Cyngor Bwrdeisdref Sirol
Blaenau Gwent
County Borough Council

a better place to live and work

LOCAL FLOOD RISK MANAGEMENT STRATEGY

BLAENAU GWENT COUNTY BOROUGH COUNCIL

May 2013

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Welcome to our first Flood Risk Management Strategy.

This is an important new tool for managing flood risk in Blaenau Gwent. Fortunately, we do not suffer from flooding on the dramatic scale seen across the UK. However, as anyone who has been affected by flooding, or the risk of flooding, knows, it can cause great distress. It can also have a significant financial impact. This strategy considers what sustainable measures we can put in place to reduce the risk of flooding.

At a strategic level we will aim to create partnerships with water companies, neighbouring councils, the Environment Agency, communities and individual households to ensure that any flood risk is reduced to a minimum. And at a local level, we will consider what we can do to improve our knowledge of flooding events. We will determine how we share this information with those who can best use it, and then deliver flood management activities that will secure and enhance both our built and natural environment.

Unfortunately, there will never be enough money available to completely reduce all existing flood risks and certainly not enough to deal with the future flood risks. But, we can achieve more, together. For this reason I am urging everyone involved - from businesses and organisations to statutory bodies and individual householders - to play a role in helping to reduce flood risk.

What we must all understand is that these measures can only manage flood risk. They cannot protect every house from all flood risk. Therefore, it is important that, over the next couple of years, we work together to consider how we can reduce the impact of flooding. In line with our Corporate Investment Plan objectives, we must also ensure that our environment is kept clean, safe and sustainable. It is also vital that our environment continues to support social and physical regeneration.

This strategy is our statement of intent as to what needs to be done to tackle flooding in Blaenau Gwent. We hope that it will help you become better informed about everyone's responsibilities with regard to flood risk, how to find out your flood risk and how we aim to manage this risk in the future.

Cllr Hedley McCarthy
Leader of Blaenau Gwent County Borough Council

1. Executive summary

Following the introduction of The Flood and Water Management Act 2010; Blaenau Gwent County Borough Council has been designated as a Lead Local Flood Authority (LLFA) and as such is now directly responsible for the management of local flood risk. This is defined within the Act as flood risk from:

i) Ordinary watercourses
ii) Surface runoff
iii) Ground water

As a LLFA, Blaenau Gwent County Borough Council must **develop, maintain, apply and monitor a Local Flood Risk Management Strategy** and this Strategy must include the following:

- The flood risk management Authorities in Blaenau Gwent;
- The flood risk management functions that may be exercised by those Authorities in relation to Blaenau Gwent;
- The objectives for managing local flood risk;
- The measures proposed to achieve our objectives;
- How and when the measures are expected to be implemented;
- The potential costs and benefits of those measures;
- The assessment of local flood risk for the purpose of the strategy;
- How and when the strategy is to be reviewed;
- How the strategy contributes to the achievement of wider environmental objectives.

In considering local flood risk; Blaenau Gwent has developed eight primary objectives as below in Table 1-1.

Table 1-1 Primary Local Flood Risk Management Objectives

Social	Reduce the number of people exposed to flooding risk. Reduce the number of residential, community, heritage assets and commercial properties exposed to flooding risk. Reduce risk to life (no of people exposed to death x velocity of flow) Reduce disruption to key infrastructure (roads, hospitals, power sub stations etc.)
Economic	Reduce economic damage (e.g. annual average damages - AAD) Reduce the cost of flood management
Environmental	Reduce the number of important habitats (including those protected by international, national or local designations) exposed to flooding risk Improve naturalness (reduce modification of channels / waterbodies).

To achieve these objectives Blaenau Gwent has also adopted three approaches; the **prevention** of flooding, the **protection** of individuals, communities and the environment against the consequences of flooding and improved **forecasting and warning**. For each approach, a number of specific measures have been identified, which are show below in the following tables.

Table 1-2 Prevention Measures

Measures
• making more use of the natural environment, like wetlands;
• avoiding inappropriate development in flood risk areas;
• increasing approaches that utilise the natural environment, like adopting soft engineering in place of traditional solutions, managing of the land to reduce storm runoff, creating more wetlands to store water;
• encourage the sustainable drainage systems (SuDS) approach for surface water management for both new and existing developments;
• incorporating greater resilience into the design of developments (houses, buildings, roads and paved areas).

Table 1-3 Protection Measures

Measures
• develop robust maintenance regimes of culverts & drains and identify priority areas.
• Identifying and protecting areas suitable for inundation and water storage to prevent flooding elsewhere
• enabling those at risk of flooding to play a proactive role in shaping the flood risk management service they receive;
• improving the response to flooding incidents by the emergency response organisations, as well as individuals and businesses;
• ensuring effective recovery arrangements are in place and supported by all relevant parties.

Table 1-4 Forecasting Measures

Measures
• developing better flood forecasting and warning systems;
• improve communication and support to residents, businesses and communities
• improve monitoring and data recording.

Blaenau Gwent's Flood Risk Management Strategy will set out the local organisations with responsibility for flood risk in the area, partnership arrangements to ensure co-ordination between these, an assessment of the flood risk and plans and actions for managing the risk.

2. Introduction

Under the terms of The Flood and Water Management Act 2010 Blaenau Gwent County Borough Council has now become a Lead Local Flood Authority (LLFA) and is responsible for 'local flood risks'.

Blaenau Gwent's responsibility as a LLFA is to develop, maintain, apply and monitor a Local Flood Risk Management Strategy of which a summary must be published.

This is the first time responsibility for the risks of flooding from surface runoff has been allocated to any particular body in law. Blaenau Gwent will now be responsible for local flood risk which is defined within the Act as flood risk from:

i) Ordinary watercourses
ii) Surface runoff
iii) Ground water

An ordinary watercourse includes a lake, pond or other area for which water flows into an ordinary watercourse. Surface water means rainfall or other precipitation which is on the surface or ground and has not entered a watercourse drainage system or public sewer. Ground water means water which has seeped into the ground and may form underground ponds or streams which discharge above ground generally in the form of small ponds, bogs etc sometimes as a result of heavy rainfall.

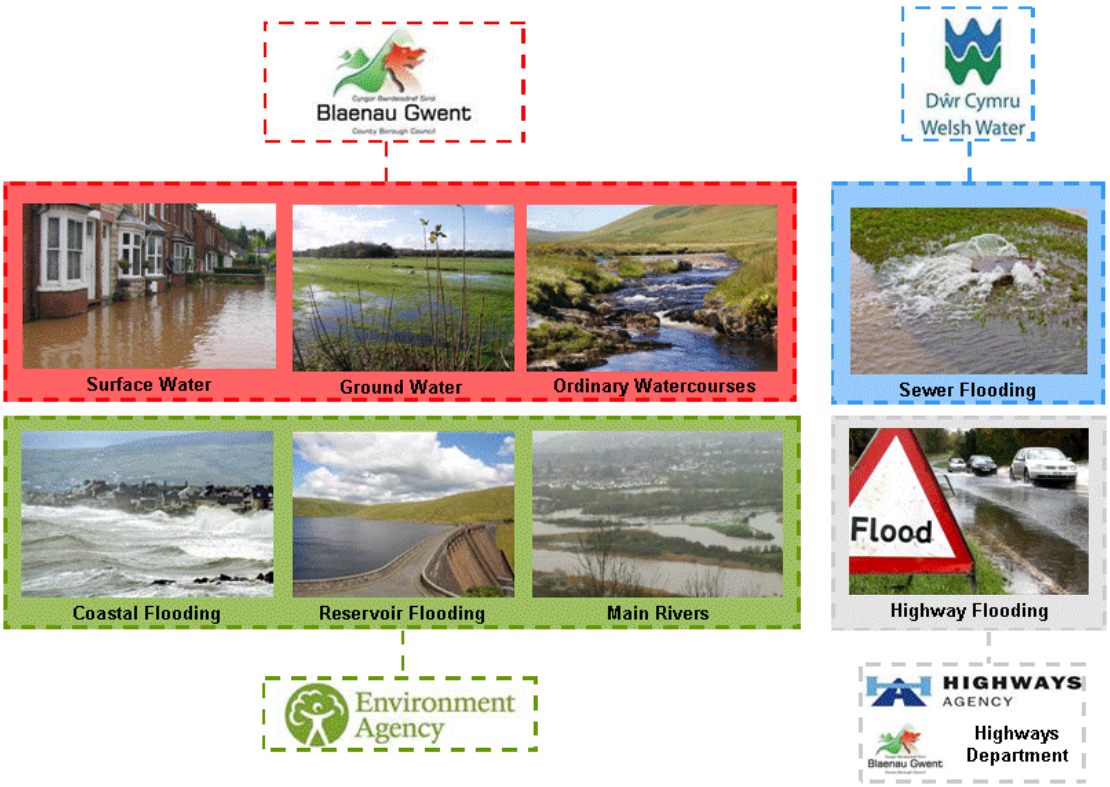

Figure 2-1 Flood Risk Authorities

The authorities responsible for each form of flood risk are demonstrated in the diagram on the previous page. In accordance with The Flood Risk Regulations 2009, Blaenau Gwent LLFA is not required to take into account flooding from the sea, main rivers, or reservoirs unless the authority thinks it may affect flooding from another source.

Climate change projections suggest that weather patterns will alter and that there will be an increase in the intensity of rainfall, the frequency of sudden storms and sea level rises across Wales. Taken together these factors are likely to increase the likelihood of flooding and coastal erosion.

The UK Climate Projections 2009 show that the key findings for Wales are:

- by 2050 average annual temperatures are projected to increase by 2.3°C
- summer daily maximum temperatures are projected to increase by 3.4°C
- winter minimum temperatures are projected to increase by 2.5°C
- rainfall is projected to increase in winter on average by 14 per cent and decrease in summer by 16 per cent
- sea levels around Wales are predicted to rise by approximately 20cm by 2050
- storm intensity in summer and winter will increase, leading to more severe storms and larger waves attacking our shores

The Flood and Water Management Act 2010 has placed a number of statutory duties on Local Authorities in their new role as LLFA. These include:

- The preparation of a local flood risk management strategy;
- A duty to comply with the National Strategy;
- To co-operate with other Authorities, including sharing data;
- A duty to investigate all flooding within its area, insofar as the LLFA consider it necessary or appropriate;
- A duty to maintain a register of structures and features likely to affect flood risk; and
- A duty to contribute to sustainable development

LLFA in Wales will also take on the role of SuDS Adopting and Approving Body in relation to sustainable drainage systems. In this role they will be responsible for both approving the original design of the SuDS and adopting and maintaining the finished system.

The allocation of responsibility for the local flood risk is replicated in the Flood Risk Regulations 2009.

Section 10(4) of the Act specifies that The Local Flood Risk Management Strategy must include:

1) The Risk Management Authorities in the Local Authority's area;
2) The flood risk management functions that may be exercised by those Authorities in relation to the area;
3) The objectives for managing local flood risk (including, when available, any objectives included in the LLFA flood risk management plan prepared in accordance with the Flood Risk Regulations 2009);
4) The measures proposed to achieve those objectives;
5) How and when the measures are expected to be implemented;
6) The costs and benefits of those measures, and how they are to be paid for;
7) The assessment of local flood risk for the purpose of the strategy;
8) How and when the strategy is to be reviewed; and
9) How the strategy contributes to the achievement of wider environmental objectives.

2.1. Programme

Blaenau Gwent County Borough Council are required to submit an agreed draft Local Strategy and any associated guidance to the Welsh Minister for Environment and Sustainable Development for review allowing for at least two months for a response.

We are aiming to sign-off this Strategy by April 2013.

3. Nature of Flood Risk Within Blaenau Gwent

3.1. Locality

The Local Flood Risk Management Strategy is defined by the administrative boundary of Blaenau Gwent County Borough Council and is illustrated in the map below.

Blaenau Gwent is bordered to the North by Powys County Council, the North East by Monmouthshire County Borough Council, the West by Caerphilly County Borough Council, the East by Torfaen County Borough Council, and adjoins the Brecon Beacons National Park.

