



Asiantaeth yr  
Amgylchedd Cymru  
Environment  
Agency Wales

# Ogmore to Tawe (including Thaw and Cadoxton) Catchment Flood Management Plan

Summary Report January 2010

# managing flood risk



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Front cover image: Glyn-neath flood alleviation scheme

# Introduction

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**I am pleased to introduce our summary of the Ogmore to Tawe (including Thaw and Cadoxton) Catchment Flood Management Plan (CFMP). This CFMP gives an overview of the flood risk in the Ogmore to Tawe (including Thaw and Cadoxton) catchments and sets out our preferred plan for sustainable flood risk management over the next 50 to 100 years.**

The Ogmore to Tawe (including Thaw and Cadoxton) CFMP is one of 77 CFMPs for England and Wales. Through the CFMPs, we have assessed inland flood risk across all of England and Wales for the first time. The CFMP considers all types of inland flooding, from rivers, groundwater, surface water and tidal flooding, but not flooding directly from the sea (coastal flooding), which is covered by Shoreline Management Plans (SMPs). Our coverage of surface and groundwater is however limited due to a lack of available information.

The role of CFMPs is to establish flood risk management policies which will deliver sustainable flood risk management for the long term. This is essential if we are to make the right investment decisions for the future and to help prepare ourselves effectively for the impact of climate change. We will use CFMPs to help us target our limited resources where the risks are greatest.

This CFMP identifies flood risk management policies to assist all key decision makers in the catchment. It was produced through a wide consultation and appraisal process. However it is only the first step towards an integrated approach to Flood Risk Management. As we all work together to achieve our objectives, we must monitor and listen to each others progress, discuss what has been achieved and consider where we may need to review parts of the CFMP.

This CFMP covers eight main river catchments. River flooding is the main problem, with surface water flooding an issue in many areas, and tidally

influenced flooding a significant threat in the lower reaches of some rivers, for example the rivers Neath and Tawe. Following flooding in 1960, 1979 and 1998 a number of engineering schemes were constructed to reduce flood risk, for example at Bridgend, Glyn-neath and Cowbridge.

We have worked with others to produce this CFMP, including: local authorities, water companies, environmental groups, land owners and land managers. Whilst there is broad support for this plan, local authorities have raised concerns about limited resources, prioritisation and the potential impact on current development and regeneration proposals. Also, land managers have raised concerns about how flood risk is managed in rural areas. We cannot reduce flood risk on our own. We will therefore work closely with all our partners to improve the co-ordination of flood risk activities and agree the most effective way to manage flood risk in the future.

This is a summary of the main CFMP document. If you need to see the full document, an electronic version may be obtained by emailing [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk).

A handwritten signature in blue ink that reads "Chris Mills".

**Chris Mills**  
**Director Wales**

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# The purpose of a CFMP in managing flood risk

CFMPs help us to understand the scale and extent of flooding now and in the future, and set policies for managing flood risk within the catchments. CFMPs should be used to inform planning and decision making by key partners such as:

- the Environment Agency, who will use the plan to guide decisions on investment in further plans, projects and actions;
- local authorities, who can use the plan to inform spatial planning activities and emergency planning;

- internal drainage boards, water companies and other utility companies to help plan their activities in the wider context of the catchment;
- transportation planners; who can use the plan to inform their activities;
- land owners, farmers and land managers who manage and operate land for agriculture, conservation and amenity purposes;
- the public and businesses to enhance their understanding of flood risk and how it will be managed.

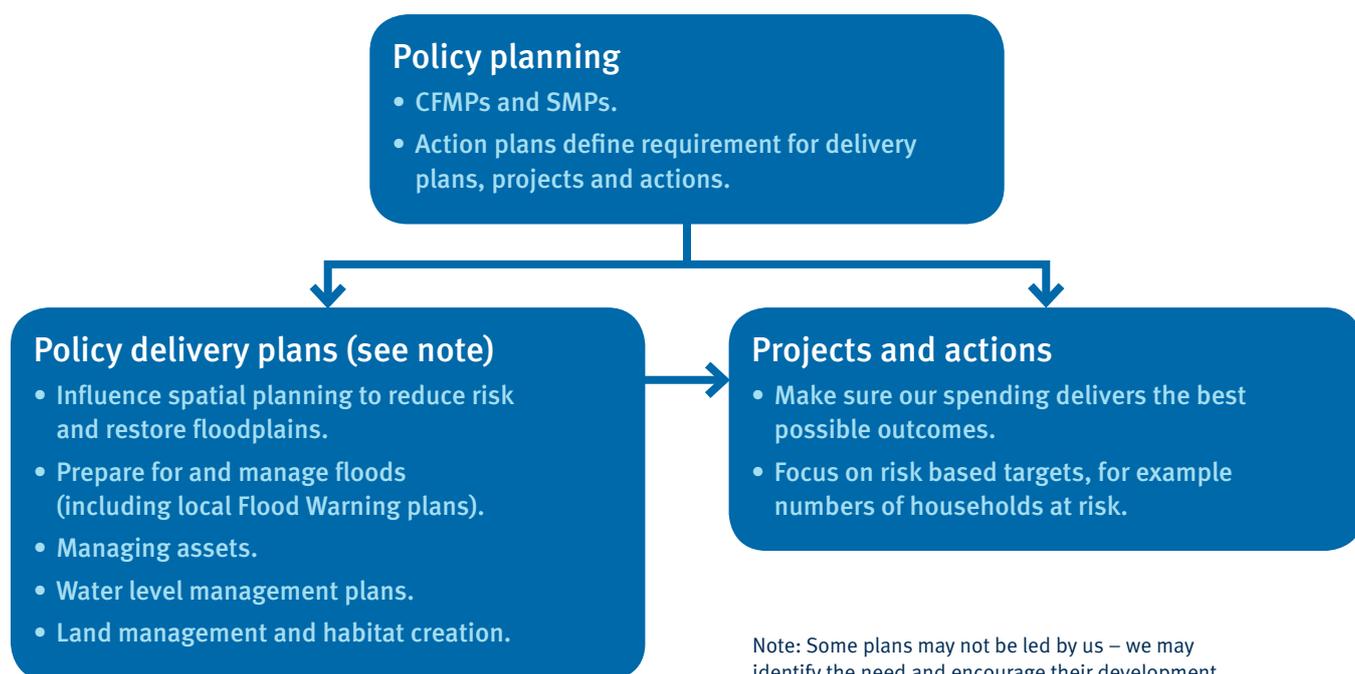
CFMPs aim to promote more sustainable approaches to managing flood risk.

The policies identified in the CFMP will be delivered through a combination of different approaches.

Together with our partners, we will implement these approaches through a range of delivery plans, projects and actions.

The relationship between the CFMP, delivery plans, strategies, projects and actions is shown in Figure 1.

Figure 1. The relationship between CFMPs, delivery plans, projects and actions



# Catchment overview

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The Ogmore to Tawe (including Thaw and Cadoxton) CFMP is situated in South Wales. It covers approximately 1,300 km<sup>2</sup> and around 196,000 properties, in an area extending from Swansea docks to Penarth point and the Brecon Beacons to the north.

There are 429 kilometres of main river including the rivers Tawe, Neath, Afan, Kenfig, Ogmore, Ewenny, Col-huw, Thaw and Cadoxton. The catchments generally drain in a southerly direction, discharging into the Severn Estuary.

Approximately 70 per cent of the CFMP area is used for agriculture, whilst around 11 per cent is urban. The main towns include Swansea, Neath, Port Talbot, Bridgend, Llantwit Major, Dinas Powys, Cowbridge and Barry. Most are situated on river and tidal floodplains at the lower reaches of the rivers. There are also a number of smaller towns established since the 18th and 19th centuries around the historic mining and metal working industries that developed in South Wales.

