maps in General

Number	Organisation	Comments Made	Actions
11	NRW	The objectives within the plan can be found on pages 29/30. If the objectives from the Torfaen Local Flood Risk Management Strategy are the objectives adopted as part of this plan, there needs to be reference made that these objectives have been adopted by the FRMP to ensure compliance with the legislation.	Revise the lineages between the Local Flood risk management strategy
12	NRW	There are a number of fields that are mandatory for European reporting missing from the FRMP that will be needed for European reporting and are recommended to be included within the FRMP (measure type (sub-category M41, M42, etc), progress of implementation, FRMP timetable).	Revise the sub category reporting measure and incorporate into the FRMP
13	NRW	Measures already underway should also be reported to Europe and we encourage consideration of how this can be done.	Incorporate any measures currently being undertaken reflecting the strategies being implemented from the LFRMS
14	NRW	All measures are linked to the objectives through the high level measure type. For reporting to Europe, this will need individual measure coding (e.g. M21, M31. M32, M41, etc).	Measure coding as per European standard to be incorporated within objectives descriptions
15	NRW	This is covered on page 41. The FRMP will be subject to an annual review. There is sufficient detail to meet the legislative requirements.	None
16	NRW	The consultation timetable has been included so far on page 40. A report on the consultation will need to be added to the final FRMP to ensure compliance with the requirements.	Updating the Timetable for consultation and incorporation of consultation report
17	NRW	TCBC have considered the measures within the RBD RBMP (page 26) to ensure the measures in the Torfaen FRMP are complimentary and will take opportunities to deliver against WFD, just text included, no examples. If there are any examples of specifics in the TCBC it would be good to add to the plan.	Incorporation of examples where TCBC objectives aligns with SRBMP
18	NRW	There is no reference to SEA. If TCBC have reviewed the LFRMS SEA in light of the FRMP, this needs to be mentioned. Alternatively, if TCBC have made the decision not to review the SEA on the basis that there has been no change the LFRMS SEA needs to be referenced in the FRMP.	Reference SEA within FRMP from original LFRMS
19	NRW	During the Preliminary Flood Risk Assessment stage in 2011 where flood risk areas were determined, the flood risk area in Torfaen was named Pontypool and Cwmbran. The map on 13 refers to it in this way. It is recommended that reference is given to this in the introduction of the plan so there is the clear link back to the initial Floods Directive stage.	Link the original flood risk area (Cwmbran and Pontypool) with the introduction
20	NRW	Paragraph top of Page 24 should omit reference to Forestry Commission Wales and Countryside Council for Wales.	Amended reference to Forestry commission and Name NRW as relevant authority

Number	Organisation	Comments Made	Actions
21	NRW	It is highly likely that the provision of early warning systems would not be feasible due to the topography and flash flooding experienced within this catchment. The flood event of 22nd May 2014 is a good example of this which gave little if any lead in time even if gauges were installed on the watercourses in question.	A pilot programme has been designed by the flood risk officer to determine validation of larger scale application.
22	NRW	Good to see that the Torfaen Local Flood Management Strategy had the following aims, mentioned on page 30, which we fully support: 10. Protect and Improve SSSIs and SINCs; 11. Contribute to delivery of Torfaen CBC Biodiversity Action Plan; 12. Create natural channels and waterbodies with minimal modification:	None
23	EA	Final paragraph. Would be useful clarifying category TCBC falls into, i.e. is it one of the 8 LA's in Wales which is deemed to have significant flood risk?	Earlier reference can be made to TCBC Flood risk area
24	EA	Thought there was also flooding from watercourses (i.e. Dowlais Brook) during May 2014. Worth clarifying and also if this was over main river or ordinary watercourse reach.	Clarification of Paragraph 3 to include surface water, ordinary watercourses and foul sewers
25	EA	For completeness could also specify what the design standards are for the foul and fresh water systems (this would put flood risk from these sources into context).	Revise Page 12 to incorporate updated guidance related to sewers design and construction standards
26	EA	Depth of flooding to property. Need to check whether 'stubby buildings' (or equivalent) is already included within the Surface Water Maps therefore removing the need to filter to depths greater than 200mm. If this is the case could be underestimating the number of properties at risk.	Expand explanation surrounding the methodology where appropriate
27	EA	Furthermore, why is a 200mm filter being used if 150mm is quoted as being a typical value within the area?	Expand explanation surrounding the methodology where appropriate
28	EA	Is cost benefit analysis the correct terminology as other factors should also be considered?	Expand section to explain how work has been prioritised
29	EA	Refers individually to Forestry Commission and Countryside Council for Wales as partners.	Amended reference to Forestry commission and Name NRW as relevant authority
30	EA	Again, is filtering of flood depths above 200mm correct?	Expand explanation surrounding the methodology.