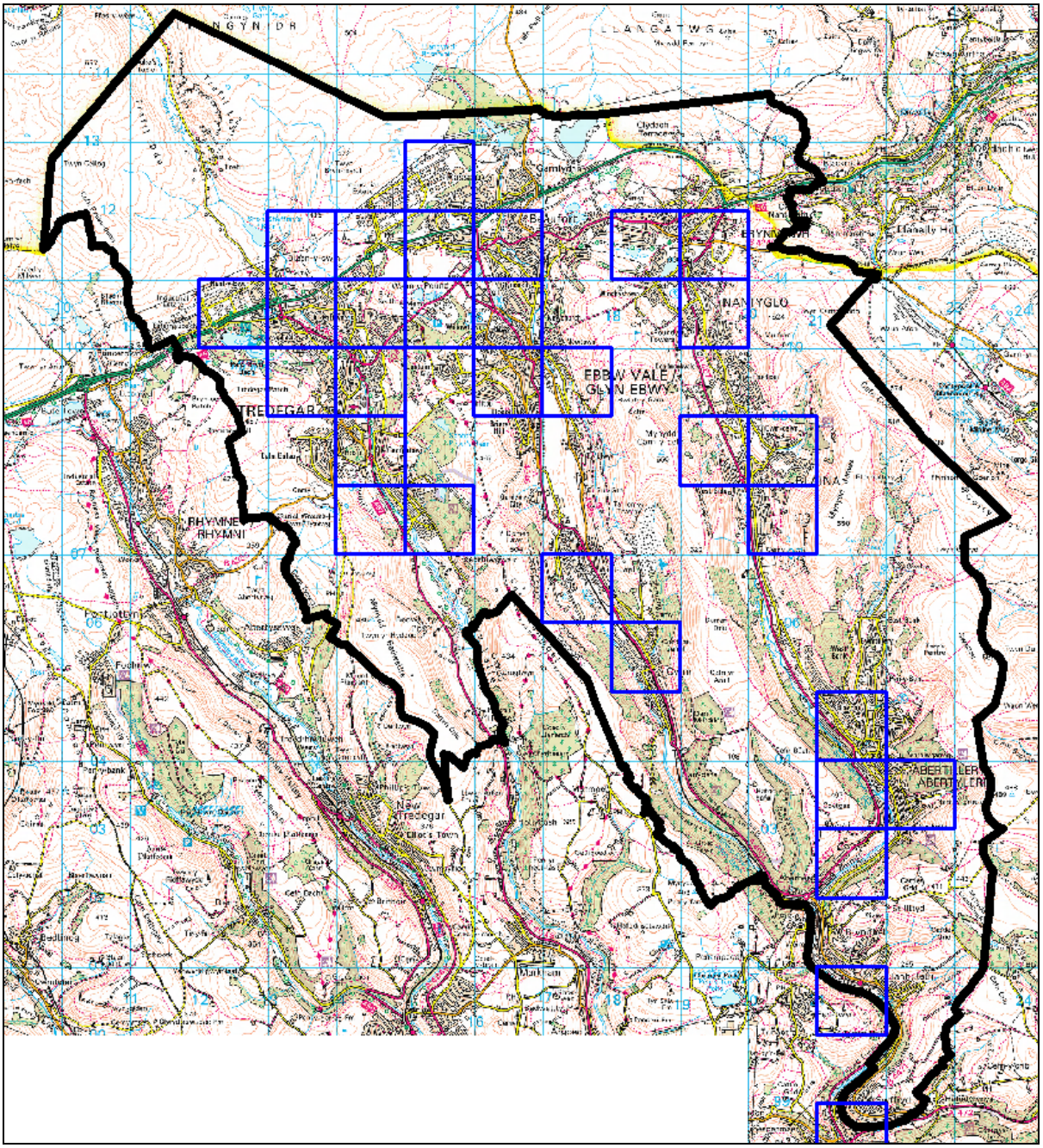

Figure 3-1 Environment Agency 'Blue Squares' (areas above the flood risk threshold)

Blaenau Gwent covers approximately 109km^2. The main settlement areas within Blaenau Gwent are Tredegar, Ebbw Vale, Brynmawr, Nantyglo, Blaina and Abertillery and as you can see from Figure 3-1, Blaenau Gwent is unaffected by the risks of coastal flooding or erosion.

3.2. Hydrological Climate

Blaenau Gwent has a relatively high amount of rainfall, in comparison with the rest of the UK. The average annual rainfall for the entire area is approximately 1,600mm which is 42% higher than the average annual rainfall for the whole of the UK from 1971 to 2000 which was 1126.1mm. (Met office).

Rainfall in Blaenau Gwent predominantly falls as relatively low intensity, long duration rainfall that is dominated by frontal weather systems. However, short duration, high rainfall intensity storms are also experienced due to Blaenau Gwent's upland nature.

3.3. Topography

The topography of the land can affect the hydrological regime of an area and dictate how the catchment responds to rainfall. Typically, watercourses in lower lying, flatter areas respond gradually to rainfall and in times of flood can have long duration events.

Watercourses in steeper upland areas like Blaenau Gwent can respond quickly to rainfall but the flood events themselves have a shorter duration.

The topography of Blaenau Gwent is dominated by relatively steep sided valleys. However, the areas in the north of the study area have a gentler topography, as they are located within the foothills of the Brecon Beacons.

The topography of both the Ebbw and Sirhowy Rivers is characterised by narrow river channels bounded by steep sided valleys, with limited floodplains.

3.4. Historic Flooding Events

Blaenau Gwent has 446 historical flood events and a number of flooding hotspots have been identified. These flood events came from a range of flood sources, and in many cases the source of flooding was unknown or not recorded. A summary of flooding is shown below:

Table 3-1 Summary of Historical Flooding

Organisation	Summary of Data Provided	Type of Flooding	Gaps in Data
Blaenau Gwent County Borough Council (BGCBC)	446 historical records for the period 01/04/2005 – 20/10/2010	Surface water & fluvial from ordinary watercourses	No information on duration, cause & number of properties affected
Dŵr Cymru Welsh Water (DCWW)	49 records of sewer flooding & 7 records of other types	Sewer flooding & external flooding	Records limited to sewer flooding
South Wales Fire & Rescue Service (SWFRS)	10 records for the period 06/07/2008 – 01/01/2010	Surface water & sewer flooding	Limited record going back to July 2008. No information provided on duration or number of people affected.

The historical flooding records do not provide enough information to determine the consequences of the flooding events and records show flooding to occur on an ad hoc basis, generally localised and due to maintenance issues, blockage of gullies or culverts.

3.5. Local Sources of Flooding

3.5.1. Surface Water Flooding

Surface water flooding occurs when heavy rainfall overwhelms the drainage capacity of the local area. It is difficult to predict and pinpoint, much more so than river or coastal flooding.

Key sources of surface water records were South Wales Fire and Rescue Service, Blaenau Gwent Highways department and a number of Catchment Flood Management Plans (CFMPs), which are high-level strategic plans published by the Environment Agency that focus on flooding and adopted flood risk management policies in major river catchments.

3.5.2. Ordinary Watercourse Flooding

Watercourse flooding occurs when a watercourse cannot cope with the water draining into it from the surrounding land, or when they become blocked. This can happen, for example, when heavy rain falls on an already waterlogged catchment.

3.5.3. Groundwater Flooding

Groundwater flooding can occur when water levels in the ground rise above surface levels. It is most likely to occur in areas underlain by permeable rocks, called aquifers. This is not a significant source of flooding in Wales.

There are no historic groundwater flooding records.

3.5.4. Sewer Flooding

Sewer flooding occurs when sewers are overwhelmed by heavy rainfall or when they become blocked. The likelihood of flooding depends on the capacity of the local sewerage system. Land and property can be flooded with water contaminated with raw sewage as a result. Rivers can also become polluted by sewer overflows.

It was found that there were a total of 56 sewer flooding events which have been recorded by Dwr Cymru Welsh Water. These events have been geo-referenced so comments can be made about their spatial extent and distribution.

There are no records of sewer flooding with significant consequences within Blaenau Gwent.

3.5.5. Surface Water Flooding

The Environment Agency has produced a national assessment of surface water flood risk. The Flood Map for Surface Water (FMfSW) is a model containing two flood events (a 1 in 30 years chance and a 1 in 200 years chance) and two depth bandings (greater than 0.1m and greater than 0.3m).

The Flood Map for Surface Water (©Environment Agency Figure 3-2) highlights areas at risk of surface water flooding in the future.

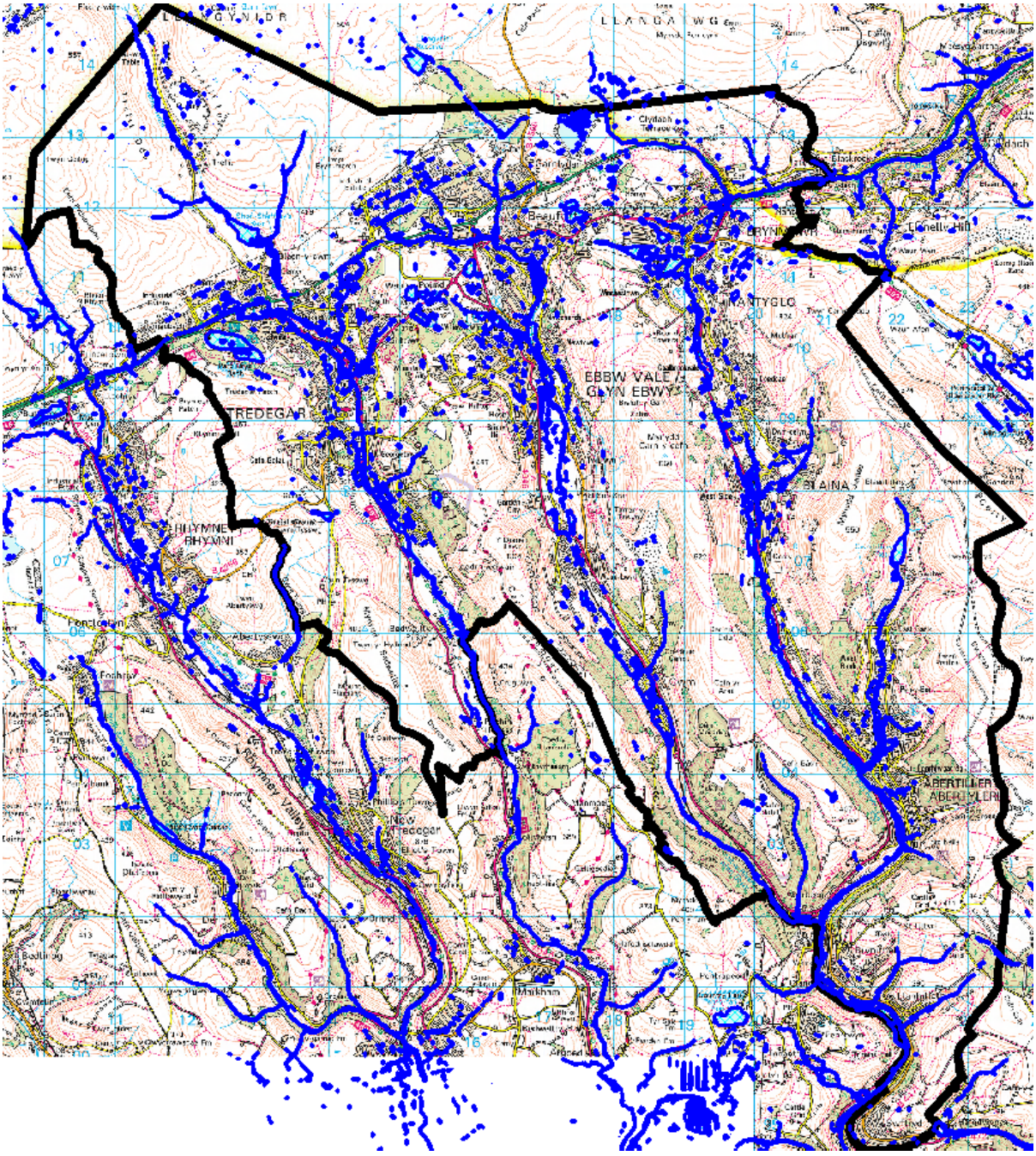

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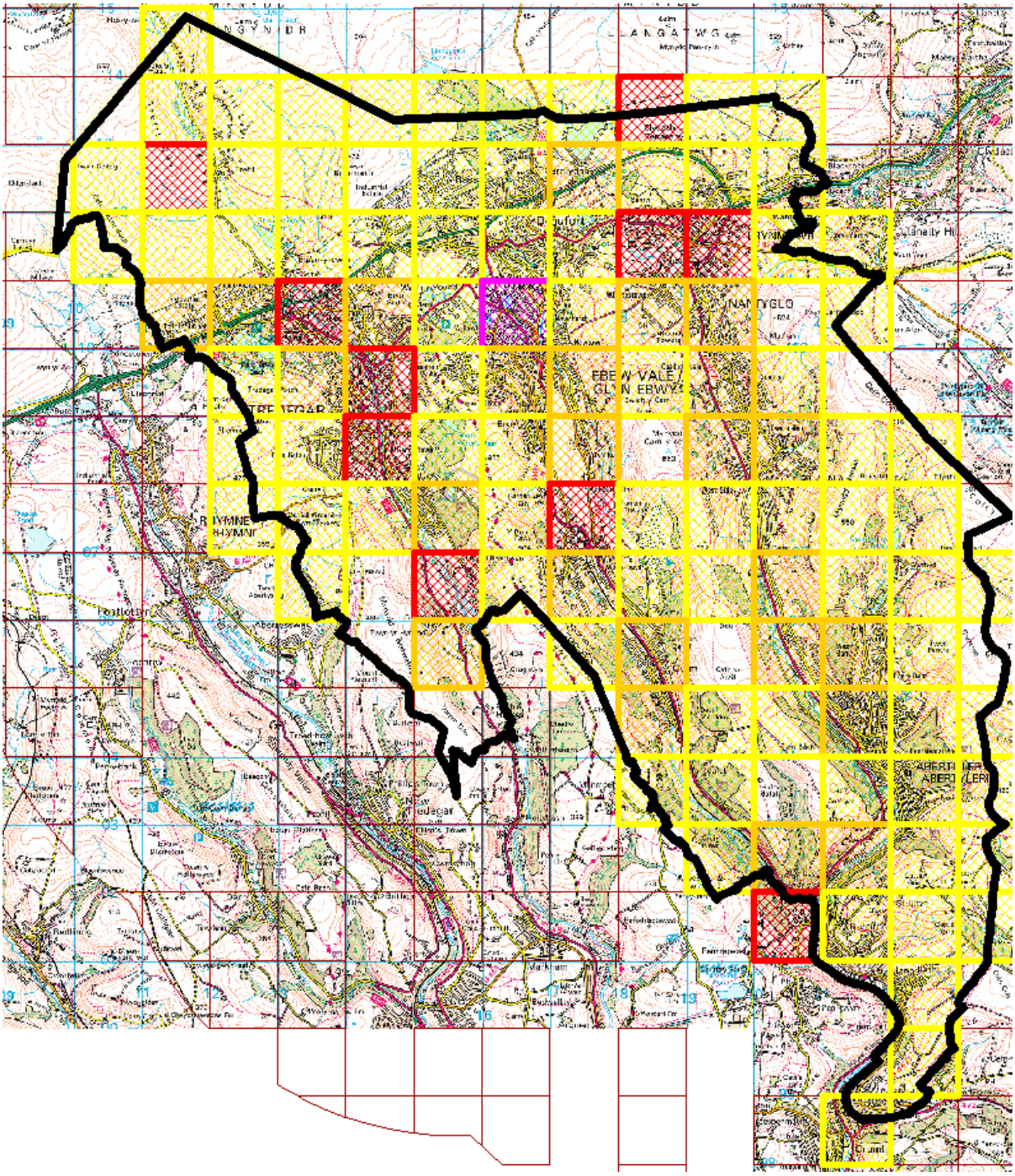
Figure 3-2 Flood Map for Surface Water Flooding (1 in 200 year event to a depth of 0.3m)

3.5.6. Groundwater Flooding

There is no local information available which provides evidence on future groundwater flood risk across Blaenau Gwent, and groundwater rebound is not believed to be an issue in the county. The Environment Agency's national dataset, Areas Susceptible to Groundwater Flooding has been used to form the basis of the assessment of future flood risk from groundwater.