Tourism and recreation make a significant contribution to the local economy, due to the natural features of the area. There are also a number of designated nature conservation, landscape and heritage sites.

Map 1 shows the location, extent and main features of the CFMP area.

“Primary trunk roads run up the valleys alongside many of the main rivers, providing key transport links between the rural communities and the large towns.”



↑ Swansea Marina at the downstream extent of the River Tawe

Map 1. Location and extent of the Ogmore to Tawe (including Thaw and Cadoxton) CFMP area



# Current and future flood risk

## Overview of the current flood risk

Flood risk is the combination of two components; the likelihood (or probability) of a particular flood event occurring and the consequence (or impact) that the flood event would have if it occurred.

The probability of a flood event is the likelihood of a flood of that size occurring within a one year period. It is described as an annual exceedance probability (AEP) and is expressed as a percentage. For example, a 1% AEP flood event has a one per cent chance or 0.01 probability of occurring in any one year.

Unless otherwise stated, numbers in this report are based on the 1% AEP river flood event. More extreme events can occur at any time. The likelihood of an extreme event occurring is small, although the consequences are potentially very serious, particularly where defences could be overtopped.

In the past, many catchments experienced flooding. Notable flood events occurred in December 1960 and 1979 and October 1998 and 2000. Bridgend was particularly affected in 1960, following which flood defences were constructed. The Vale of Glamorgan was widely affected in October 2000 when heavy rain fell on already saturated ground. The unprecedented rainfall in June and July 2007 also caused surface water flooding in parts of the Vale of Glamorgan.

The sources of flood risk are:

- **river flooding** accounts for the majority of all recorded flood events, with all of the CFMP catchments affected to a greater or lesser degree;
- **tidally influenced river flooding** can significantly increase flood risk on a number of rivers in their lower reaches affecting, for example, Neath, parts of Swansea and also some sensitive environmentally designated sites;
- **surface water flooding** is difficult to quantify as many incidents are masked by the impact of river flooding. However, it is believed to occur fairly frequently in many of the Ogmere to Tawe catchments, particularly within the Vale of Glamorgan. Surface water flooding poses a low risk of loss to life but can be a significant contributory factor to flooding;
- **sewer flooding** is caused by overloading of sewerage systems and is particularly a risk in Barry and Briton Ferry;
- **groundwater flooding** is not well documented in the CFMP area, except in the Vale of Glamorgan where localised flooding has occurred in Ewenny Village, St Brides Major, Rhoose and Barry in the past.

## What is at risk?

CFMPs assess how flood risk is likely to change in the next 100 years. They do this at a strategic level and not at a detailed, local level.

We used computer models to simulate river flows and produce indicative numbers of properties, infrastructure and environmental features at risk. These models take in to account the benefit of current flood defences. Where applicable, tidal influences on river flows have also been modelled. Where models are not available we have based our flood risk estimates on our Flood Maps, which do not include flood defences. Numbers produced are sufficient for the purposes of the CFMP only.

There are currently approximately 9,900 properties across the CFMP area at risk from flooding during a 1% AEP flood event.

Flooding has an impact on infrastructure, including several major transport routes and emergency service centres as well as many local services such as schools and health centres. Agricultural land is also affected by flooding.

There are six special areas for conservation, three national nature reserves, 37 sites of special scientific interest and 19 scheduled monuments located within the 1% AEP floodplain. There are also around 100 hectares of high grade agricultural land (Grade 2 or above) at risk from the 1% AEP flood event.

Depending on the nature of the environmental feature, flooding may have a negative or positive impact. For example, flooding may create or enhance a habitat in some areas e.g. a new flood storage wetland, or have the potential to cause physical damage to the historic environment e.g. listed buildings and scheduled monuments.

## Where is the risk?

To assess flood risk at a strategic level we have identified a number of key locations where we have carried out a more detailed analysis of flood risk. These are presented in Table 1 and Map 2. This is not an exhaustive list of locations. Flood risk in all other areas has been considered in the development of the CFMP.

The largest flood risk is in Port Talbot in the Afan catchment, along with Swansea Central in the Tawe catchment. There are also a number of communities at risk in the Neath, Ogmore and Cadoxton catchments.

We recognise that there is potential risk from surface water and groundwater flooding in other areas of the CFMP, but there is limited information currently available.

Table 2 lists some of the infrastructure currently at risk in the CFMP area.

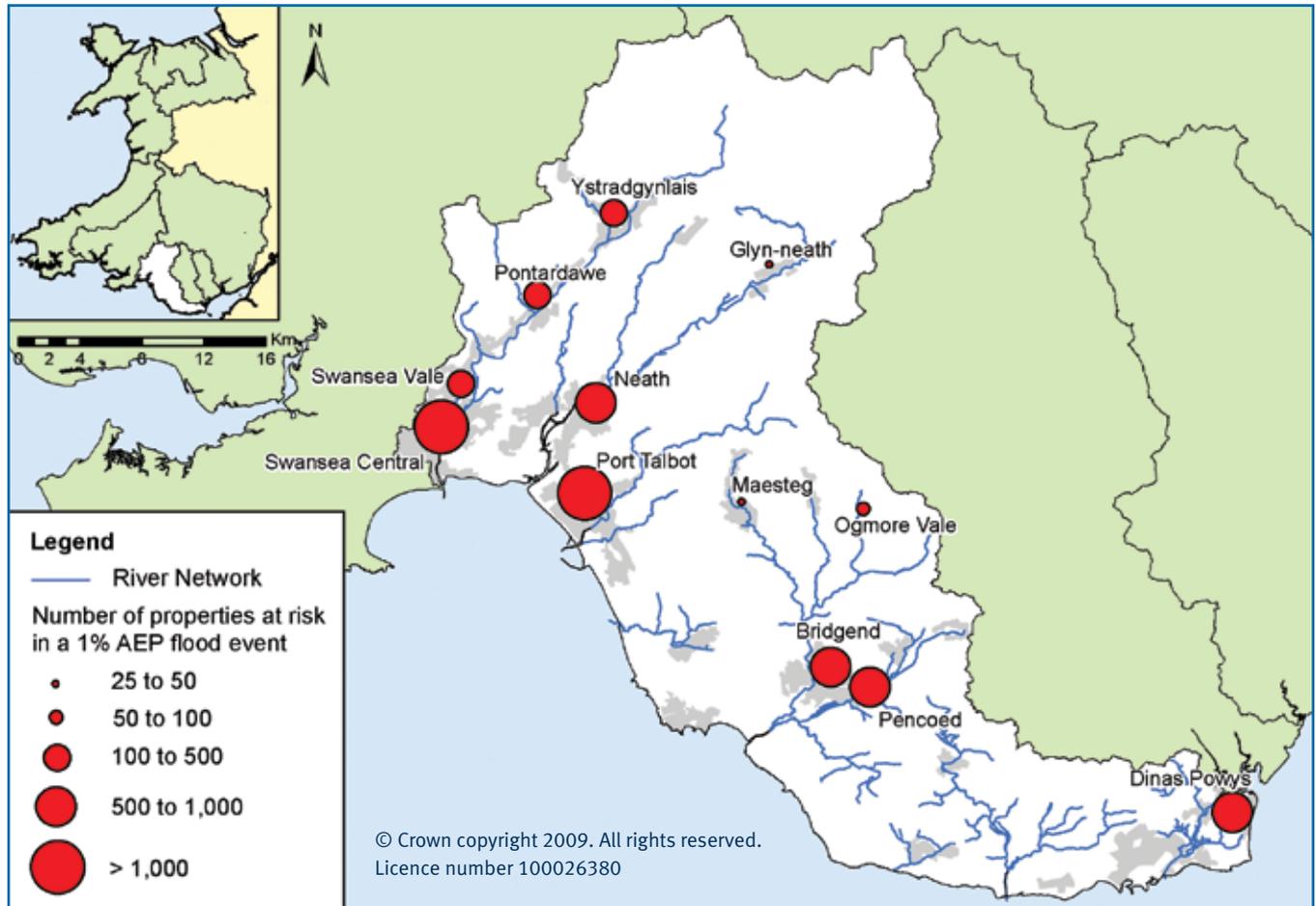
**Table 1. Key locations currently at risk in a 1% AEP flood event**