Number	Organisation	Comments Made	Actions
31	EA	Action 11. Is broader than TCBC and is also a National Action.	A pilot programme has been designed by the flood risk officer to determine validation of larger scale application.
32	EA	Action 20. Suggests engineering works will be looked at where "all possible avenues of flood risk have been explored." Shouldn't engineering works be considered as part of an integrated solution and not necessarily a solution of last resorts?	Rewording the measures to expand on the integrated use of engineering works
33	EA	There is no 'Action' for flood event data collection.	FWMA 2010 Requirement; not envisaged as a new measure
34	EA	Mentions that flood risk assets within watercourses have been designed to Q100+20% for climate change allowance. Is the case everywhere?	Use terminology used within Section 19 to clarify
35	EA	Numbering after Page 40 is wrong.	Reformatting
36	Member of the Public	The link on page 9 of the document is broken http://naturalresourceswales.gov.uk/alerts/whats-my-flood-risk/?lang=en#.U9DdgXIOU5h As are other links on the site naturalresourceswales.gov.uk	Revise Page 8 and the Links to EA/NRW interactive maps in General
37	Member of the Public	Do the figures for Low, Medium and High Risk include the residents flooded out on 22 May 2015?	Responded to separately
38	Member of the Public	I purchased a house in St Joseph's Meadow where in one small area the chance of getting flooded was put at 1 in a 1000 years. It now appears that this location has flooded twice in 35 years. So where does Cwmbran Brook figure in any list of potential flooding risks?	Responded to separately
39	Member of the Public	Since the May 22nd 2015 flooding when a blocked water course at Cwmbran Brook caused devastating flooding to at least 10 houses in St Joseph's Meadow, Llantarnam I have kept an eye on Cwmbran Brook by checking out the area concerned at least once a month and especially after heavy rainfall. Recently I noticed that someone had dumped a supermarket trolley in the same place so I reported the problem by using Torfaen App. As I suspected within a few days I got a message back to simply tell me that as the water course was not owned by Torfaen CBC that there was nothing that the council could do. As I say I suspected that would be the answer so I had additionally sent your Andrew Villars a copy of the details and he contacted the owners of the Court Road Industrial Estate and before I'd received the email back from Torfaen App telling me that they could not do anything the blockage had already been removed. This shows that there are problems with reporting such cases unless you know how to contact the correct people. I was lucky that I was taking local councillor David Daniels over to Cwmbran Brook to show him where the flooding had	Responded to separately

Number	Organisation	Comments Made	Actions
		happened and was lucky to meet Andrew Villars and a gentleman from Network Rail. Although I was aware of Andrew Villars I don't think we had met previously so it was good to have a contact.	
40	Member of the Public	One area that is quoted in the consultation is on page 15 and states 'TCBC have carried out an assessment of the risk of flooding based on a 200mm depth of water at the three stages of risk used by NRW.; Now I tried to walk from my estate towards the Railway line and onwards to Cwmbran Brook but had to walk at a very slow pace because although I was wearing wellington boots the water was just an inch from the top of my boots. That means that it was over 200mm and getting near 300mm. So Cwmbran Brook should most definitely be on any list of Risks of flooding.	Responded to separately
41	Member of the Public	Another interesting statement from the consultation document is 'Any property recognised as having 50% or more of its perimeter wetted by the overlying flood models is deemed as being internally flooded' If this were to be included for residents of St Joseph's Meadow then the figure I reported earlier for people who actually were inundated with flood water would probably be doubled or tripled as many residents were lucky that the water ran through their gardens and on to other properties in the estate. Pictures taken by myself and the South Wales Argus show several streets flooded with water which was impossible to get through unless wearing boots. I was lucky as my house is about ½ metre higher than some of my neighbours and the water only really touched one small area at the side of my house where the water got onto next door's parking space which is next to my property. Indeed, my next door neighbour was even luckier as the flood water was over her front step and less than an inch from entering her front door when the water started to recede. Other neighbours were not so lucky and had to leave their houses until they had dried out. Some were out for 6-8 weeks.	Responded to separately
42	Member of the Public	I'm happy to get involved with a constituted group within Llantarnam. I'm already the chair of a local resident's conservation group working in Oakfield Flower Gardens in partnership with Torfaen Parks. Please let me know how I can get involved. I look forward to hearing from the council as you conduct further work on reducing flooding within Torfaen and especially Llantarnam and I hope that you keep consultees informed throughout the ongoing process.	Responded to separately
43	Member of the Public	Both Andrew Villars and Owen Griffiths made a number of statements that TCBC consider the Cwmbran Flood event of 22nd May 2014 as "nearer to 1 in a 1000 year event." I strongly take contention with their statements; the TCBC endorsed and published Section 19 Flood Investigation Report – Cwmbran, clearly states within its executive summary. "the flooding that impacted Torfaen County Borough Council on 22nd May 2014, in the Cwmbran area was as a result of a localised extreme weather event that has been assessed as greater than a 1 in 100 year event"	Responded to separately