Key: Purple Square Possibility >=75%,
Red Square Possibility >=50% <75%
Orange Square Possibility >=25% <50%
Yellow Square Possibility <25%

Figure 3-3 Flood Map for Ground Water Flooding

3.5.7. Ordinary Watercourses

The fluvial flood map was used to assess the risk of flooding from ordinary watercourses. The Detailed River Network was used to identify ordinary watercourses and this was cross-referenced with the Flood Map for Rivers and the Sea to assess future flood risk from this source.

Based on this methodology, no areas in addition to those identified through the surface water flood mapping seemed to be at significant risk of flooding from ordinary watercourses.

3.6. Local Drainage Capacity

Blaenau Gwent has both separate and combined foul and surface water drainage systems. Modern systems are typically designed to accommodate rainfall events with a 3.3% (1 in 30) annual probability and are usually separated into foul and surface water systems.

Older systems, such as those found within the majority of the local area, may have a design standard lower than this. These systems are often combined foul and surface water systems.

3.7. Environmental aspects

The SEA Environmental Report highlights the key environmental issues for Blaenau Gwent in relation to flood risk management, which have helped to guide the development of measures. The key issues can be summarised as:

- **Flood Risk:** As with much of the Valleys areas of South Wales, Blaenau Gwent has a relatively high amount of rainfall, in comparison with the rest of the UK. The average annual rainfall for the entire area is approximately 1,600mm. Rainfall in Blaenau Gwent predominantly falls as relatively low intensity, long duration rainfall that is dominated by frontal weather systems. However, short duration, high rainfall intensity storms are also experienced due to the upland nature of the study area.

  A Preliminary Flood Risk Assessment (PFRA) (June 2011) has been undertaken in order to provide a high level overview of flood risk in the County Borough. The Indicative Flood Risk Area is situated in the north of the Borough, and covers Ebbw Vale and Tredegar. Based on the evidence that was collected, no past flood events were considered to have had 'significant harmful consequences'. The historical flood records show flooding to occur on an ad hoc basis, generally localised and due to maintenance issues, blockage of gullies or culverts. However, it must be noted that the Environment Agency has identified a high risk of flooding from local sources across Blaenau Gwent, particularly from surface water. Based on national surface water modelling approximately 3,229 residential properties are estimated to be at risk from flooding to a depth of 0.3m or more during a rainfall event with a 1 in 200 annual chance of occurring.

  The National Flood Risk Assessment shows that a sizeable part of BGCBC's important infrastructure and public services are in flood risk areas. This is especially so for water-related infrastructure that needs to be near rivers. For example, over 80 per cent of water and sewage

pumping stations/treatment works are in flood risk areas, with 67 per cent at significant risk.

The PFRA identifies the potential consequences of flooding in Blaenau Gwent. It identifies that the potential human health impact of a flood to a depth of 0.3m or greater during a rainfall event with a 1 in 200 chance of occurring could amount to 13,104 people being affected, and 967 key services being affected.

The PFRA identifies Indicative Flood Risk Areas, entitled Environment Agency 'Blue Squares'. Two clusters have been identified, at Abertillery and Ebbw Vale and Tredegar. As only Ebbw Vale and Tredegar meets the minimum population criteria, it is the only Indicative Flood Risk Area identified. Within Ebbw Vale, the following are at risk: 2,856 properties, 6683 people, 28 critical services and 693 non-residential properties. In Abertillery, 993 residential properties are at risk, 2,324 people, 6 critical services and 156 non-residential properties are at risk.

- **Changing demographics and vulnerable population groups:** The proportion of population aged over 65 has increased since 2001 from 16.89% to 17.9% in 2011. The over 65 age group is the highest proportion of any age bracket within BG, suggesting there is an ageing population. According to the Index of Multiple Deprivation (IMD) 2011, 7 areas are within the top 25% most deprived areas nationally, in relation to flood risk. The highest risk Lower Super Output Area (LSOA) for flood risk is Six Bells 1 in Blaenau Gwent. A PFRA has been undertaken in order to provide a high level overview of flood risk in the County Borough. The Indicative Flood Risk Area is situated in the north of the Borough and covers Ebbw Vale and Tredegar. The Indicative Flood Risk Areas were identified through the PFRA using the Environment Agency 'blue squares'. A comparison between these areas and the IMD 2011 has shown that a range of communities of differing levels of deprivation are at risk of flooding.

- **Risk to Human Health:** The proportion of people with limiting long term illness is above the South East and national averages: 28.26% compared to 23.4% in the South East and 23.3% in Wales. In addition, people who self-assessed their general health as 'good' (2001 Census) represented a lower proportion of the population than the South East and national averages: 59.38% in Blaenau Gwent compared to 64.48% in the South East and 60.06% in Wales.

- **Protection of natural resources and biodiversity value:** There are now 137 Sites of Importance for Nature Conservation (SINCs) designated in the County Borough, which represents a significant increase since 2007. Further to this, there are 6 Local Nature Reserves (LNRs), 5 of which have been designated since 2007. A further 5 LNRs are expected to be designated at the end of 2012. These are aimed at increasing the awareness of and regulatory powers to protect the area's valuable natural assets. Blaenau Gwent is nationally important for breeding lapwings, a scarce and declining

bird species in Wales. Annex A of Appendix A includes the results of a river habitat survey in relation to river modification. The majority of watercourses are of moderate ecological status. Examples of notable European Protected Species in the area include otters, Atlantic salmon, eel, bullhead, Lapwing and marsh fritillary butterflies. These species may be vulnerable to measures included within the LFRMS. Salmon Action Plan compliance relates to a small proportion of the County Borough in the north east in the River Usk. Predicted performance identifies a probable risk. 100% of water bodies (of which 1 river was assessed) 'failed' for chemical status, compared to almost 80% nationally. Reasons for failure are included in Annex A. The greatest proportion of reasons (43%) was related to impoundments. 29% failed due to barriers to fish migration. Flood protection and land drainage occurred once as a reason for failure, representing 7% of the total. This occurred in the south of the county borough - a plan is included in Annex A. Further to this, the local Biodiversity Action Plan identifies a very broad range of species and habitats considered worthy of protection from damage, coupled with detailed listings of the range of pressures that face these habitats. Priority habitats are:

- Blanket bog
- Mesotrophic lakes
- Purple moor grass and rush pastures
- Upland mixed ashwoods
- Upland oakwood
- Wet woodland

An indirect threat to biodiversity is the potential for flooding to lead to the spread of non-native species. There are no European sites within the County Borough. The County Borough is adjacent to parts of the Usk Bat Sites and Cwm Clydach Woodlands Special Area of Conservation (SAC), both of which are European Sites for nature conservation. The SACs support internationally important plant and animal communities.

The County Borough includes the Cwm Merddog Woodlands SSSI near Cwm, which are fine examples of ancient semi-natural woodlands and a small part of the Cwm Clydach SSSI. The SSSI condition was last assessed by CCW in 2007 and was recorded as unfavourable recovering. Since then effort has been input to remedy the factors contributing it being unfavourable. The site is due to be visited again in 2013 to re-assess the condition.

The other SSSIs in Blaenau Gwent area include:

- Mynydd Llangynidr SSSI - this is a geological SSSI only recently notified;
- Mynydd Llangatwg SSSI
- Bryn Mawr Sections SSSI

- **Landscape enhancement:** The topography of the land can affect the hydrological regime of an area and dictate how the catchment responds to rainfall. Typically, watercourses in lower lying, flatter areas respond gradually to rainfall and in times of flood can have long duration events. Watercourses in steeper upland areas can respond quickly to rainfall but the flood events themselves have a shorter duration. The topography of Blaenau Gwent is fairly typical of the South Wales valleys in that it is dominated by relatively steep sided valleys. However, the areas in the north of the study area have a gentler topography, as they are located within the foothills of the Brecon Beacons. The topography of both the Ebbw and Sirhowy Rivers is characterised by narrow river channels bounded by steep sided valleys, with limited floodplains. Existing Special Landscape Areas (SLAs) have served to assist in protecting against inappropriate development and conserving the landscape quality with particular regard to the visual qualities.
- **Under appreciation and protection of heritage resources:** The South East Wales region has approximately 56 registered historic parks and Gardens. Out of the 10 regional authorities, Blaenau Gwent only has one registration – Bedwellty House and Park – which is a very low proportion. It was suggested in the consultation on the Scoping Report for the Sustainability Appraisal (SA) during the development of the recently adopted Local Development Plan (LDP) that this historic park and garden was in need of improvement, work which has subsequently been undertaken in recognition of the value of the resource. The Heritage Strategy recognises that the range and significance of archaeological monuments and sites within the County Borough is not well known and nor is it sufficiently recognised and appreciated. The PFRA identifies potential consequences of a flood depth of 0.3m or greater during a rainfall event with a 1 in 200 chance of occurring. This includes the flooding of 7 scheduled monuments.
- **Risk to water quality from flooding:** The main watercourses in Blaenau Gwent itself are the rivers Ebbw Fach, Ebbw Fawr and Sirhowy. 50% of the water bodies are of 'good' ecological status (compared to 30% for Wales overall), with less than 10% being 'poor'. The remainder are 'moderate' in terms of their ecological status. This compares favourably to national data. Approximately 50% of the overall status of groundwater is of poor status, with the other 50% being good. This compares to approximately 65% of groundwater being of good status nationally, with the remainder classified as poor. Given the industrial legacy of the County Borough, there are a considerable number of contaminated sites (1,607 sites in 2003), which may not be remediated due to potentially prohibitive

costs. Historic trends lend support to this issue – there are only two major contaminated sites in Blaenau Gwent that have been remediated in preparation for development. The presence of contaminated sites could create a risk to water quality during a flood event. The PFRA identifies potential consequences of a flood depth of 0.3m or greater during a rainfall event with a 1 in 200 chance of occurring. This includes the potential flooding of 5 Pollution Prevention and Control (PPC)1 sites for waste management. This could create a risk to water quality through the potential for contaminated runoff entering watercourses and groundwater.

- **Geodiversity and land instability:** Blaenau Gwent includes the Brynmawr Sections (geological site) SSSI. The landscape/geomorphology of the Blaenau Gwent area is controlled by Upper Palaeozoic, Upper Carboniferous rocks of the Productive Coal Formation (Lower-Middle Coal Measures) and overlying South Wales Pennant and Grovesend formations (Pennant Measures/Upper Coal Measures). Coal mining was an important industry, and evidence of previous mining activity remains in the landscape in the form of spoil heaps, tips, mine shafts and areas of made ground. On valley slopes with ancient landslips, renewed instability has resulted from extraction of coal and ironstone. The geology of Blaenau Gwent is relatively uniform with the bedrock of the area dominated by the South Wales Coal Measures, made of the Westphalian Series, which are typically coalbearing mudstones and sandstones. This geology can be relatively permeable in places, meaning that water can permeate the surface and enter watercourses via underground (through flow), rather than overland methods.

  The far northern extent of the study area (in the vicinity of the Brecon Beacons, to the north of Tredegar), the bedrock consists of limestones (Carboniferous Limestone) and Millstone Grits (Namurian Millstone). These layers typically have high permeability, particularly where limestones have been fractured or weathered. The soils of the upper topographical areas are typified by loams overlying the Coal Measures, which generally have relatively high infiltration rates. Soils in the lower topographical areas of the valleys are typically loamy, sandy soils associated with alluvial deposits and have variable permeability. In the northern extent of the study area (north of Tredegar and Ebbw Vale), surface water gleys and organic soils are found. These soils are typified by seasonal waterlogging and are associated with the peat drift geological deposits.

[1] The Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC) was required to be fully implemented in all Member States by October 2007. It is being introduced across Europe to improve the standard of environmental protection. The Directive covers: the disposal of waste by landfill; waste treatment and storage facilities that dispose of >10 tonnes of hazardous waste per day; facilities that treat >50 tonnes of non-hazardous waste per day, and some hazardous waste recovery operations that treat >10 tonnes of hazardous waste per day

3.8. Assessment of Local Flood Risk

The Preliminary Flood Risk Assessment (PFRA) completed by Blaenau Gwent, as required by the Flood Risk Regulations 2009, has been used to inform the development of this Strategy. The identification of the areas potentially at risk of flooding and the assessment of that risk contained therein should be used to determine if further investigation or studies are required.

Blaenau Gwent has areas identified as being at significant flood risk (as defined by the Welsh Government), and therefore will be completing further specific analysis of these areas, providing Flood Hazard and Flood Risk Maps by 2013 and a full risk management plan for the relevant areas by December 2015.

Whilst, these significant flood risk areas and the further analysis are unlikely to cover the whole of Blaenau Gwent, the information has been considered and addressed within our local strategy.

As part of the PFRA exercise, using our own records and liaising with other Risk Management Authorities, Blaenau Gwent accumulated a considerable information resource relating to historic flooding events. With the new responsibilities provided under the Act for Blaenau Gwent to investigate all flooding incidents it is expected that this resource will be enhanced and should therefore be considered by us to inform our assessment of the local flood risk.

To assess the local flood risk in the PFRA Blaenau Gwent has adopted the 'blue square' method in which 1km blue squares identify areas where either

- more than 200 people,
- more than one critical service or
- more than 20 non-residential properties

are predicted to be flooded at a depth of more than 0.3m in a rainfall event with a 1 in 200 annual chance of occurrence (0.5%) based on inspection of the FMfSW developed by the Environment Agency.