Number of properties at risk	Locations
> 1,000	Port Talbot, Swansea Central (tidal)
500 to 1,000	Pencoed, Bridgend, Dinas Powys, Neath
100 to 500	Swansea Vale, Ystalyfera/ Ystradgynlais, Pontardawe
50 to 100	Ogmore Vale
25 to 50	Maesteg, Glyn-neath

**Table 2. Infrastructure currently at risk in a 1% AEP flood event**

51 electricity/gas sub-stations
4 emergency services
1 sewage treatment works
7 surgeries/health centres
10 schools/colleges
main railway line and local rail services
at least 20 'A' Roads
9 landfill sites
17 historic landfill sites

Map 2. Number of properties currently at risk in a 1% AEP flood event



## How we currently manage the risk in the catchment

We can split the work we do to manage flood risk into two types:

- work which helps us to reduce the likelihood of a flood occurring, and
- work which helps us to deal with the consequences of flooding.

In the past we have focused on reducing the likelihood of flooding by building flood defences. Other measures have been used but not as a primary response to flood risk. It is now widely recognised that managing flood risk to provide safe and sustainable communities will require more emphasis on the

management of the consequences of flooding. This will include:

- promoting awareness of flooding so that organisations, communities and individuals are aware of the risk and are better prepared to take action in time of flood;
- providing flood warning services to those at risk, to enable them to take action;
- improved incident and emergency response by the emergency services and by those at risk from flooding;

- encouraging land use planning to take account of flood risk in determining the location, layout and design of new development;
- flood proofing properties and infrastructure to improve the resilience (reducing the damage from flood water) and the resistance (keeping water out) to avoid harm.

In this CFMP area, current flood risk management is mainly reliant on flood warning, development control and local defences at communities such as Bridgend.

Some of the ways in which we currently manage risk in the CFMP area include:

- **flood risk mapping and data management** (understanding the risks now and in the future);

Flood risk mapping is fundamental to understanding flood risk and managing it effectively.

We have recently carried out a number of flood risk mapping studies in key risk areas, for example, Ystradgynlais. This is part of our work to continually update our hydraulic models with the latest data so we can understand flood risk better and improve the quality of our flood maps.

- **strategic planning and development control** (managing future risk and adapting to climate change);

CFMPs and SMPs are an important part of strategic planning, allowing us to look at a range of strategic measures. These include looking for opportunities to reduce run-off through managing rural land better and restoring floodplains through redevelopment of properties and infrastructure.

We work with local authorities to make sure their local development plans address flood risk. We are currently working with City and County of Swansea on measures to reduce flood risk in the Swansea Vale Development site. This may include raising flood defence bunds (walls) and introducing new flood warning and flood management procedures.

- **asset management and maintenance** (managing current risk);

We build, operate and maintain flood defences, for example in Port Talbot, Bridgend, Cowbridge and Glyn-Neath.

Maintenance differs from catchment to catchment. The work we carry out includes removing blockages and debris from watercourses, inspecting assets, managing flood storage areas and inspecting and cleaning grids and trash screens.

- **flood forecasting and warning** (flood event management);

We have set up a Flood Forecasting Centre with the Met Office. This allows us to continually improve our flood forecasting capability.

We produce flood forecasting models to forecast river levels and flows. We currently have a

flood forecasting model on the River Afan and are in the process of developing and testing models on the rivers Tawe, Ogmore and Ewenny. We use this information to inform our flood warning procedures.

Approximately 20,000 properties across the CFMP area are covered by our flood warning service. We aim to increase coverage (using our Floodline Warnings Direct) to over 75 per cent of the at risk population by 2010.

- **flood incident management** (responding to flooding events);

Emergency response to flood events is mainly co-ordinated through Civil Contingency arrangements and Local Resilience Forums.

Our role is to advise our partners through these arrangements. We support and participate in emergency response exercises.



↑ Upstream view of the River Tawe, Swansea

## The impact of climate change and future flood risk

Climate change, changes in the way land is used (for example, urban development) and the way rural land is managed will all influence flood risk in the future. Sensitivity testing identified that the main driver of change to future flood risk is climate change, but changes in the way rural land is used, particularly a decrease in forestry cover, may have some effect.

The following scenario was used to analyse future flood risk:

- 20 per cent increase in peak river flows;
- a total sea level rise of one metre by the year 2100;
- 10 per cent decrease in forestry coverage which will increase flows in the upper reaches of affected catchments.

Assuming the current level of flood risk management continues, we estimate that by 2100 the number of properties at risk from the 1%

AEP flood event will increase from approximately 9,900 to around 16,300, unless actions are taken to manage the increasing risks.

Figure 2 shows the difference between current and future flood risks from a 1% AEP flood event, assuming current management activities. The most significant increases in future risk occur in Swansea, Resolven and Glyn-neath.

Figure 2. Current and future (2100) numbers of properties at risk from a 1% AEP flood event