Number	Organisation	Comments Made	Actions
44	Member of the Public	How can TCBC Officers assess the Cwmbran flood event of 22nd May 2014 as being 'nearer to 1 in a 1000 year event, when in Owen Griffiths words that "records go back 100 years only" – so nearer to 1 in a 1000 years is totally subjective and unsubstantiated and therefore TCBC should take action to retract this statement publically as a matter of record.'	Responded to separately
45	Member of the Public	Owen Griffiths stated that areas of Torfaen have been identified and classified as either High, Medium or Low risk to flooding within the TCBC Flood Risk Management Plan (FRMP) and that communities/residents in those areas will be consulted on a priority basis aligned to the High, Medium , Low classifications. The TCBC Flood Risk Management Plan does not easily lend itself to the reader extracting those wards or areas/streets/roads within wards that assigned as High, Medium or Low flood risk. I therefore strongly suggest that TCBC publish a full Torfaen Ward list, simply stating which wards, areas/streets/roads are classified as High, Medium or Low flood risk. This will be immensely beneficial to the residents and supportive to the personal safeguard action that members of the public consider to take aligned to the flood risk.	Responded to separately
46	Member of the Public	TCBC Section 19 Cwmbran Flood Event Report, Recommendation no 4 – " For new development, the encouragement of Sustainable Urban drainage Systems (SUDS) designs, as well as green environments within communities to develop natural drainage". Officers clearly stated that SUDS is not currently statutory and as such TCBC has no authority to ensure that developers fund and deliver designs/build projects aligned to SUDS. Recommendation 4 is not a realistic goal when it relies on the good will of developer/builder to fund a non-statutory voluntary obligation. Therefore Recommendation no 4 is more an aspiration and is likely to be very in-effectual and not a realistic goal for flood mitigation.	Responded to separately
47	Member of the Public	A fair amount of discussion between Officers and the COSC members presided over the lack of any published fiscal costings/cost benefit analysis aligned to both the Flood Risk Management Plan Objectives and the three schemes of work identified in the risk assessment analysis. Further to this it was also stated by Andrew Villars 'that the FRMP has a life of six years and that it will not be formally endorsed until end of year 2015, Andrew Villars estimated that fiscal costings would then be assigned to the FRMP Objectives during 2016'. I therefore presume that if adequate funding is authorised during 2016 then actual delivery aligned to the objectives would likely not commence until late 2016/2017. Also no mention/comment was made in the COSC of 18th March 2015 with regards as to where the funding is to be obtained to facilitate the three schemes of work identified in the risk assessment analysis.	Responded to separately
48	Member of the Public	I wanted to view the flood risk for Torfaen maps but the online link would not accept my password. Are these available to view in the council offices, please?	Responded to separately
49	Member of the Public	Hi could I suggest sandbags delivered to houses on the right hand side of Penygarn Road? (as you drive up)	Responded to separately

Number	Organisation	Comments Made	Actions
50	Member of the Public	I have read the document and although this is not my field of expertise I was surprised that the old mines are causing a problem Question – are the coal board responsible for filling the said mines in.	Responded to separately
51	Member of the Public	Another question what impact will this have on the local council tax	Responded to separately
52	Member of the Public	Perhaps the recycling of Torfaen needs to be investigated as I have seen the way the little black boxes are emptied and the litter left on the roads blowing everywhere/suggestion use the green bin and put all recycling together to be sorted out within the recycling centre. This would cut down the rubbish around the drains.	Responded to separately
53	Planning Department	The link to Flood Risk Management Strategy (Page 6) links to SEPA (Scotland)	Web link Revised
54	Planning Department	A lot of the details in the FRMS relating to planning have not been included in the FRMP. I think it would be useful to reference these in the FRMP particularly in relation to measures 13 and 19 which relate to planning.	Greater linkages have been incorporated to match up the work of the LDP
55	Planning Department	In relation to measure 13 (page 37) There are policies which cover flooding mitigation and adaption (particularly Policy S3 which should be referenced) in the LDP and this applies to all developments not just 21 st century schools. We expect all developments to consider this policy and the use of SUDS so I don't see the 21 st century schools being exceptional or a pilot project in this regard.	Reference to LDP expanded and terminology behind 21st century schools expanded
56	Planning Department	In relation to measure 19 (page 39) the Torfaen LDP was adopted in December 2013. Future developments are planned through the LDP considering sustainable development (including flooding). The LDP included all the latest flooding information and policies and allocations were made with this knowledge and with the principles of sustainable development (LDP was informed by Sustainability appraisal and Strategic Environmental Assessment). A suitable plan has therefore been developed incorporating flood risk information. It is not a case of further hydrological modelling 'can be' incorporated into the LDP but that it is and will continue to be fed into any reviews of the plan. In addition policies in the plan require new developments to be based on up to date information and new developments to cover flooding mitigation and adaption (see measure 13 above) and so capacity and resilience measures are already required to be incorporated into the base design of the projects, creating a proactive resilience programme.	Review of LDP rather than Updating the document before its shelf life.
57	Planning Department	Section 12 should include links referenced in the attached Key Documents (see summary attached)	Reference to LDP Documents incorporated within section 12

Table 2: details the consultation responses and the actions taken to amend the FRMP.