29 'blue squares' have been identified in Blaenau Gwent.

Figure 3-4 shows the location of these flood risk areas against a geographical map. The larger grouping of squares has been classified as the "significant flood risk area".

A breakdown of the flooding impact within each of these squares is shown at Figure 3-5 and Table 3-2.

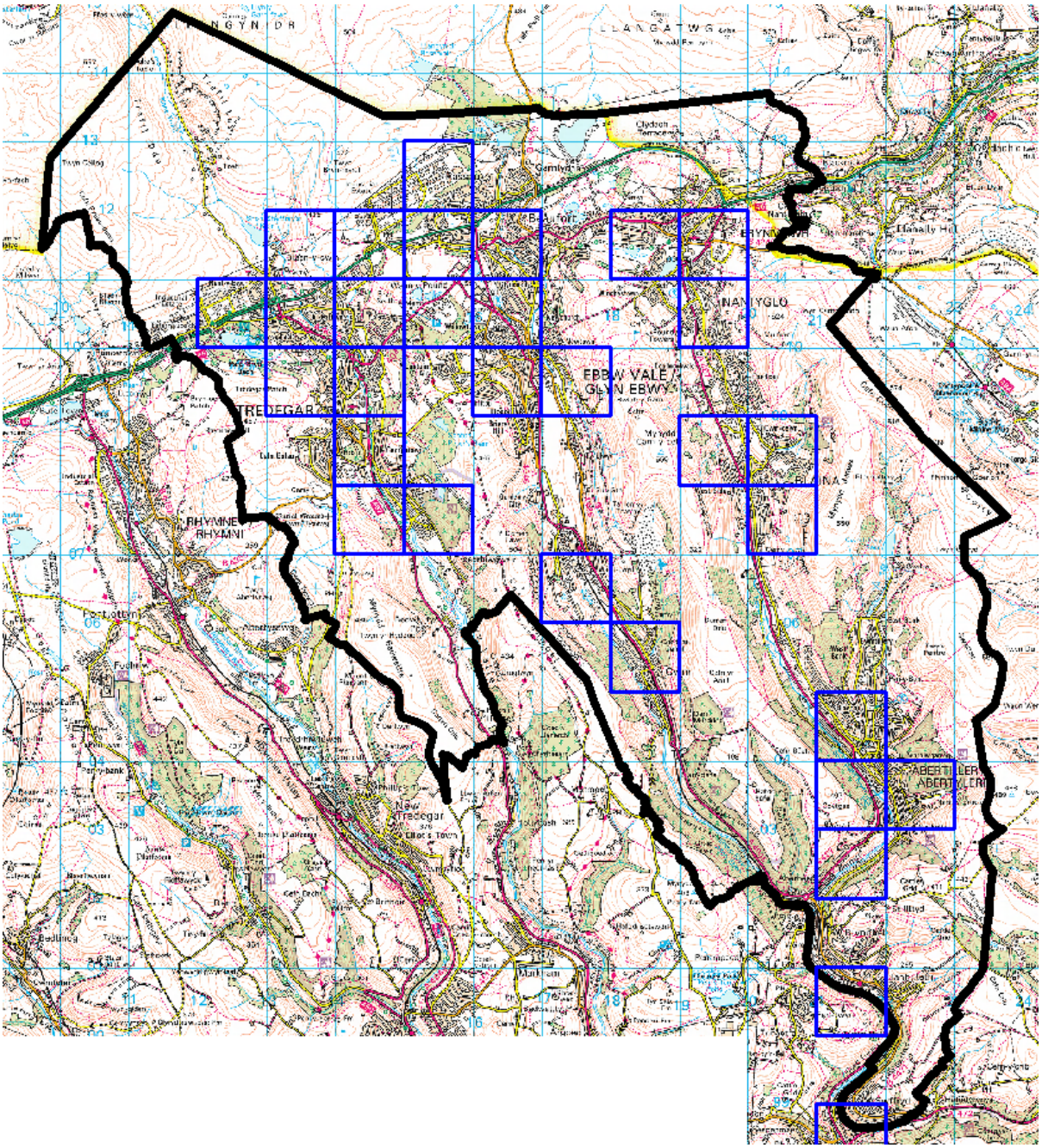


Figure 3-4 Blue Squares shown on a Geographical Map

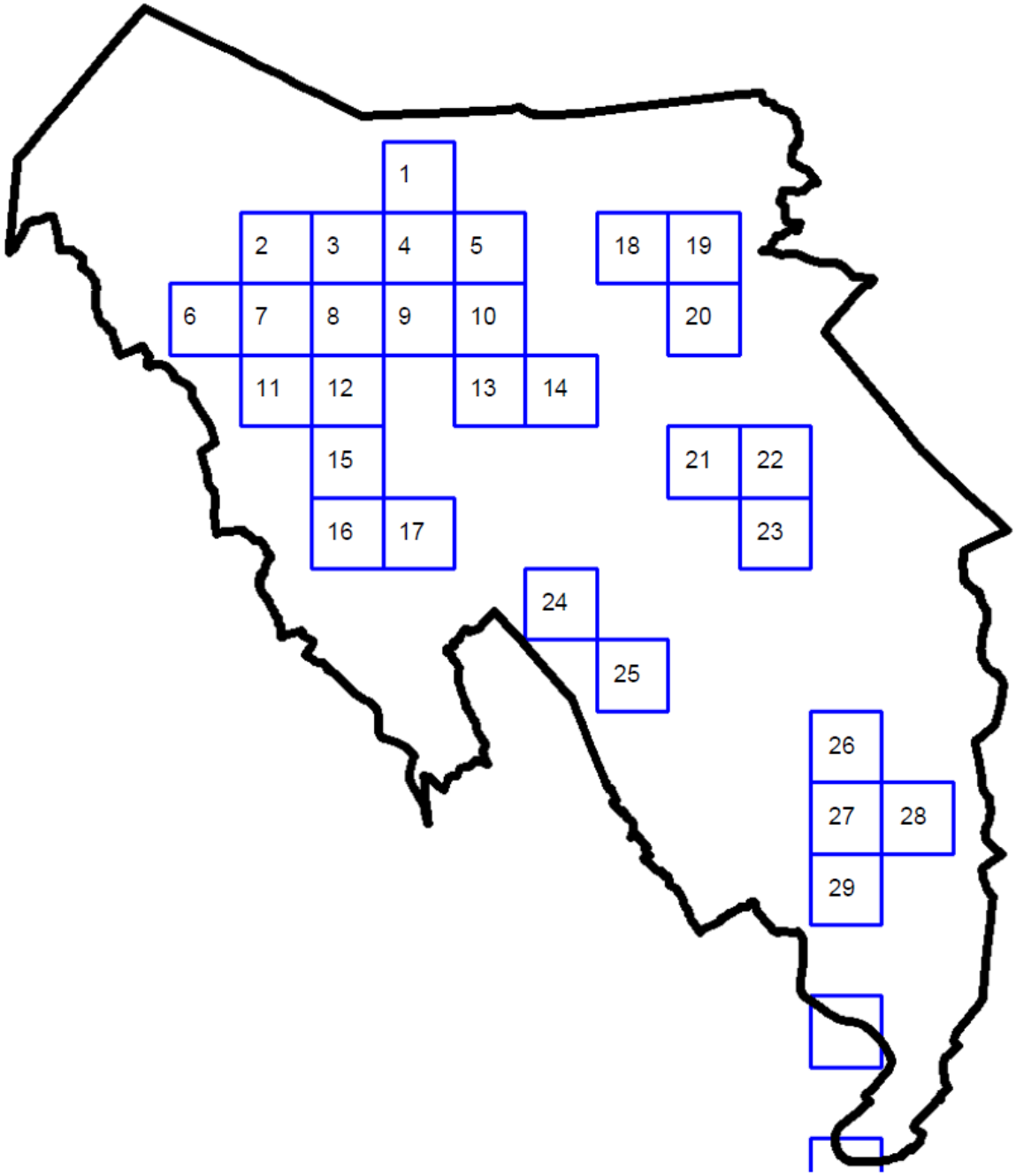


Figure 3-5 Review of Blue Squares and Consequences of Future Floods

Table 3-2 Summary of Blue Square Assessment

Consequences of Future Floods (1 in 200 Year, with a depth of 0.3m)					
		Human Health Consequences			Economic Consequences
Square No	Reference	No. Residential Properties (observed number - manual count from GIS)	Calculated Number of People (residential properties x 2.34)	No. Critical Infrastructure (Detailed GIS – provided by EAW)	No. Non-Residential Properties (Detailed GIS – provided by EAW)
1	X315 Y212	0	0.0	21	0
2	X313 Y211	5	11.7	29	1
3	X314 Y211	11	25.7	26	2
4	X315 Y211	77	180.2	20	0
5	X316 Y211	218	510.1	34	2
6	X312 Y210	36	84.2	28	1
7	X313 Y210	191	446.9	30	2
8	X314 Y210	198	463.3	32	1
9	X315 Y210	0	0.0	26	1
10	X316 Y210	113	264.4	75	2
11	X313 Y209	13	30.4	7	2
12	X314 Y209	226	528.8	50	3
13	X316 Y209	202	472.7	86	4
14	X317 Y209	25	58.5	29	0
15	X314 Y208	167	390.8	65	3
16	X314 Y207	157	367.4	17	0
17	X315 Y207	76	208.3	8	0
18	X318 Y211	133	311.2	44	2
19	X319 Y211	108	252.7	56	2
20	X319 Y210	87	203.6	7	0
21	X319 Y208	20	46.8	30	0
22	X328 Y208	113	264.4	35	0
23	X320 Y207	30	70.2	24	1
24	X317 Y206	60	140.4	32	0
25	X318 Y205	234	547.6	32	3
26	X321 Y204	412	964.1	88	4
27	X321 Y203	115	269.1	12	1
28	X322 Y203	110	257.4	15	1
29	X321 Y202	92	215.3	9	0

The table above shows that:

- 3264 properties are at risk of flooding to a depth of 0.3m, 3229 of these being residential.
- The total number of people at risk of a 1 in 200 year flood with a depth of 0.3 or above is 7556, which equates to approximately 11% of the population of Blaenau Gwent.

3.9. Future Flood Risk

Some research was undertaken on future flood risk as part of the Strategic Flood Consequences Assessment during 2010 and the resulting flood map is similar to that for the Environment Agency Flood Map for Surface Water (FMfSW).

Flooding is closely linked to climate change and the increasing number of extreme weather events; heavy rain, snow and heat. Heavy rain fall after a period of very dry weather can present the same risks as heavy rain falling on saturated ground.

Current guidance advises that a 20% allowance in the increase in rainfall intensity (and river flows) is provided for within assessments to account for climate change upto the 2080's.

By embedding sustainable considerations across all Blaenau Gwent County Borough Council activities these risks can be reduced and awareness of mitigation steps brought forwards.

4. The Risk Management Authorities

Section 6(15) of the Flood and Water Management Act 2010 makes reference to the Welsh Risk Management Authorities and lists those relevant to Blaenau Gwent as follows:

- The Environment Agency Wales;
- The Lead Local Flood Authority (LLFA);
- The Highway Authority;
- The Water Company

Table 4-1 Flood Risk Management Authorities in Blaenau Gwent

Risk Management Authority	Contact Details
Environment Agency Wales	South East Area Office Rivers House St Mellons Business Park Fortran Road St Mellons Cardiff CF3 0EY Phone Number: 08708 506506 Email: enquiries@environmentagency.gov.uk Web: www.environment-agency.gov.uk
Lead Local Flood Authority	Blaenau Gwent County Borough Council Civic Centre Ebbw Vale Blaenau Gwent NP23 6XB Phone Number: 01495 311556 Email: info@blaenau-gwent.gov.uk Web: www.blaenau-gwent.gov.uk
Highway Authority	See above. Local Authorities in Wales act as Highway Authorities in respect to local roads
Water Company	Dwr Cymru – Welsh Water Pentwyn Road Nelson Treharris CF46 6LY Head Office Phone Number: 01443 452300 Customer Services: 0800 052 0140 Web: www.dwrcymru.co.uk

In developing Local Strategies the LLFA must consult with the public and the other Risk Management Authorities who could be affected by the strategy. The following tables detail both internal and external consultees who have been contacted as part of the preparation of this Strategy

Table 4-2 Internal Partners

Partner	Contact Details
Planning Department Blaenau Gwent County Borough Council	**Steve Smith** Blaina District Office, High St, Blaina NP13 3XD Telephone Number: 01495 355510 Email: steve.smith@blaenau-gwent.gov.uk
Civil Contingency Blaenau Gwent County Borough Council	**Deanne Griffiths** Central Depot, Barleyfield Industrial Estate, Brynmawr NP23 4YF Telephone Number: 01495 355568 Email: Deanne.griffiths@blaenau-gwent.gov.uk
Environmental Health Blaenau Gwent County Borough Council	**Andrew Long** Anvil Court, Church St, Abertillery NP13 1DB Telephone Number: 01495 355581 Email: Andrew.long@blaenau-gwent.gov.uk
Finance Blaenau Gwent County Borough Council	**Angela Chard** Civic Centre, Municipal Buildings, Ebbw Vale NP23 6XB Telephone Number: 01495 355131 Email: angela.chard@blaenau-gwent.gov.uk