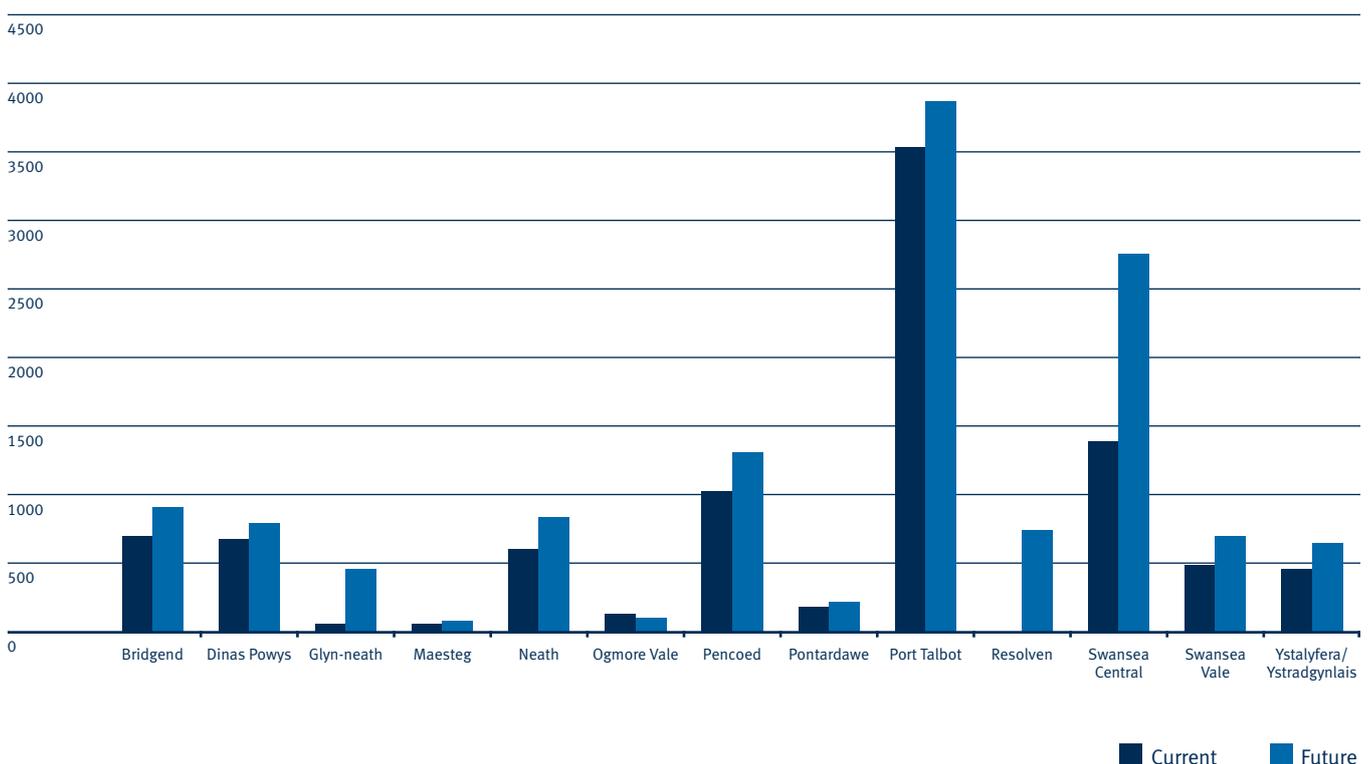


Table 3 provides a summary of key locations at risk in the future. Although river flooding remains the main source of flooding in the future, the rise in sea level will have a major effect on tidal flooding, especially around Swansea, the Aberafan area of Port Talbot and Neath.

Table 4 shows the infrastructure at risk in the future. The most notable increase is in the number of surgeries/health centres at risk (increased from 7 to 23), and there are more schools/colleges and electricity/gas sub-stations affected. Sewage treatment works and landfill sites will also be increasingly affected.

No significant increase in flood risk to environmental sites has been identified.

Across the CFMP area there is up to 320 hectares of high grade agricultural land (Grade 2 or above) at risk from a future 1% AEP flood event.

We expect surface water and groundwater flooding will increase. Organisations will need to work together to investigate and manage this flood risk in the future.



↑ Glyn-neath Flood Alleviation Scheme

**Table 3. Key locations at risk in a future (2100) 1% AEP flood event**

Number of properties at risk	Locations
> 1,000	Port Talbot, Swansea Central (tidal), Pencoed
500 to 1,000	Bridgend, Neath, Dinas Powys, Resolven, Swansea Vale, Ystalyfera/Ystradgynlais
100 to 500	Glyn-neath, Pontardawe
50 to 100	Ogmore Vale
25 to 50	Maesteg

**Table 4. Infrastructure at risk in a future (2100) 1% AEP flood event**

62 electricity/gas sub-stations
8 emergency services including police and fire station in Neath and Central Swansea fire station
9 sewage treatment works
23 surgeries/health centres and Neath Port Talbot Hospital
19 schools/colleges
main railway line and local rail services
at least 20 'A' Roads
19 landfill sites
21 historic landfill sites

# Future direction for flood risk management

## Approaches in each sub-area

We have divided the Ogmore to Tawe (including Thaw and Cadoxton) CFMP into 12 distinct sub-areas which have similar physical characteristics, sources of flooding and level of risk. We have identified the most appropriate approach to managing flood risk for each of the sub-areas and allocated one of six generic flood risk management policies. These are shown in Map 3 and Table 5.

To select the most appropriate policy, the plan has considered how social, economic and environmental objectives are affected by flood risk management activities under each policy option. Policy analysis and selection is based on flood risk across the entire CFMP area and not just the key locations referred to earlier.

Map 3. Sub-areas in the Ogmore to Tawe (including Thaw and Cadoxton) CFMP

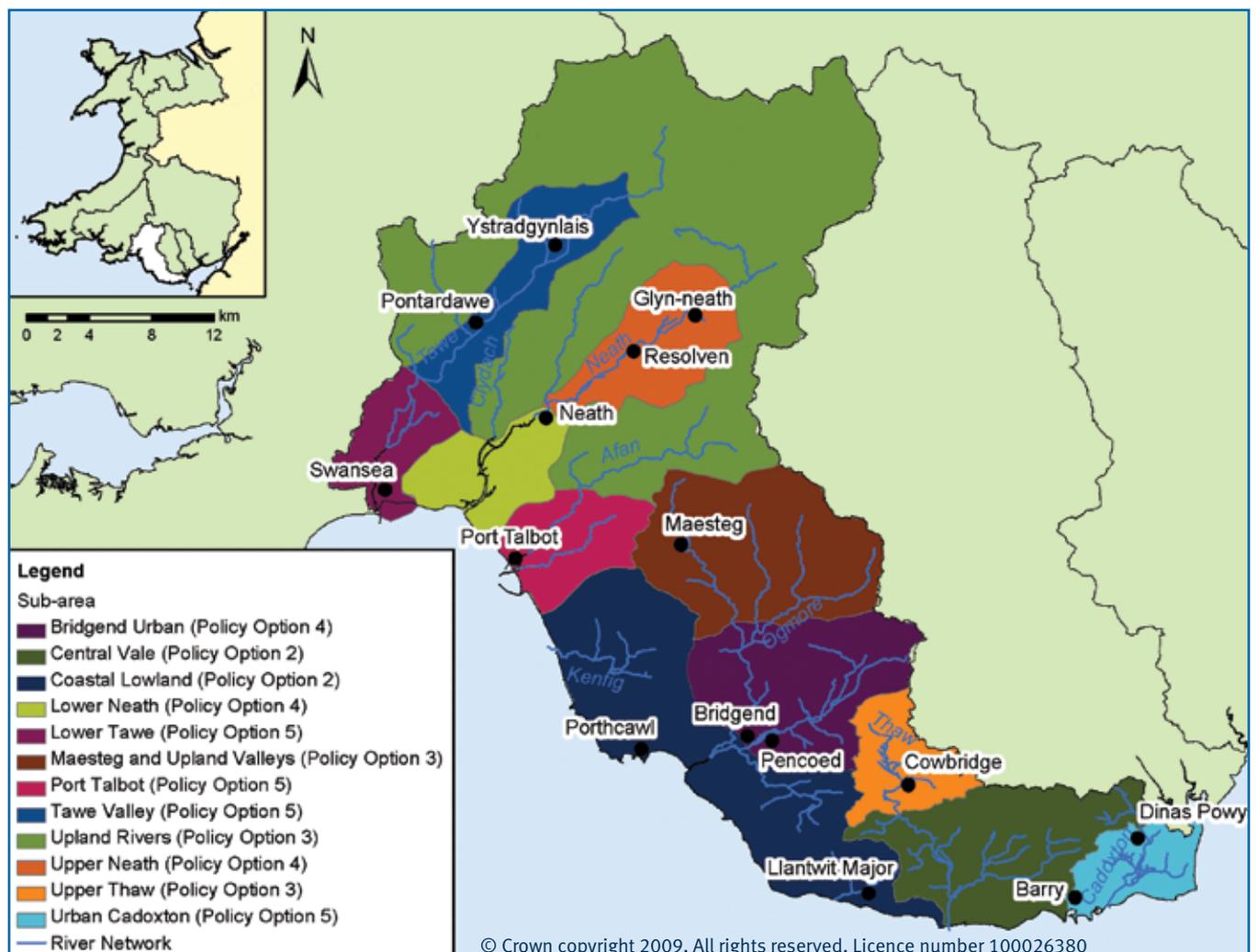


Table 5. Policy options

→ **Policy 1**

**Areas of little or no flood risk where we will continue to monitor and advise**

This policy will tend to be applied in those areas where there are very few properties at risk of flooding. It reflects a commitment to work with the natural flood processes as far as possible.