Table 4-3 External Partners

Partner	Contact
Emergency Services:	**Police -** Ebbw Vale Station, Bethcar Street, Ebbw Vale, NP23 6UY Telephone Number: 01633 838 111 **Ambulance** (Blaenau Gwent Local Health Board) Cardiff Road, Bargoed, Mid Glamorgan, CF81 8NN Telephone Number: 01443 830796 **Fire -** Cemetery Road, Ebbw Vale, Blaenau, Gwent, NP23 6LE
National Flood Forum:	**Paul Cobbing** Old Snuff Mill Warehouse, Park Lane, Bewdley, Worcestershire, DY12 2EL. Telephone Number: 0777 3355181 Email: Paul.cobbing@floodforum.org.uk
National Farmers Union:	**Head Office** Agricultural House, Stoneleigh Park, Stoneleigh, Warwickshire, CV8 2TZ Telephone Number: 02476 58500 **Welsh Office of NFU** Dafed Jarret Telephone Number: 01982 554222 Email: dafed.jarret@nfu.org.uk
Local Partnerships, forums, and community groups:	**Communities 1st Partnership Co-ordinator** Rob James Ebbw Vale & District Development Trust Ltd. 44 Church Street Ebbw Vale Blaenau Gwent NP23 6BG Telephone Number: 01495 352253 Email: rob.james@evad.org.uk
Royal Society for the Protection of Birds:	**RSPB** - Sutherland House, Cowbridge Road East, Cardiff, CF11 9AB Telephone Number: 029 2035 3000
Land Owners and	Land Registry Wales Office, Swansea, SA7 9FQ Telephone Number: 0844 892 1111

Partner	Contact
land/estate Managers:	
Developers Forum:	
National Parks Authorities:	Brecon Beacon National Park 126 Bute Street,Cardiff, CF10 5LE Telephone Number: 029 2049 9966 Email: info@anpa.gov.uk **Brecon Beacon national Park** Plas y Flynnon, Cambrian Way, Brecon, Powys, LD3 7HP Telephone Number: 01874 624437
Network Rail:	Western House, 1 Holbrook Way, Swindon, SA1 1B Telephone Number: 08457 11 41 41
Parish and Town Councils:	Mr G Bartlett **Abertillery & Llanhilleth Community Council,** Council Offices, Mitre Street, Abertillery, NP13 1AE Telephone Number:01495 217323 Mr Steve Bartlett **Nantyglo & Blaina Town Council,** Council Offices, High Street, Blaina Mrs A Davies **Brynmawr Town Council** Community Centre, Orchard Street, Brynmawr Mr J Morgan **Tredegar Town Council,** 19 St James Park, Tredegar, NP22 4NH
Local Resilience Forum:	Local Resilience Forum Coordinator Gwent Police Headquarters Croesyceiliog Cwmbrân NP44 2XJ Email: GLRF.coordinator@gwent.pnn.police.uk
Countryside Council for Wales:	Richard Jones Maes-y-Ffynnon, Penrhosgarnedd, Bangor, Gwynedd, LL57 2DW Email: rc.jones@ccw.gov.uk
Association of Drainage Authorities (ADA):	6 Electric Parade, Surbiton, Surrey, KT6 5NT Telephone Number: 020 8399 7350 Email: admin@ada.org.uk
Country Land and Business Association (CLA):	Unit 8, Broadaxe Business Park, Presteigne, Powys, LD8 2LAQ Telephone Number: 01547 317085 Email: info.wales@cla.org.uk
SWTRA – South Wales Trunk Road Agency:	12A Llandarcy House, The Courtyard, Llandarcy, Neath, SA10 6EJ
Forestry Commission Wales:	Rhodfa Padarn, Llanbadarn Fawr, Aberystwyth, Ceredigion, SY23 3UR
CADW:	Unit 5-7 Cefn Coed Nantgarw Cardiff Telephone Number: 01443 336000

Partner	Contact
Housing Associations:	**Aelwyd Housing Association Limited,** Mr Martin Hughes 58 Richmond Road, Roath, Cardiff, CF24 3ET Email: martinh@aelwyd.co.uk **First Choice Housing Association Ltd,** 19 Stanwell Road, Penarth, Vale of Glamorgan, CF64 2EZ Email: admin@firstchoicehousing.co.uk **Linc Cymru,** Mr James Eades 387 Newport Road, Cardiff, South Glamorgan CF24 1GG Email: james.eades@linc-cymru.co.uk **United Welsh** Y Borth,13 Beddau Way, Caerphilly, CF83 2AX

From April 2013, the Welsh Government plans to create a single environmental body for Wales, National Resources Wales. This will merge the functions of the Environment Agency Wales, the Countryside Council for Wales and the Forestry Commission Wales. This new body would take on all of the responsibilities of the Environment Agency in relation to flood and coastal erosion risk management in Wales and would undertake all of the functions described within this strategy.

5. The Risk Management Authority Functions

All Risk Management Authorities (except water companies) are required to act in a manner consistent with both the Local and National Strategies. Water companies must have regard to the relevant Local Strategies and any associated guidance.

5.1. Environment Agency Wales

The Environment Agency Wales is a Welsh Government Sponsored Public Body, whose principal aims are to protect and improve the environment and to promote sustainable development.

As of The Flood and Water Management Act 2010, the Environment Agency has a dual role:

Operational responsibilities of flooding from main rivers, the sea and coastal erosion;

Oversight responsibilities in relation to all flood and coastal erosion risk management in Wales.

As part of their oversight role the Environment Agency will lead on the provision of technical advice and support to the other Risk Management Authorities. They will also lead on national initiatives such as Flood Awareness Wales, the national raising awareness programme, and will be the single point of contact for enquiries and information on flood risk, currently being piloted via their Floodline Warning Service.

The Flood and Water Management Act 2010 has placed a number of statutory duties on the Environmental Agency (Wales):

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

The Environment Agency will be the sole Risk Management Authority charged with monitoring and reporting on the National Strategy's implementation. In undertaking this role they will:

- Collect data on progress from Risk Management Authorities using existing avenues wherever possible;
- Report factual information to Welsh Government; and
- As requested, provide interpretive advice to the Welsh Government.

In addition to their statutory duties, the Environment Agency has a number of "permissive powers". These are powers that allow them to do something, but do not compel them to and include:

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

Under the Regulations the Environment Agency also take on an assessment and coordination role at a national level, ensuring the correct information is passed back to the European Commission.

5.2. Blaenau Gwent County Borough Council

Blaenau Gwent County Borough Council has been established as the Lead Local Flood Authority (LLFA) for its administrative area as well as being the Highways Authority (this does not include trunk roads).

The LLFA is responsible for 'local flood risk'. These include the risk of flooding from ordinary watercourses, surface runoff and ground water.

The LLFA is responsible for both approving the original design of the SuDS (Sustainable Urban Drainage Systems) and adopting and maintaining the finished system.

The Flood and Water Management Act 2010 has placed a number of statutory duties on Local Authorities as LLFA's. These include:

- The preparation of local flood risk management strategies;
- A duty to comply with the National Strategy;
- To co-operate with other Authorities, including sharing data;
- A duty to investigate all flooding within its area, insofar as the LLFA consider it necessary or appropriate;
- A duty to maintain a register of structures and features likely to affect flood risk; and
- A duty to contribute to sustainable development
- The duty to consent works on Ordinary Watercourses (6th April 2013)

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

- Powers to request information;
- Powers to designate certain structures or features that affect flood or coastal erosion risk;
- The expansion of powers to undertake works to include broader risk management actions; and
- The ability to cause flooding or coastal erosion under certain conditions

5.3. Dwr Cymru – Welsh Water

Water and sewerage companies are responsible not only for the provision of water, but also for making appropriate arrangements for the **drainage of foul water**, **the treatment of waste, surface water sewers and combined sewers**. They have primary responsibility for floods from water and sewerage systems, which include sewer flooding, burst pipes or water mains or floods caused by system failures.

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

The Flood and Water Management Act 2010 places a number of statutory duties on Water and sewerage companies including:

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

Water and sewerage companies often hold valuable information which could greatly aid the understanding of flood risks faced by communities across Wales. Water and sewerage companies will also need to contribute to the preparation of the Local Strategies prepared by LLFAs.

6. The Objectives for Managing Local Flood Risk

An objective can be defined as being an outcome or target to be achieved.

In developing the objectives for managing local flood risk, Blaenau Gwent has taken the approach to embedding sustainable development as the central organising principal based around a number of sustainable development principals:

Low ecological footprint – all flood risk management should not overuse, but seek to work in harmony with natural resources and processes, promote resource efficiency , and minimise waste, so we are clear that flood risk management will help us reduce Blaenau Gwent's ecological footprint;

Full costs and benefits – Whole system thinking and whole life costing are key approaches that should be used. Taking account of risks – especially to the economic, social and environmental wellbeing of communities – and uncertainties associated with action and inaction should also be part of the decision – making process;

Evidence base – An evidence-based approach to decision-making will be used, but where there are threats of serious or irreversible damage, lack of full scientific certainty will not be used as a reason for postponing cost-effective measures to promote sustainable approaches to flood and coastal erosion risk management;

Polluter pays – Social and environmental costs of development should fall on those who impose them;

Reflecting distinctiveness – Approaches to sustainable flood and coastal erosion risk management will reflect and respond to the particular needs and issues of communities, and the differing economic, social and environmental circumstances in different parts of Wales

6.1. Overarching Objectives

Each LLFA is expected to develop their Local Strategy in keeping with the four overarching objectives for flood and coastal erosion risk management in Wales as set out in the National Strategy:

Table 6-1 National Strategy Objectives

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

By adopting this approach, the objectives will be consistent with those required under the Flood Risk Regulations 2009 and assist in ensuring that this common approach is maintained across Wales.

6.2. Flood Risk Management Objectives

The Environment Agency has developed specific flood risk management objectives in relation to social, economic and environmental aspects.

Blaenau Gwent have adopted these objectives on this basis that they have regard to the National Strategy, and are applicable to the local area.

Table 6-2 Flood Risk Management Specific Objectives

Social	Reduce distress (No. of people exposed to flooding) Reduce community disruption (No of residential and commercial properties) Reduce risk to life (No of people exposed to death x velocity of flow) Reduce disruption to key infrastructure (Or maintain operation of)
Economic	Reduce economic damage (e.g. Annual Average Damages AAD) Reduce cost of management (note a risk management outcome for use in appraisal)
Environmental	Reduce damages to Natura 2000 / SSSIs / BAP sites (or improve sites) Improve naturalness (reduce modification of channels / waterbodies)

6.3. Environmental Assessment Objectives

As part of the Strategic Environmental Assessment (SEA) process we have developed the above two environmental objectives to encompass a set of wider Environmental objectives as set out in the following table. These have been used to test the potential impacts of the LFRMS on environmental receptors. This assessment is documented in the supporting SEA Report.

Table 6-3 Strategic Environmental Assessment Objectives

1. To reduce health inequalities and promote community health, social care and well-being
2. To reduce the risk of surface, groundwater and sewer flooding taking account of climate change
3. To protect key infrastructure from adverse effects associated with flooding
4. To protect and enhance biodiversity across Blaenau Gwent
5. To protect the quality and character of the landscape and enhance where necessary
6. To conserve the heritage assets of Blaenau Gwent and their settings
7. Protect and conserve soils and soil function, and increase resilience to degradation
8. To promote the use of sustainable design
9. Protect and improve the water environment, in terms of water quality, quantity and hydromorphological function

6.4. Blaenau Gwent Objectives

The Objectives set by Blaenau Gwent, in Table 6-4 below, are in response to both the SEA Statutory Consultation and Public Consultation. These Objectives also detail how the Overarching (National) Objectives have been considered.

Table 6-4 Blaenau Gwent Objectives Reviewed against the Overarching Objectives

			1. Reducing the consequences	2. Raising awareness	3. providing response	4. Investment
Social & Cultural	S1	Reduce the number of people exposed to flooding risk.	X	X		
	S2	Reduce the number of residential, community, heritage assets and commercial properties exposed to flooding risk	X	X		
	S3	Reduce risk to life (No of people exposed to death x velocity of flow)	X	X	X	
	S4	Reduce disruption to key infrastructure (Roads, Hospitals, Power Sub Stations etc.)	X		X	
Economic	Ec1	Reduce economic damage (e.g. Annual Average Damages AAD)	X			
	Ec2	Reduce cost of management (note a risk management outcome for use in appraisal)				X
Environmental	En1	Reduce the number of important habitats (including those protected by international, national or local designations) exposed to flooding risk	X		X	
	En2	Improve naturalness (reduce modification of channels / waterbodies)	X		X	

7. Proposed Local Flood Risk Measures

Blaenau Gwent has developed a range of measures to help deliver the objectives.

These measures will be reviewed periodically to ensure that they are achieving the objectives set out in this Strategy.

A measure can be defined as an activity, which will be undertaken to manage risk and achieve the agreed objectives.

According to The Flood Risk Regulations 2009, our measures must in particular, include measures relating to –

a) the **prevention** of flooding;
b) the **protection** of individuals, communities and the environment against the consequences of flooding; and
c) arrangements for **forecasting** and warning.

The range of measures have been considered for action in the short (0-20 years), medium (20 – 50 years) and longer term (50 – 100 years). This includes both structural and non-structural activities. To account for the review cycle of the LFRMS Blaenau Gwent have in turn broken down the short term period as follows;

- Short term (0 – 20 years)
  - 1st LFRMS cycle (up to 2015)
  - 2nd LFRMS cycle (up to 2020)
  - 3rd LFRMS cycle (up to 2030)

Blaenau Gwent has assessed both the current and potential future flood risks as part of the PFRA in order to enhance adaption thinking and planning when identifying measures. Blaenau Gwent are also engaging with the community through consultation and surveys etc. to outline the risks now and in the future to the affected communities.

Discussions will continue in order to agree any proposed measures to mitigate against these risks and what communities and individuals can also do for themselves.

In determining the objectives and measures Blaenau Gwent has worked with other Risk Management Authorities, listed in Section 4, in order to enhance the benefits of partnership working. Partnership working and collaboration is an integral part of managing flood risk and is reflected in the duty to co-operate within Act.

Working with communities in managing flood risk will help:

- Understand the needs of individuals, communities and businesses;
- Make better informed plans, decisions and policies;
- Communities to understand what flood risk means for them, including what they should do in a flood;
- Communities to recover more quickly after a flood;
- Meet goals (including timescales);
- Increase local support;
- Increase trust in government; and
- Improve the reputation of LLFA (and other partners)

Measures have been considered as either Structural or Non-Structural. The cost benefit of each measure will be considered when prioritising what measures will be implemented. Typical Structural and Non-Structural Measures are shown below:

Structural measures to manage local flood risks include activities such as:

- changing land management practices to reduce surface water runoff and diffuse pollution,
- attenuating rainfall at source through the use of sustainable urban drainage systems (SuDS),
- designing drainage systems for larger than immediately necessary volumes,
- considering the management of rainfall on highways,
- kerb realignment, and
- determining overarching approaches for regulating ordinary watercourses.

Non – structural measures to manage local flood risks include activities such as:

- emergency planning,
- awareness campaigns,
- spatial planning policies to reduce flood risk on new developments,
- consider the adaptive approaches to be taken on existing developments,
- determining overarching approaches for regulating ordinary watercourses (for example through a policy on consents for culverts).

A vital aspect in the identification and delivery of the measures will be community engagement and to outline the risks now and how in the future communities may be affected. It will also be important to discuss and agree any proposed measures to help mitigate against these risks and what communities and individuals can also do for themselves.

In developing objectives and measures Blaenau Gwent County Borough Council have also considered the impacts of climate change to ensure that the measures are designed, and are resilient to changing climate.

Drainage and defence still have a place within a flood and coastal erosion system based on the principles of risk management, but we also need to consider other options that could prevent an event from occurring and that protect individuals, communities and the environment against the consequences of flooding.

7.1. Proposed Measures

A list of the proposed measures can be seen in Table 7-1 together with how each measure addresses the objectives set by Blaenau Gwent County Borough Council.

7.2. High Level Strategic Options

In developing the proposed measures Blaenau Gwent have reviewed potential actions against the following high level strategic options. A summary of the considered options is included in Appendix F.

1) **Do Nothing** – Potentially there would be a greater social risk together with an increase in economic and environmental damage.
2) **Maintain** – Keep pace with climate change so that there is no net increase in flood risk; existing flood risk management infrastructure will need to be improved over time and all new development will need to take climate change into account.
3) **Do More**– Take action to reduce social, economic and environmental impact due to flooding.

Table 7-1 Proposed Measures

	Blaenau Gwent Objective							
	S1	S2	S3	S4	Ec1	Ec2	En1	En2
Prevention Measures								
• making more use of the natural environment, like wetlands;	?	?	?	?	✓	✓		✓
• avoiding inappropriate development in flood risk areas;	✓	✓	✓					
• increasing approaches that utilise the natural environment,						✓		✓
• encourage use o f sustainable drainage systems (SuDS);	✓	✓			✓	✓		✓
• incorporating greater resilience into the design of developments		✓			✓	✓	✓	✓
Protection Measures								
• develop robust maintenance regimes of culverts & drains and identify priority areas.		✓			✓	✓		
• identifying and protecting areas suitable for inundation and water storage to prevent flooding elsewhere					?			✓
• enabling those at risk of flooding to play a proactive role in shaping the flood risk management service they receive;	?	?	✓	✓	?	?	?	
• improving the response to flooding incidents by the emergency response organisations, as well as individuals and businesses;				?	✓	✓		
• ensuring effective recovery arrangements are in place and supported by all relevant parties.				?	✓	✓		

	Blaenau Gwent Objective							
	S1	S2	S3	S4	Ec1	Ec2	En1	En2
Forecasting Measures								
• developing better flood forecasting and warning systems;	✓	✓	?	?		✓		
• improve monitoring and data recording.	?	?	?	?	?			
• improve communication and support to residents, businesses and communities	✓	✓	?	?	?			

8. How and When the Measures Are to be Implemented

In order to determine how and when any proposed measures will be implemented; Blaenau Gwent as LLFA, will consider its own priorities and objectives and ensure that these measures are realistic in terms of both financial and physical resources available. Blaenau Gwent will also agree how, by when and by whom the measures are expected to be implemented with the other Risk Management Authorities.

For each measure the time scale for implementation must fall under one of the following categories:

- Short term (0 – 20 years), period as follows;
- Medium term (20 – 50 years)
- Long term (50 – 100 years)

Blaenau Gwent have in turn broken down to “short-term” period to match the LFRMS review cycle. Each measure has been classified in terms of a preventative, protection or forecasting measure and are shown in Tables 8.1, 8.2 and 8.3 overleaf

The internal departments with Blaenau Gwent are also identified on the tables as follows;

- Env/Reg Environment and Regeneration - Regeneration Division
- Env/TS Environment and Regeneration - Technical Services Division
- Env/NS Environment and Regeneration - Neighbourhood Services
- Env/Plan Environment and Regeneration - Planning Division
- SBU/CC Strategic Business Unit – Civil Contingencies

In selecting the preferred option for each measure we have considered the outcome of the environmental assessments. The outcome of these assessments is set out in more detail with the supporting reports. See Section 11 for further details.

Table 8-1 Measures to Prevent an Event from Occurring

SPECIFIC MEASURES		LEAD DEPT.	Preferred LFRMS Option	Proposed Action	OBJECTIVE ADDRESSED	FUNDING	TIME SCALE	ACTION REQ.
MEASURE PRV1: We will make more use of our natural environment								
PRV 1.1	Delivery of the Blaenau Gwent Local Biodiversity Action Plan (LBAP), specifically HAP1, Wet woodlands, HAP4, Wetlands and HAP 5 Rivers and Streams.	E&R/ Reg	Do-More	include consideration of flood risk within review of the LBAP. Raise internal awareness of flood risk / bio-diversity synergies and seek advice from NRW.	S1,Ec1,En2	Unknown	Short (LFRMS2)	Yes
PRV 1.2	Consider/Review the designation and management of Local Nature Reserves (LNR) where they assist in flood prevention.	E&R/ Reg	Do-More	Include consideration if the LNR can or does reduce local flood risk. Review how Nature Reserves are managed, including approaches to soil conservation or creation techniques and ecosystem services with advice from appropriate NRW officers. Raise internal awareness of flood risk/bio-diversity synergies	S1,Ec1,En2	Resource Required to Identify	Short (LFRMS1)	Yes
PRV 1.3	Consider planning requirements for wetland habitat creation as part of the Development Management Process.	E&R/ Reg	Do-More	Negotiate via conditions or S106 agreement, and review need for Supplementary Planning Guidance as part of the Development Management Process	En2	Developer subject to viability of scheme	Short (LFRMS2)	None
PRV 1.4	Consider the designation and management of existing wetland areas where they assist in flood prevention.	E&R/NS	Maintain	Review areas which can directly assist with the management of flood risk and seek advice from NRW as appropriate.	Ec2, En2	None required	Short (LFRMS2)	No

SPECIFIC MEASURES		LEAD DEPT.	Preferred LFRMS Option	Proposed Action	OBJECTIVE ADDRESSED	FUNDING	TIME SCALE	ACTION REQ.
PRV 1.5	BGCBC will encourage developers to incorporate wetland and other natural attenuation schemes in new development through guidance, policies and pre-application discussions with Planning Control case officers.	E&R/ Reg&NS	Do-More	Review need for Supplementary Planning Guidance, identifying most appropriate SuDS systems that BGCBC will accept, using CIRIA C697 and (to be published) National SuDS standards. Raise awareness of Planning Staff in advance of BGCBC taking on new duty as SuDS Approval Body Planning Control case officers to include item related to management of local flood risk during pre-application discussions.	S2, Ec2, En2	Developer subject to viability of scheme	Short (LFRMS1)	Yes
MEASURE PRV2: We will avoid inappropriate development in flood risk areas								
PRV 2.1	Adopt the Local Development Plan (LDP) as all allocations included in the Plan have been subject to a Strategic Flood Consequence Assessment	E&R / Reg	Maintain	LDP to be adopted by end of 2012	S1, S2, S3	None required	Short (LFRMS1)	Yes
PRV 2.2	Adopt the Local Development Plan and implement Policy SP7 which directs new development away from high flood risk areas	E&R / Reg	Do-More	LDP to be adopted by end of 2012 review SP7 to account for local flood risk areas and not just those considered within the SFCA	S1, S2, S3	None required	Short (LFRMS1)	Yes
PRV 2.3	Raise awareness in Planning Committees when developments potentially impact on flood risk areas.	E&R/NS	Do-More	Include as specific topic within Council Member Planning Training; overarching legislation, WG/BGCBC policy, and not only the need to protect people and property from flood risk, but also the need to protect biodiversity, heritage and landscape assets. Carry out internal officer awareness raising exercise at the same time	S1, S2, S3, Ec2	None required	Short (LFRMS1)	Yes

SPECIFIC MEASURES		LEAD DEPT.	Preferred LFRMS Option	Proposed Action	OBJECTIVE ADDRESSED	FUNDING	TIME SCALE	ACTION REQ.
MEASURE PRV3: We will increase approaches that utilise the natural environment, like adopting soft engineering in place of traditional solutions, managing of the land to reduce storm runoff, creating more wetlands to store water								
PRV 3.1	Identify contributions to delivery of the Woodlands for Wales Strategy (Welsh Gov) e.g. Shelter belt planting opportunities.	E&R/ Reg	Do-More	Through the County Ecologist identify opportunities to manage flood risk, especially from woodland run-off through sustainable management of forestry areas	Ec2, En2	Resource Required	Short/Med	Yes
PRV 3.2	Review the existing management of ordinary water courses in regard to controlling invasive weeds	E&R/ Reg	Do-More	Continue to clear areas which affect access to any related assets that are required to manage flood risk, eg culverts, sluices, weirs , pumping stations. Review if other management options are available in partnership with other bodies to introduce efficiencies of scale or alternative treatment approaches. Initial discussions with adjacent LLFA's and appropriate officers within NRW	Ec2, En2	Resource Required	Short (LFRMS1)	Yes
PRV 3.3	Review the existing management plans for Local Nature Reserves which assist in storing and filtering water.	E&R/ Reg	Do-More	Include consideration of water quality to improve WFD classification within review of how nature reserves are managed. Raise internal awareness of flood risk / bio-diversity synergies	Ec2, En2	Resource Required	Short (LFRMS2)	Yes

SPECIFIC MEASURES		LEAD DEPT.	Preferred LFRMS Option	Proposed Action	OBJECTIVE ADDRESSED	FUNDING	TIME SCALE	ACTION REQ.
PRV 3.4	When designing streetscape works consideration will be given to incorporating a greater area of tree planting and permeable areas.	E&R/ Reg	Do-More	Revise internal policy guidance and SPG. The revision should include guidance on species to avoid as well as those which may improve flood risk management and appropriate / inappropriate circumstances for use Poorly planned tree planting may have negative effects on flood risk management if leaves/debris from trees block drains / culverts. to account for evidence that the options have been considered and acceptable justification where these have not been included in final layouts	S4, Ec2, En2	Resource Required	Short (LFRMS2)	Yes
PRV 3.5	Identify opportunities for planting to stabilise river banks.	E&R/ Reg	Maintain	where identified as posing a high-risk of causing flooding or damage we work with the riparian owner to stabilise the river bank. Before undertaking such works appropriate advice will be sought from the NRW and consent applied for (from ourselves). If necessary we will carry out emergency works to stabilise the bank under our permissive powers.	Ec2, En2	Resource Required	Short (LFRMS1)	Yes
MEASURE PRV4: deploying the sustainable drainage systems (SuDS) approach for surface water management for both new and existing developments								
PRV 4.1	Adopt the Local Development Plan and implement Policy DM1 which requires proposals to reduce surface water run off through minimising an increase in impermeable surfaces and using Sustainable Drainage systems, where appropriate.	E&R/ Reg	Maintain	LDP to be adopted by end of 2012	Ec1, Ec2	None Required	Short (LFRMS1)	Yes

SPECIFIC MEASURES		LEAD DEPT.	Preferred LFRMS Option	Proposed Action	OBJECTIVE ADDRESSED	FUNDING	TIME SCALE	ACTION REQ.
PRV 4.2	Encourage developers through pre-application discussions to use sustainable drainage systems pending the introduction of the new SuDS regime	E&R/NS	Do-More	Discussions undertaken on all applications. Raise awareness in advance of BGCBC taking on required duty as SuDS Approval Body	En2	None Required	Short (LFRMS1)	Staff training
PRV 4.3	Specify greater use of SuDS systems for new developments as conditions of planning consent.	E&R/NS	Do-More	Discussions undertaken on all applications. Raise awareness in advance of BGCBC taking on required duty as SuDS Approval Body	S1, S2, En2	None Required	Short (LFRMS1)	Await introduction of SuDS and WG guidance
MEASURE PRV5: Incorporate greater resilience into the design of developments (houses, buildings, roads and paved areas)								
PRV 5.1	Adopt the Local Development Plan and implement Policy SP7 which includes a requirement to incorporate measures in design and construction to reduce the effects of flooding. This will ensure buildings are designed to reduce the effects of flooding	E&R/ Reg	Maintain	LDP to be adopted by end of 2012	S2, Ec1, Ec1, Ec2	None Required	Short (LFRMS1)	Yes
PRV 5.2	Promote appropriately designed developments in relation to site levels, creation of high ground and setting floor levels	E&R/ NS	Do-More	Discussions undertaken on all applications, review if further Supplementary Planning Guidance is required.	S1, S2, Ec2	None Required	Short (LFRMS1)	Yes
PRV 5.3	Increase approaches in road schemes to utilise materials which provide more resilience to flooding incidents where they are likely to occur.	E&R/ TS	Do-More	Review with WG / adjacent Highway Authorities / Suppliers potential advances in materials and design which will provide greater resilience to flooding	S4, Ec2, En2	None Required	Short (LFRMS2)	Yes

Table 8-2 Measures to Protect Individuals, Communities and the Environment against the Consequences of Flooding