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→ **Policy 2**

**Areas of low to moderate flood risk where we can generally reduce existing flood risk management actions**

This policy will tend to be applied where the overall level of risk to people and property is low to moderate. It may no longer be value for money to focus on continuing current levels of maintenance of existing defences if we can use resources to reduce risk where there are more people at higher risk. We would therefore review the flood risk management actions being taken so that they are proportionate to the level of risk.

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→ **Policy 3**

**Areas of low to moderate flood risk where we are generally managing existing flood risk effectively**

This policy will tend to be applied where the risks are currently appropriately managed and where the risk of flooding is not expected to increase significantly in the future. However, we keep our approach under review, looking for improvements and responding to new challenges or information as they emerge. We may review our approach to managing flood defences and other flood risk management actions, to ensure that we are managing efficiently and taking the best approach to managing flood risk in the longer term.

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→ **Policy 4**

**Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change**

This policy will tend to be applied where the risks are currently deemed to be appropriately-managed, but where the risk of flooding is expected to significantly rise in the future. In this case we would need to do more in the future to contain what would otherwise be increasing risk. Taking further action to reduce risk will require further appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options.

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→ **Policy 5**

**Areas of moderate to high flood risk where we can generally take further action to reduce flood risk**

This policy will tend to be applied to those areas where the case for further action to reduce flood risk is most compelling, for example where there are many people at high risk, or where changes in the environment have already increased risk. Taking further action to reduce risk will require additional appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options.

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→ **Policy 6**

**Areas of low to moderate flood risk where we will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits**

This policy will tend to be applied where there may be opportunities in some locations to reduce flood risk locally or more widely in a catchment by storing water or managing run-off. The policy has been applied to an area (where the potential to apply the policy exists), but would only be implemented in specific locations within the area, after more detailed appraisal and consultation.

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# Upland Rivers

## Our key partners are:

Local authorities and communities

Landowners and managers

Emergency services

## The issues in this sub-area

This area includes the upland reaches of the Rivers Tawe, Neath and Afan in the western part of the CFMP area. The rivers are fast responding due to the steep topography. Overtopping of river defences or natural ground levels is the primary cause of flooding.

Approximately 90 properties are currently at risk from the 1% AEP flood event, rising to around 120 properties in the future. Affected communities are mostly small geographically dispersed hamlets, but include the villages of Glyncoirwg in the Afan Valley and Pontneddfechan in the Neath Valley.

Flood risk is relatively low and is not expected to increase significantly in the future. The level of flood risk is considered to be appropriately managed.

## The vision and preferred policy

**Policy Option 3** – areas of low to moderate flood risk where we are generally managing existing flood risk effectively.

Our vision is to ensure the range of our actions is appropriate and proportionate to the risks, now and in the future.

It is unlikely that we will be able to justify construction of significant new defences. We will continue to maintain existing defences, but it may not be justifiable to increase their height in the future. Our vision also includes:

- increased emphasis on actions to manage the consequences of flooding;

- increasing community and individual awareness of flood risk and the actions both can take to help themselves.

## Actions to implement the policy include:

Review and rationalise our current actions to ensure they are appropriate and targeted to locations of greatest risk.

Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at Glyncoirwg and Pontneddfechan. These plans should include an assessment of the consequences of flooding and actions to manage these. They should consider future options and investment needs for defences, emergency planning and response, and development control issues.

Engage and advise the local communities to encourage people at risk to take action to help themselves e.g. to sign up to and respond to flood warnings.

Encourage and support land use and management changes by others, where these deliver flood risk management and wider environmental benefits e.g. in the upland and forested areas.



↑ Glyncoirwg in the Afan Valley

# Tawe Valley

## Our key partners are:

Local authorities and communities

Dŵr Cymru Welsh Water

Infrastructure owners/operators

Land owners and managers

Emergency services

## The issues in this sub-area

Historic development of the Tawe Valley has resulted in dense urbanisation along the valley floor. The main river channel is highly modified with poor connectivity with its natural flood plain. The main source of flooding is from the River Tawe.

Approximately 440 properties are currently at risk from the 1% AEP flood event, rising to around 700 properties in the future. Flood risk is considered to be high, with a majority of properties in Ystalyfera and Pontardawe affected by flood depths of more than 0.5 metres.

There are a number of community assets at risk, several utility services premises and a number of main roads affected.

## The vision and preferred policy

**Policy Option 5** – areas of moderate to high flood risk where we can generally take further action to reduce flood risk.

Defences will continue to have a role in reducing the likelihood of flooding. Overtopping of defences, now or in the future, by extreme flood events could have serious consequences. We will continue to maintain our defences, but it may not be justifiable or acceptable to increase their height in the future.

The outcome we seek is a complementary set of flood risk management actions by all partners at a local community level. These will include:

- increased emphasis on actions to manage the consequences of flooding from all sources;
- increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves.



↑ River Tawe, Pontardawe

## Actions to implement the policy include:

Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at Ystalyfera, Ystradgynlais and Pontardawe. These plans should include an assessment of the consequences of flooding, including from overtopping of defences, and actions to manage these. They should consider future options and investment needs for defences, emergency planning and response, and development control issues.

Encourage and support studies by partners to identify surface water and sewer flooding issues and management options, particularly at Ystradgynlais and Ystalyfera.

Engage and advise the local communities to encourage people at risk to take action to help themselves.

Encourage and support owners and operators of important infrastructure, to plan for and manage their current and future flood risks.

Encourage and support land use and management changes by others, where these deliver flood risk management and wider environmental benefits e.g. in the upland and forested areas.

# Lower Tawe

## Our key partners are:

City and County of Swansea

Local communities

Dŵr Cymru Welsh Water

Infrastructure owners/operators

Emergency services

## The issues in this sub-area

This area covers the main urban, commercial and redevelopment areas of Swansea. The Tawe River is the dominant source of flooding to the north of the area, whilst at the downstream end, tidal flood risk is more significant.

Approximately 1,910 properties are currently at risk from the 1% AEP flood event, rising to around 3,440 properties in the future. Tidally



↑ River Tawe, Swansea

induced flooding is predicted to increase at the lower reach, with increasing sea levels. There are also surface water flooding issues that we do not yet fully understand.

Flood risk is considered to be high at present with people, properties, community assets and infrastructure at risk.

Defences will continue to have a role in reducing the likelihood of flooding. Overtopping of defences, now or in the future, by extreme flood events could have very serious consequences.

## The vision and preferred policy

**Policy Option 5** – areas of moderate to high flood risk where we can generally take further action to reduce flood risk.

We will continue to maintain our defences, but it may not be justifiable or acceptable to increase their height in the future.

The outcome we seek is a complementary set of flood risk management actions by all partners at a local community level. These will include:

- increased emphasis on actions to manage the consequences of flooding from all sources;
- increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves.

## Actions to implement the policy include:

Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at Tawe Vale and Swansea Central. These plans should include an assessment of the consequences of flooding, including from overtopping of defences, and actions to manage these. They should consider future options and investment needs for defences, emergency planning and response, and development control issues to avoid inappropriate development in high risk areas.

Encourage and support studies by partners to identify surface water and sewer flooding issues and management options.

Engage and advise the local communities, to encourage people at risk to take action to help themselves e.g. to sign up to and respond to flood warnings.

Encourage and support owners and operators of important infrastructure to plan for, and manage, their current and future flood risks.

# Upper Neath

## Our key partners are:

Neath Port Talbot County  
Borough Council

Local communities

Dŵr Cymru Welsh Water

Infrastructure owners/operators

Land owners and managers

Emergency services

## The issues in this sub-area

There are over seven kilometres of raised defences providing varying standards of protection. The main urban areas of Glyn-neath and Resolven are protected to a 1% AEP flood event standard from main river flooding by recent defence schemes.