SPECIFIC MEASURES		LEAD DEPT.	Preferred LFRMS Option	Proposed Action	OBJECTIVE	FUNDING	TIME SCALE	ACTION REQ.
MEASURE PRT1: Develop maintenance regimes for culverts & drains and identify priority areas								
PRT 1.1	Develop reporting system to register details of events at the time of flooding incidents.	E&R/ TS	Do-More	Recording software purchased to enable efficient logging of flooding events. Collaboration with other LLFRA's to share flooding incident information	Ec2	Resource Required	Short (LFRMS1)	Yes
PRT 1.2	Develop and maintain a register of flood assets.	E&R/ TS	Do-More	Recording software purchased to enable efficient logging and registering of incidents. Collaboration with adjacent Authorities underway to share flood asset information	Ec2	Resource Required	Short (LFRMS1)	On-Going
PRT 1.3	Develop a maintenance recording system and ensure these are informed by the register of flooding incidents.	E&R/ TS	Do-More	Recording software purchased to enable efficient logging of asset (namely culvert, highway gully, watercourse) inspections. Officer responsible is currently familiarising himself with the system	Ec2	Resource Required	Short (LFRMS1)	On-Going
PRT 1.4	Carry out a risk assessment of all critical culverts and flood assets, as identified through the register of flooding incidents, maintenance records or flood assets, and prepare an action plan to address any unacceptable risks as a result	E&R/ TS	Maintain	PFRA completed - identified high-risk areas Hazard Maps being prepared by the EA for high-risk areas by June 2013 BGCBC to prepare Flood Plans by Dec 2015	Ec2	Resource Required	Short (LFRMS1)	On-Going

SPECIFIC MEASURES		LEAD DEPT.	Preferred LFRMS Option	Proposed Action	OBJECTIVE	FUNDING	TIME SCALE	ACTION REQ.
	of the review.							
MEASURE PRT2: Identifying and protecting areas suitable for inundation and water storage to prevent flooding elsewhere								
PRT 2.1	Identify areas suitable for inundation and water storage.	E&R/ Reg	Maintain	Adoption of LDP development / land use allocations, and subsequently identify areas which can be used for water storage to manage flood risk through assessment of the Flood Plans and impact on the surrounding environment Continue to contribute to Consultations and discussion with WG through the WLGA etc. At a local level include environmental assessment of areas identified for inundation (Any update to designation through a change at a National level is assumed would include the need for environmental assessment)	Ec1, En2	Resource Required	Short (LFRMS2)	Yes
PRT 2.2	Consider how any identified flood storage areas can be protected through changes to existing procedures, policy, legislation etc.	E&R/ Reg	Maintain		En2, En3	None Required	Short (LFRMS2)	Yes
MEASURE PRT3: Enable those at risk of flooding to play a proactive role in shaping the flood risk management service they receive								

SPECIFIC MEASURES		LEAD DEPT.	Preferred LFRMS Option	Proposed Action	OBJECTIVE	FUNDING	TIME SCALE	ACTION REQ.
PRT 3.1	Communities in flood risk areas to be consulted on the flood strategy and changes to service	E&R/TS	Maintain	Consultation of the Local Flood Risk Strategy, and the previous PFRA provides communities with the opportunity to influence any change	S1, S2, S3, Ec1	Resource and Funding Required	Short (LFRMS1)	
PRT 3.2	Develop community resilience schemes for areas at risk of flooding	SBU/CC	Do-More	Help communities prepare and Community Flood Plan. Encourage self-help / awareness through better understanding and awareness raising working with all internal BGCBC Depts and the EA Flood Awareness Wales team	S1, S2, S3	Resource Required	Short (LFRMS2)	
PRT 3.3	Ensuring wider awareness of individual risk to increase levels of preparedness and planning for flooding events	SBU/CC	Do-More	Include session within new Member training, as well as review and update of available information. Review identified high-risk areas and working with all internal BGCBC Depts and the EA Flood Awareness Wales team develop rolling programme of events	S1, S3, Ec1	Resource Required	Short (LFRMS1)	Yes
MEASURE PRT4: Improve the response to flooding incidents by the emergency response organisations, as well as individuals and businesses								
PRT 4.1	Ensure lessons from flooding incidents in this and other areas are captured	E&R/TS	Maintain	Review of available incident proformas to record details during events by the supervisor /lead officer to include not only affected people and properties or infrastructure but also wider environmental assets and the potential effects of flooding, such as pollution to water-	Ec1, Ec2	Resource Required	Short (LFRMS1)	Yes

SPECIFIC MEASURES		LEAD DEPT.	Preferred LFRMS Option	Proposed Action	OBJECTIVE	FUNDING	TIME SCALE	ACTION REQ.
				courses event de-brief meetings are carried out to capture lessons of what went well and bad. Where applicable actions are subject to Scrutiny Review				
PRT 4.2	Appropriate trained staff to ensure awareness of roles, responsibilities and an effective response for those involved in flood response.	SBU/CC	Do-More	Review of the training need across BGCBC and provide where gaps are identified. Include flood risk awareness as part of all new staff inductions	Ec1, Ec2	Training Required	Short (LFRMS1)	Yes
MEASURE PRT5: Ensure effective recovery arrangements are in place and supported by all relevant parties								
PRT 5.1	Involvement in multi agency recovery planning, ensuring plans are tested for suitability	SBU/CC	Maintain	Recovery plan in plans and approved by Gwent Local Resilience Forum. Validation exercise undertaken involving key service areas and partners. Revised as necessary.	Ec1, Ec2	None Required	Short (LFRMS1)	On-going

Table 8-3 Measures to arrange for forecasting and warning

SPECIFIC MEASURES		LEAD DEPT.	Preferred LFRMS Option	Proposed Action	OBJECTIVE	FUNDING	TIME SCALE	ACTION REQ.
MEASURE FC1: Develop better flood forecasting and warning systems								
FC 1.1	Review current flood forecasting and warning systems and identify potential improvements to allow as much warning as possible of potential flooding events.	SBU/CC	Maintain	Met office / EA forecasting received for pan-Wales and local weather forecasting contract in place. Review need to upgrade systems as improved systems are developed.	Ec1, Ec2	Resource Required	Short (LFRMS2)	Yes
FC 1.2	Developing a consistent approach to recording of flood events and flood assets.	E&R/TS	Do-More	Recording software purchased to enable efficient logging and registering of incidents. Collaboration with adjacent Authorities underway to share flood asset information	Ec2	Resource Required	Short (LFRMS1)	Yes
FC 1.3	Develop a communication strategy for at-risk communities where risks that cannot be immediately reduced are communicated to the Emergency Planning Team and affected businesses or residents.	E&R/TS	Do-More	Help at-risk communities prepare a Community Flood Plan. The plan should include awareness actions to manage the risk to the environment as a result of flooding such as pollution of watercourses. Encourage self-help / awareness through better resident understanding and awareness raising working with all internal BGCBC Depts and the NRW Flood Awareness Wales team	S1, S2, Ec2	Resource Required	Short (LFRMS1)	Yes
MEASURE FC2: Improve monitoring and data recording								
FC 2.1	Ensuring flood events are recorded in line with the form identified in PRFA	E&R/TS	Do-More	Recording software purchased to enable efficient logging of flooding events. Collaboration with other LLFRA's to share flooding incident information	Ec2	Resource and Funding Required	Short (LFRMS1)	On-Going

SPECIFIC MEASURES		LEAD DEPT.	Preferred LFRMS Option	Proposed Action	OBJECTIVE	FUNDING	TIME SCALE	ACTION REQ.
FC 2.2	Implementing a geographical database of flood events to inform future mapping of flood risk areas	E&R/TS	Maintain	PFRA completed - identified high-risk areas Hazard Maps being prepared by the EA for high-risk areas by June 2013 BGCBC to review and update following future events	Ec2	Resource and Funding Required	Short (LFRMS1)	On-Going
FC 2.3	Utilise new software to enable identification of priority areas.	E&R/TS	Do-More	Develop prioritisation criteria to account for reduction in flood risk and greatest community and environmental benefit. Using available GIS packages Council held information, and Hazard Maps (after June 2013) assess areas for prioritisation of needs	S1, S2, S3, S4, En2	Resource and Funding Required	Short (LFRMS1)	Yes
MEASURE FC3: Improve communication and support to residents, businesses and communities								
FC 3.1	Set up a "Flood Risk Community Engagement Group" to help communicate flooding and flood risk to residents, businesses, community etc.	SBU/CC	Do-More	Help communities prepare and communicate Flood Plan. Encourage self-help / awareness through better understanding and awareness raising working with all internal BGCBC Depts and the EA Flood Awareness Wales team	S1, S2	Resource Required	Short (LFRMS2)	On-going

8.1. General Recommendations/Measures (Project Level)

In some cases it has not been possible to rule out the possibility of significant effects due to the strategic nature of the LFRMS and it is deemed more appropriate to determine the possibility of significant effects at a project level. It has, however, been possible to identify mitigation actions that could be taken in order to reduce the potential for such projects to have a significant effect on site features, namely:

- Ensure that an EIA/HRA is undertaken at the project level;
- Time works to minimise disturbance to features of the sites e.g. hibernating bats;
- Access to/from roost entrances should be unobstructed and large enough for bats to fly through unimpeded;
- No artificial lights shining on access or associated flight paths;
- Appropriate levels of vegetation should be maintained close to entrance (s) but not obstructing it (them);
- Any works should ensure there is no net loss of suitable woodland, scrub and hedgerows in the areas used by bats and any vegetation clearance should not create any major gaps in the continuity of these habitats;
- Use of materials that are appropriate for use in/near water, taking account of relevant advice from EA and CCW in relation to these matters;
- Seek opportunities to improve the condition of the natural environment, where practical;
- Standard Operating Procedures and Emergency Procedures should be reviewed to ensure bio-security issues are included and addressed and clearance of areas with invasive species should be carried out in accordance with best practice and advice from EA, CCW. Equipment, clothing, vehicles and vessels to be appropriately cleaned before being used in other watercourses in/outside BG;
- Changes to SPG or other guidance should take account of potential impacts to protected habitats and aim to contribute to maintaining and expanding protected habitats in line with HAPs and EU protected site management plans.

9. The Costs and Benefits of the Measures

For each of the measures set out in Section 7 the associated costs, benefits (be they tangible or intangible) and how they are to be paid for will be determined following a comprehensive review of the most up to date information available.

It is anticipated that, following production of the hazard maps and flood maps in June 2013, Blaenau Gwent County Borough Council will be in a position to review the areas/buildings/services most at risk and consider, based on the strategic priorities, the most appropriate measures to reduce risks. A cost/benefit analysis will then be carried out to determine what measures are implemented and when. The implementation of any measures ultimately being dependant on the funding available.

The cost/benefit analysis process is largely determined by who is paying for the measure and who is benefiting directly from it. Measures should retain the cost/benefit compliance, whilst ensuring that they are proportionate to the level of risk reduction presented.

9.1. Potential Sources of funding

There are a number of potential sources of funding to consider, unfortunately, due to current financial challenges, the actual amount of funding available is likely to be very limited. Blaenau Gwent County Borough Council however, will consider all sources available to manage the risk of flooding, some of which are considered below and ultimately the most effective way of reducing the risk and subsequent impact of flooding will probably be through the implementation of non structural measures.

9.1.1. Developer contribution

Section 106 of the Town and Country Planning Act 1990 allows a local planning authority, such as Blaenau Gwent County Borough Council, to enter an agreement with a landowner or developer in association with the granting of planning permission. A Section 106 agreement is used to address issues that are necessary to make a development acceptable, such as supporting the provision of services and infrastructure.

Government guidance advise that local planning authorities should make more use of Section 106 agreements to ensure that there is a strong planning policy to manage flood risk. This means that any flood risk which is caused by, or increased by, new development should be resolved and funded by the developer.

Unfortunately, due to current land values in Blaenau Gwent, there is considerable pressure on existing S106 priorities and any additional requirements would potentially reduce significantly the viability of a project.

The Planning Act 2008 makes provision for local planning authorities to prepare and implement a Community Infrastructure Levy (CIL), which can be used to fund those infrastructure elements that will no longer be deliverable through S106 agreements. Blaenau Gwent is currently considering the scope of a potential CIL Charging Schedule, which identifies what development will be subject to CIL and the applicable level of levy.

9.1.2. Welsh Water

Water companies invest money in flood alleviation schemes as part of their duties to remove properties from the DG05 register. Sometimes the most effective way to do this is to work in partnership with risk management authorities on flood alleviation schemes in other areas which can help reduce surface water pressure downstream.

Water companies are able to raise funds for flood alleviation schemes through the prices they charge their customers. However these prices are heavily regulated by OFWAT. When determining price limits OFWAT determines how much water companies can charge its customers to:

- Finance its day to day spending;
- Finance its capital investment programme;
- Reward outperformance in the previous five-year period;
- Continue to finance previous capital investment through the return the company earns on its regulatory capital value (RCV);
- Pay tax it is liable for.

9.1.3.Public Funding

The current situation of government flood risk management funding is summarised below:

Under an agreement between LLFA and the Welsh Government, which expired on 31St March 2011 funding of £22,727 was awarded to each Unitary Authority in Wales to support LLFA in the pursuance of the requirement to prepare and provide a completed PFRA to the Environment Agency by their specified deadline of 22 June 2011.

Further funding has been provided to each Unitary Authority in Wales by the Welsh Government, in the sum of £90,000, for the fiscal years up to 31 March 2012 and 31st March 2013. This funding is to allow LLFA to resource the implementation of the requirements of the Flood Risk Regulations 2009 and in particular to fund the preparation of the Local Flood Risk Management Strategy and the provision of an Asset Register for items which have a significant effect on flood risk.

It is anticipated that funding will also be provided by Welsh Government for the continued implementation of the responsibilities laid on LLFA under the Flood and Water Management Act. At the time of writing, the detail of this funding has not yet been decided.