↑ River Neath at Pont Walby, Glyn-neath

Approximately 20 properties are currently at risk from the 1% AEP flood event, rising to over 650 properties in the future. The increasing future flood risk comes primarily from overtopping of existing defences in a future 1% AEP flood event as a result of climate change predictions. The A465 (T) road is also currently at risk of flooding.

## The vision and preferred policy

**Policy Option 4** – areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change.

Our vision includes improved integration of actions by all parties to manage all sources of flood risk.

We will continue to maintain our defences, but it may not be justifiable or acceptable to increase their height in the future. Our vision also includes:

- increased emphasis on actions to manage the consequences of flooding;
- increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves.

## Actions to implement the policy include:

Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at Glyn-neath and Resolven. These plans should include an assessment of the consequences of flooding, including from overtopping of defences, and actions to manage these. They should consider future options and investment needs for defences, emergency planning and response, and development control issues.

Encourage and support studies by partners to identify surface water and sewer flooding issues and management options.

Engage and advise the local communities to encourage people at risk to take action to help themselves.

Encourage and support owners and operators of important infrastructure to plan for, and manage, their current and future flood risks, e.g. the A465(T).

Encourage and support land use and management changes by others, where these deliver flood risk management and wider environmental benefits e.g. in the upland and forested areas.

# Lower Neath

## Our key partners are:

Neath Port Talbot County  
Borough Council

Local communities

Dŵr Cymru Welsh Water

Network Rail

Emergency services

## The issues in this sub-area

Dense urban areas dominate the lower reaches of the Neath catchment. Tidal influence and overtopping of Tenant canal are the main sources of flood risk. Future increase in tide levels will result in tidal flood risk extending further upstream.

Approximately 280 properties are currently at risk from the 1% AEP flood event rising to around 1,570 properties in the future. The main urban settlements at risk are Neath, Briton Ferry and Jersey Marine. Parts of the SA1/Fabian Way development corridor are also shown to be at greater risk in the future. The main London to Swansea railway is predicted to be at risk during the future 0.5% AEP tidal flood event.

The impact of tidal flooding on the lower reaches of the River Neath is the main risk. The natural ground level currently provides a level of protection to the majority of the area against current flood risk, however this protection will reduce in the future.

## The vision and preferred policy

**Policy Option 4** – areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change.

Our vision includes improved integration of actions by all parties to manage all sources of flood risk. It may not be justifiable construct significant new defences in the future to manage the impact of sea level rise and increased tidal flooding. Our vision also includes:

- increased emphasis on actions to manage the consequences of flooding;
- increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves.



↑ Lower Neath River

## Actions to implement the policy include:

Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at Neath Town Centre, Briton Ferry, Fabian Way/Red Jacket Pill (including the flood risk via the canal system to Neath and Fabian Way). These plans should consider climate change impacts and include an assessment of the consequences of flooding, including from overtopping of defences, and actions to manage these. They should consider future options and investment needs for defences, emergency planning and response, and development control issues to avoid inappropriate development in high risk areas.

Encourage and support studies by partners to identify surface water and sewer flooding issues and management options.

Engage and advise the local communities, to encourage people at risk to take action to help themselves e.g. to sign up to and respond to flood warnings.

Flood risk management actions will be informed by the Swansea and Carmarthen Bay SMP review, currently being undertaken.

# Port Talbot

## Our key partners are:

Neath Port Talbot County  
Borough Council

Local communities

Dŵr Cymru Welsh Water

Infrastructure owners/operators

Emergency services

## The issues in this sub-area

This is a high density urban area. Fast responding rivers with a risk of overtopping of defences on the Afon Afan and Ffrwd Wylt.

Approximately 3,840 properties are currently at risk from the 1% AEP flood event, rising to around 5,790 properties in the future. The predicted flood extents during the 1% AEP flood event cover a significant part of Aberavon as well as Port Talbot centre. There are also surface water flooding issues that are not well understood.

People, properties, community assets and infrastructure in Port Talbot, Aberavon, Tai Bach and parts of Cwmafan are at risk. There is an increasing risk of overtopping of current defences in the future due to climate change. This will substantially increase the number of properties at risk.

## The vision and preferred policy

**Policy Option 5** – areas of moderate to high flood risk where we can generally take further action to reduce flood risk.

This area is very dependent on flood defences to reduce the likelihood of flooding. Overtopping of defences, now or in the future, by extreme flood events could have serious consequences. We will continue to maintain our defences, but it may not be justifiable or acceptable to increase their height in the future.

The outcome we seek is a complementary set of flood risk management actions by all partners at a local community level. These will include:

- increased emphasis on actions to manage the consequences of flooding from all sources;
- increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves.



↑ Afon Afan at Port Talbot Town Centre

## Actions to implement the policy include:

Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at Port Talbot centre and Aberavon. These plans should include an assessment of the consequences of flooding, including from overtopping of defences, and actions to manage these. They should consider future options and investment needs for defences, emergency planning and response, and development control issues to avoid inappropriate development in high risk areas.

We will continue to maintain our defences and provide flood warnings.

Encourage and support studies by partners to identify surface water and sewer flooding issues and management options.

Engage and advise the local communities to encourage people at risk to take action to help themselves e.g. to sign up to and respond to flood warnings.

Encourage and support owners and operators of important infrastructure to plan for, and manage, their current and future flood risks, particularly, utility services, Network Rail and Neath Port Talbot Hospital.

# Maesteg and Upland Valleys

## Our key partners are:

**Bridgend County Borough Council**

**Local communities**

**Dŵr Cymru Welsh Water**

**Infrastructure owners/operators**

**Land owners and managers**

**Emergency services**

## The issues in this sub-area

The area contains scattered urban areas in the upper reaches (Maesteg, Pontycymer, Pontymoel) and ribbon development towards Bridgend. Generally low risk with the main source of flooding from fast responding rivers in steep topography, although there is some risk of surface water flooding in Maesteg and Ogmore Vale.

Within the urban centre of Maesteg there is a flood risk due to culvert blockage, as the River Llynfi threads its way through the town.

Approximately 30 properties are currently at risk from the 1% AEP flood event, rising to around 50 properties in the future. The main flood risk areas are Maesteg and Ogmore Vale.

Flood risk is contained in localised areas and we consider it to be appropriately managed at present.

## The vision and preferred policy

**Policy Option 3** – areas of low to moderate flood risk where we are generally managing existing flood risk effectively.

Our vision is to ensure the range of our actions is appropriate and proportionate to the risks, now and in the future.

It is unlikely that we will be able to justify construction of significant new defences. Where defences exist we will continue to maintain them but it may not be justifiable to increase their height in the future. Our vision also includes:

- increased emphasis on actions to manage the consequences of flooding;
- increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves.

## Actions to implement the policy include:

Review and rationalise our current actions to ensure they are appropriate and targeted to locations of greatest risk.

Encourage and support studies by partners to identify surface water and sewer flooding issues and management options, particularly at Maesteg and Ogmore Vale.

Engage and advise the local communities to raise awareness and encourage people at risk to take action to help themselves e.g. to sign up to and respond to flood warnings.

Encourage and support owners and operators of important infrastructure to plan for, and manage, their current and future flood risks.

Encourage and support land use and management changes by others, where these deliver flood risk management and wider environmental benefits e.g. in the upland and forested areas.



↑ River Llynfi, Maesteg

# Coastal Lowland

## Our key partners are:

Local authorities

Local communities

Dŵr Cymru Welsh Water

Land owners and managers

## The issues in this sub-area

Predominantly rural with scattered settlements located mainly at the lower end of the catchments. Tidally influenced river flooding is the dominant source at low return periods, with surface water flooding an issue in some areas, particularly in the East Vale. Groundwater flooding is also believed to be an issue in some areas.

Approximately 130 properties are currently at risk from the 1% AEP flood event, with little or no increase expected in the future. Ham Manor Caravan Park is also believed to be at risk. The balancing ponds above Porthcawl help manage flood risk within the town.



↑ Ogney Brook, Llantwit Major

## The vision and preferred policy

**Policy Option 2** – areas of low to moderate flood risk where we can generally reduce existing flood risk management actions.

Our vision is to reduce the overall level of our flood risk management activity over time. We will follow a risk based approach to rationalise our current activities and target our actions and limited resources to locations of greatest risk.

It may not be justifiable to continue to maintain our defences, to replace them or to increase their height in the future. Our vision also includes:

- increased emphasis on actions to manage the consequences of flooding;
- increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves.

## Actions to implement the policy include:

Work with partners to determine how the policy of reducing actions is most appropriately communicated and implemented.

Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at defended communities. These plans should include an assessment of the consequences of flooding, including from overtopping of defences, and actions to manage these. They should consider future options and investment needs for defences.

Engage and advise the local communities to encourage people at risk to take action to help themselves.

Carry out a modelling study at Ham Manor Caravan Park, to better understand the flood risk and encourage and support our partners to produce a plan to manage the current and future risks.

Encourage and support studies by partners to identify surface water and sewer flooding issues and management options, particularly East Vale.

Flood risk management actions will be informed by the findings of the Swansea and Carmarthen Bay SMP.

# Bridgend Urban

## Our key partners are:

Local authorities

Local communities

Dŵr Cymru Welsh Water

Infrastructure owners/operators

Emergency services

## The issues in this sub-area

This is a highly urbanised area and includes the towns of Aberkenfig, Bridgend and Pencoed. The main source of flooding is the Ogmore River and its tributaries. Surface water flooding is also a key issue. The Ogmore River and its tributaries respond quickly to rainfall events, while saturated ground following prolonged rainfall is more significant to the response in the Ewenny catchment, especially at Pencoed.

Approximately 2,000 properties are currently at risk from the 1% AEP flood event. However, with the impacts of climate change, this could rise to at least 2,500 properties in the future with major transport routes increasingly affected.

Defences currently reduce the likelihood of flooding to the centre of Bridgend and the settlements of Pencoed and Aberkenfig.

## The vision and preferred policy

**Policy Option 4** – areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change.

Defences will continue to have a role in reducing the likelihood of flooding. Overtopping of defences, now or in the future, by extreme flood events could have very serious consequences. We will continue to maintain our defences, but it may not be justifiable or acceptable to increase their height in the future.

The outcome we seek is a complementary set of flood risk management actions by all partners at a local community level. These will include:

- increased emphasis on actions to manage the consequences of flooding from all sources;
- increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves.



↑ Flooding in Pencoed, 1998

## Actions to implement the policy include:

Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at Wildmill Estate, Bridgend town centre and Pencoed. These plans should include an assessment of the consequences of flooding, including from overtopping of defences, and actions to manage these. They should consider future options and investment needs for defences, emergency planning and response, and development control issues to avoid inappropriate development in high risk areas.

We will continue to maintain our defences and provide flood warnings.

Encourage and support studies by partners to identify surface water and sewer flooding issues and management options.

Engage and advise the local communities to encourage people at risk to take action to help themselves.

Encourage and support owners and operators of important infrastructure to plan for, and manage, their current and future flood risks.

# Upper Thaw

## Our key partners are:

Vale of Glamorgan Council

Local communities

Dŵr Cymru Welsh Water

## The issues in this sub-area

A recently constructed Flood Alleviation Scheme (FAS) has reduced the level of flood risk within the main urban settlements of Cowbridge and Llanblethian. Elsewhere, informal defences provide protection where individual properties are at risk. The main source of flood risk is failure or overtopping of these defences.

Approximately 20 properties are currently at risk from the 1% AEP flood event, rising to around 30 properties in the future, assuming continued operation of the FAS. The FAS provides protection to at least 185 additional properties.

Flood risk is considered to be managed appropriately at present with the operation of the Cowbridge FAS.

## The vision and preferred policy

**Policy Option 3** – areas of low to moderate flood risk where we are generally managing existing flood risk effectively.

Our vision is to ensure the range of our actions is appropriate and proportionate to the risks, now and in the future.

We will continue to maintain the Cowbridge FAS but it is unlikely we will be able to justify construction of significant new defences. Our vision also includes:

- increased emphasis on actions to manage the consequences of flooding;
- increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves.

## Actions to implement the policy include:

Review and rationalise our current actions to ensure they are appropriate and targeted to locations of greatest risk.

Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at defended communities. These plans should include an assessment of the consequences of flooding, including from overtopping of defences, and actions to manage these. They should consider future options and investment needs for defences.

Encourage and support studies by partners to identify surface water and sewer flooding issues and management options.

Engage and advise the local communities to encourage people at risk to take action to help themselves.

Develop a Reservoir Flood Plan for Cowbridge FAS.

Investigate options to improve flood forecasting and warning.



↑ Cowbridge storage reservoir

# Central Vale

## Our key partners are:

Vale of Glamorgan Council

Local communities

Dŵr Cymru Welsh Water

Land owners and managers

## The issues in this sub-area

Predominantly rural with the main sources of flooding from lowland rivers and moorland runoff. Flood risk from the main river is considered to be low with the majority of flooding contained to grazing pasture. There is a faster catchment response after prolonged rainfall due to saturated ground conditions which may cause some localised issues.

Approximately 15 properties are currently at risk from the 1% AEP flood event with no increase expected in the number of properties affected in the future. This is generally a low risk area with only a few properties in the village of Llancarfan affected.

## The vision and preferred policy

**Policy Option 2** – areas of low to moderate flood risk where we can generally reduce existing flood risk management actions.

Our vision is to reduce the overall level of our flood risk management activity over time. Typically this will be achieved through a reduction in our routine maintenance. We will follow a risk based approach to rationalise our current activities and target our actions and limited resources to locations of greatest risk. Our vision also includes:

- increased emphasis on actions to manage the consequences of flooding;
- increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves.

## Actions to implement the policy include:

Work with partners to determine how the policy of reducing actions is most appropriately communicated and implemented. The impacts of significant change must be understood before implementation of change.

Engage and advise the local community to encourage people at risk to take action to help themselves, particularly at Llancarfan.

Encourage and support studies by partners to identify surface water and sewer flooding issues and management options.

Support opportunities to store water or manage run-off to provide flood risk and environmental benefits, e.g. in the upper catchments.



↑ Thaw Valley in flood

# Urban Cadoxton

## Our key partners are:

Vale of Glamorgan Council

Local communities

Dŵr Cymru Welsh Water

Infrastructure owners/operators

Land owners and managers

Emergency services

## The issues in this sub-area

The Cadoxton is a small catchment with a high proportion of urbanisation. Barry and Penarth are the main urban centres. Flooding from lowland rivers is the main source of risk. This can be combined with surface water, sewer flooding and culvert blockage. Flooding can be locally deep.

Approximately 1,130 properties are currently at risk from the 1% AEP flood event, rising to around 1,350 properties in the future. The main areas of flood risk are located in Dinas Powys and Barry. In the future there is a significant increase in risk to the Dow Corning chemical complex and around Barry Dock commercial areas.

Flood risk management actions will be informed by the findings of the Swansea and Carmarthen Bay SMP review, currently being undertaken.

## The vision and preferred policy

**Policy Option 5** – areas of moderate to high flood risk where we can generally take further action to reduce flood risk.

Our vision includes improved integration of actions by all parties to manage all sources of flood risk, particularly local surface water and sewer flooding in Barry and Dinas Powys.

A reduction of constrictions to flow and culverts. Particularly in urban areas, e.g. Barry and Dinas Powys.

We will continue to maintain our defences, but it may not be justifiable to increase their height in the future. Our vision also includes:

- increased emphasis on actions to manage the consequences of flooding from all sources;
- increased community awareness of their flood risks and adoption of actions they can take to help themselves.



↑ Sully Moors, July 2009

## Actions to implement the policy include:

Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at Barry and Dinas Powys. These plans should include an assessment of the consequences of flooding, including from overtopping of defences, and actions to manage these. They should consider future options and investment needs for defences, emergency planning and response, and development control issues to avoid inappropriate development in high risk areas.

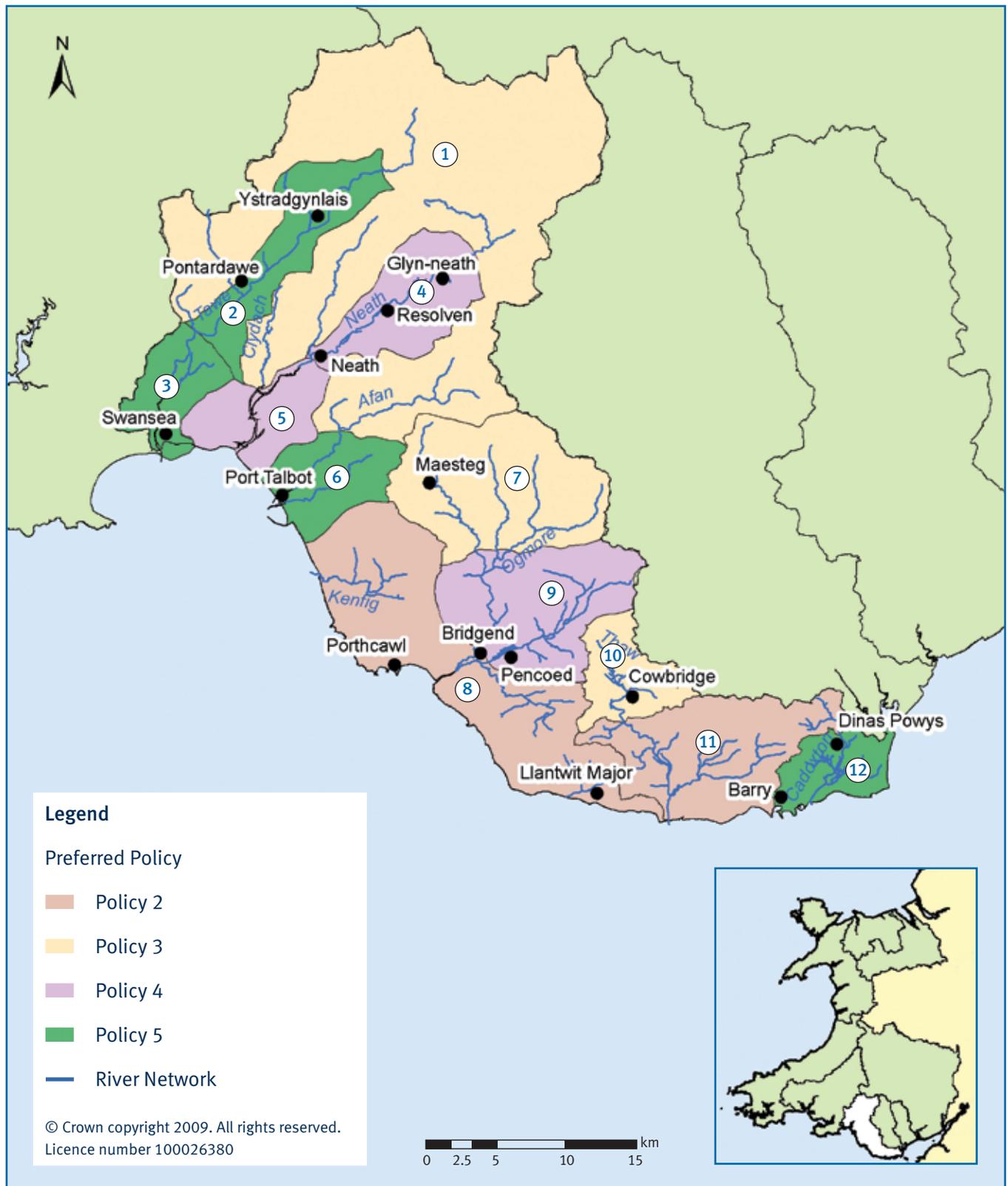
Encourage and support studies by partners to identify surface water and sewer flooding issues and management options.

Engage and advise the local communities to encourage people at risk to take action to help themselves.

Encourage and support owners and operators of important infrastructure to plan for, and manage their current and future flood risks. Particularly the Dow Corning Complex.

Investigate the potential for utilising storage within Cog Moors and Sully Moors upstream of the Dow Corning chemical complex to reduce future flood risk.

# Map of CFMP policies



### ■ Sub-area 1 – Upland Rivers

Flood risk is relatively low and is not expected to increase significantly in the future. The current level of flood risk management is considered to be appropriate but will be reviewed and reprioritised to ensure our activities remain appropriate to the risk.

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### ■ Sub-area 2 – Tawe Valley

Flood risk is high and is expected to increase significantly. There is a risk of harm to life, risk to infrastructure and community disruption. Further flood risk management action is required in order to reduce flood risk to an appropriately managed level.

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### ■ Sub-area 3 – Lower Tawe

Flood risk is high and is expected to increase significantly. There is a risk of harm to life, risk to infrastructure and community disruption. Further flood risk management action is required in order to reduce flood risk to an appropriately managed level.

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### ■ Sub-area 4 – Upper Neath

Flood risk is considered to be managed appropriately at present. Further flood risk management actions will be required to sustain the current level of risk into the future.

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### ■ Sub-area 5 – Lower Neath

Flood risk is considered to be managed appropriately at present. Further flood risk management actions will be required to sustain the current level of risk into the future.

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### ■ Sub-area 6 – Port Talbot

Flood risk is high and is expected to increase significantly. There is a risk of harm to life, risk to infrastructure and community disruption. Further flood risk management action is required in order to reduce flood risk to an appropriately managed level.

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### ■ Sub-area 7 – Maesteg and Upland Valleys

Flood risk is relatively low and is not expected to increase significantly in the future. The current level of flood risk management is considered to be appropriate but will be reviewed and reprioritised to ensure our activities remain appropriate to the risk.

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### ■ Sub-area 8 – Coastal Lowland

Flood risk is low and is not expected to increase significantly in the future. Flood risk management will be reduced over time in a managed way but flood warning and maintenance of existing defences will continue.

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### ■ Sub-area 9 – Bridgend Urban

Flood risk is considered to be managed appropriately at present. Further flood risk management actions will be required to sustain the current level of risk into the future.

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### ■ Sub-area 10 – Upper Thaw

Flood risk is currently managed by a new Flood Alleviation Scheme. Future levels of risk will remain similar assuming that this stays operational. We will continue with the current level of flood risk management activity to manage flood risk at the current level.

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### ■ Sub-area 11 – Central Vale

Flood risk is low and is not expected to increase significantly in the future. Flood risk management will be reduced over time in a managed way.

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### ■ Sub-area 12 – Urban Cadoxton

Flood risk is high and is expected to increase significantly. There is a risk of harm to life, risk to infrastructure and community disruption. Further flood risk management action is required in order to reduce flood risk to an appropriately managed level.

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