9.1.4.European Union – Convergence funding

European Union funding is potentially available through the “Interreg” scheme. The scheme will allow a major piece of work to go ahead and will enable land to be opened up to development. As surface water management plans are created across the study area, option proposals from these reports will be used to inform future proposals to the ERDF.

9.1.5. Fundraising & Third Sector

Funding partnerships working with local communities and businesses that directly benefit from flood defence schemes could also be an opportunity to implement flood risk measures.

Whilst likely to be a daunting task initially, focusing on the people who stand to benefit from a project is usually the best place to start. The importance of partnerships and collaboration with developers, the Local Authority and utilising the commitment and enthusiasm of volunteers to deliver flood risk reduction should not be overlooked.

10. Strategy Review and Monitoring

The National Strategy will be formally reviewed on a six-yearly cycle, mirroring the requirements of the Flood Risk Regulations 2009. This will enable the Welsh Government to consider the information being produced from the mapping and planning exercises that the Environment Agency and LLFA will complete.
This information will also continue to inform the development of Local Strategies ongoing and so it seems logical for the Local Strategies to reflect this six yearly review cycle.

11. Environmental Assessment

Each LLFA must consider and record how their Local Strategy contributes to the achievement of wider environmental objectives. How some have been considered within the National Strategy has been recorded below.

11.1. Water Framework Directive

The Water Framework Directive (WFD) considers sustainable development and works with natural processes to provide solutions to flood risks which will help to mitigate the effects on biodiversity. It is designed to:

- Prevent deterioration in the classification status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- Aim to achieve at least good status for all waters. Where this is not possible, good status should be achieved by 2021 or 2027;
- Promote sustainable use of water as a natural resource;
- Conserve habitats and species that depend directly on water;
- Progressively reduce or phase out releases individual pollutants or groups of pollutants that present a significant threat to the aquatic environment;
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
- Contribute to mitigating the effects of floods and droughts.

The Water Framework Directive establishes new and better ways of protecting and improving rivers, lakes, groundwater, transitional (where freshwater and sea water mix) and coastal waters.

It is important that measures to manage local flood risk do not cause deterioration of water bodies and should consider opportunities to improve water bodies in conjunction with local flood risk management. Blaenau Gwent County Borough Council has undertaken an assessment of the proposed measures against the Water Framework Directive and the results are available as part of the consultation of this document. Any recommendations made as a result of the Water Framework Directive Assessment have been considered in the final drafting of the Local Flood Risk Management Strategy.

11.1.1. WFD Assessment Conclusions

The WFD assessment concludes that *"the LFRMS may result in operations capable of causing deterioration or disturbance to the features of the sites assessed. It has not been possible to say with certainty that these operations will not have a significant effect on the features. It has, however, been possible*

to identify mitigation measures that, if implemented, would remove these effects.

In some cases it has not been possible to rule out the possibility of significant effects due to the strategic nature of the LFRMS and it is deemed more appropriate to determine the possibility of significant effects at a project level. It has, however, been possible to identify mitigation actions that should be taken in order to reduce the potential for such projects to have a significant effect on site features.
With…mitigation measures in place, it is concluded that the proposals are not likely to have a significant adverse impact on any designated features or sites either alone or in combination with other plans or projects."

The recommended mitigation arising from the WFD assessment is listed in Chapter 10 of the Environmental Report.

11.2. Strategic Environmental Assessment

The Welsh Government has determined that the National Strategy requires a Strategic Environmental Assessment (SEA) to be undertaken therefore LLFAs are also required to undertake an SEA.

The purpose of SEA is to provide for a high level of protection of the environment, by ensuring the integration of environmental considerations into the preparation of the Local Strategy and to contribute to the promotion of sustainable development and environmental protection.

11.2.1. SEA Conclusions

The SEA for the Blaenau Gwent LFRMS draws the following conclusions, which are contained in the ***Environmental Report.***

"It is considered that the measures in the Draft LFRMS taken together and considered alongside the adopted Blaenau Gwent Local Development Plan (LDP) will help to lead to the sustainable reduction in local flood risk over the plan period. The measures are generally considered to offer potentially significant positive effects against the SEA Objectives.

The LFRMS is likely to have significant benefits for environmentally sustainable development, particularly relating to the following contributors:

- *1. To reduce health inequalities and promote community health, social care and well-being;*
- *2. To reduce the risk of surface, groundwater and sewer flooding taking account of climate change;*
- *4. To protect and enhance biodiversity across Blaenau Gwent;*
- *7. Protect and conserve soils and soil function, and increase resilience to degradation; and*
- *9. Protect and improve the water environment, in terms of water quality, quantity and hydromorphological function.*

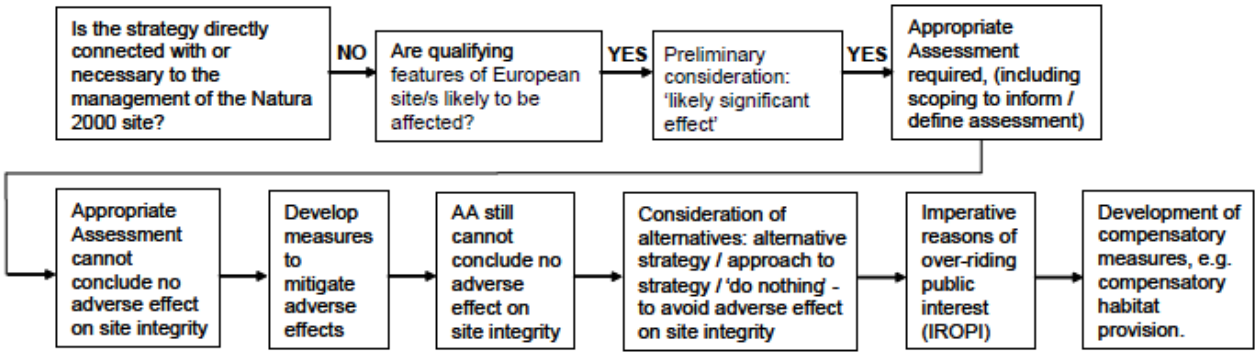
Following the assessment of the December 2012 version of the Draft LFRMS, a number of recommendations were made for the measures."

Recommended mitigation is included within Chapter 9 of the Environmental Report.

11.3. Habitats Regulations Assessment

The Welsh Government also determined that the National Strategy required a Habitats Regulations Assessment (HRA) to be undertaken.

The Habitats Regulations, implements the EU 'Habitats Directive' on the Conservation of natural habitats and of wild flora and fauna and certain elements of the 'Birds Directive'. This legislation provides the legal framework for the protection of habitats and species of European importance in Wales and England. The diagram below presents an overview of the HRA process for each LLFA to consider when developing their Local Strategies.



11.3.1. HRA Conclusions

The HRA for the Blaenau Gwent LFRMS draws the following conclusions:

"The LFRMS may result in operations capable of causing deterioration or disturbance to the features of the sites assessed. It has not been possible to say with certainty that these operations will not have a significant effect on the features. It has, however, been possibly to identify mitigation measures that, if implemented, would remove these effects.

In some cases it has not been possible to rule out the possibility of significant effects due to the strategic nature of the LFRMS and it is deemed more appropriate to determine the possibility of significant effects at a project level. It has, however, been possible to identify mitigation actions that should be taken in order to reduce the potential for such projects to have a significant effect on site features.

With…mitigation measures in place, it is concluded that the proposals are not likely to have a significant adverse impact on any designated features or sites either alone or in combination with other plans or projects."

The HRA mitigation measures are listed in Chapter 10 of the Environmental Report.

12. Appendices

Appendix A. **National Strategy**

Appendix B. **Datasets available on the EA DataShare website.**

Appendix C. **Relevant Policy, Regulations and Legislation**

Appendix D. **List of Documents Consulted**

Appendix E. **Communicating with the public, raising awareness and encouraging local leadership.**

Appendix F. **LFRMS Measures Option Assessment**

Appendix G. **Flood Consultation and Summary of Feedback from Consultation**

Appendix H. **Glossary of Terms**

Appendix A. National Strategy

1. The Welsh Government is responsible for developing, maintaining and applying a flood and coastal erosion risk management strategy for Wales; a National Strategy.

2. The National Strategy will give effect to the requirements of the Flood and Water Management Act 2010, providing a framework for more specific actions to be implemented by the Welsh Risk Management Authorities. It will create a framework for delivering effective flood and coastal erosion risk management in Wales both now and in the future.

3. Under Section 8 of the Act the National Strategy is required to include details of:

- the Risk Management Authorities in Wales;
- the flood and coastal erosion risk management functions that may be exercised by those Authorities in relation to Wales;
- the objectives for managing flood and coastal erosion risk;
- the measures proposed to achieve those objectives;
- how and when the measures are to be implemented;
- the costs and benefits of those measures, and how they are to be paid for;
- the assessment of flood and coastal erosion risk for the purpose of the strategy;
- how and when the strategy is to be reviewed;
- the current and predicted impact of climate change on flood and coastal erosion risk management; and
- how the strategy contributes towards the achievement of wider environmental objectives.

4. The Welsh Government is committed to ensuring that the Risk Management Authorities manage the risks of flooding and coastal erosion in Wales and reduce their impacts by adopting a broader range of responses that encompass not only traditional defences and protection against flooding and coastal erosion, but a wider group of interventions and using the full range of risk management tools.

5. An effective flood and coastal risk management system must focus on protecting people and key assets and managing the impacts of the risk on the natural environment.

6. It is the Welsh Government's intention to develop a system that:

embeds sustainable development as the key principle informing decisions and which is reflected in an approach that promotes the wellbeing of people in Wales and addresses the needs of the economy and the environment;

- is focussed on the needs of individuals, communities and businesses and which recognises that different groups have different needs and varying capacity to deal with flood risk and that the service they receive must be tailored accordingly;
- promotes equality and does not exacerbate poverty;

- is based upon a holistic understanding of the risks and consequences;
- considers the full range of risk management responses;
- facilitates long term resource planning; and
- allows prioritisation of investment, resources and actions.

7. To support the development of this system the Welsh Government is committed to delivering the four overarching objectives for flood and coastal erosion risk management in Wales as follows:

- **reducing the impacts** on 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; and
- **prioritising investment** in communities most at risk.

8. The National Strategy will set out the expectations on the Risk Management Authorities in order to achieve these objectives.

9. A public consultation exercise on the Draft National Strategy was completed in 2010 and the consultation responses received along with the formal *Assembly Government Response to the Public Consultation* is available on the Welsh Government website.

10. Following comments received during the consultation and in light of subsequent discussions with the Environment Agency, Countryside Council for Wales and Cadw it was determined that a Strategic Environmental Assessment (SEA) and a Habitats Regulations Assessment should be completed. The completed assessments are available from the Welsh Government website.

11. The findings of these assessments has fed into the development of the National Strategy ensuring that the environment is afforded a high level of protection by ensuring the integration of environmental considerations into the preparation and adoption of the National Strategy and contributing to the promotion of sustainable development and environmental protection.

Appendix B. Datasets available on the EA DataShare website.

As at September 2011, the following datasets were available to Local Authorities via the Environment Agency DataShare website (http://www.geostore.com/environment-agency/):

- Areas Susceptible to Surface Water Flooding
- Areas Susceptible to Groundwater Flooding
- Detailed River Network
- Flood Zones 2
- Flood Zones 3
- Flood Defences
- Flood Storage Areas
- Areas Benefiting from Flood Defences
- Flood Map for Surface Water 1:200 Rainfall
- Flood Map for Surface Water 1:30 Rainfall
- Flood Map for Surface Water DTM
- Historic Flood Map
- Historic Landfill
- National Receptor Dataset - Property Points
- National Receptor Dataset - Social, cultural and environmental (part 1)59
- National Receptor Dataset - Social, cultural and environmental (part 2)60
- Sealed Main Rivers
- WFD Classification Data
- WFD Risk Assessment Data
- WFD Environmental objectives
- WFD Measures/Actions
- WFD River Waterbodies (River_Waterbodies_fRBMP)
- WFD River Waterbody Catchments (River_Waterbody_Catchments_fRBMP)
- WFD River Basin Districts (RBD_fRBMP)
- WFD Lake Waterbodies (Lakes_fRBMP)
- WFD Coastal Waterbodies (Coastal_fRBMP)
- WFD Transitional (Estuarine) Waterbodies (Transitional_fRBMP)
- WFD Groundwaterbodies (Groundwaters_fRBMP)
- WFD Monitoring Network (MonitoringNetwork_fRBMP)
- WFD Artificial Waterbodies: Canals (AWB_Canals_fRBMP)
- WFD Artificial Waterbodies: Surface Water Transfer Channels (AWB_SWT_fRBMP)
- SSSI Ditches (AWB_SSSI_Ditches_fRBMP)

Appendix C. Relevant Policy, Regulations and Legislation

EU Strategic Environmental Assessment (SEA) Directive

An SEA is a legally enforced assessment procedure required by Directive 2001/42/EC (known as the SEA Directive). The SEA Directive aims at introducing systematic assessment of the environmental effects of strategic land use related plans and programs.

EU Water Framework Directive

The Water Framework Directive (WFD), Directive 2000/60/EC, is the most substantial piece of EC water legislation to date and is designed to improve and integrate the way water bodies are managed throughout Europe. It came into force on 22 December 2000 and was transposed into UK law in 2003 via the Water Environment (Water Framework Directives) (England and Wales) Regulations 200361. Member States must aim to reach good chemical and ecological status in inland and coastal waters by 2015. It is designed to:

- Prevent deterioration in the classification status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- Aim to achieve at least good status for all waters. Where this is not possible, good status should be achieved by 2021 or 2027;
- Promote sustainable use of water as a natural resource;
- Conserve habitats and species that depend directly on water;
- Progressively reduce or phase out releases individual pollutants or groups of pollutants that present a significant threat to the aquatic environment;
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
- Contribute to mitigating the effects of floods and droughts.

The Water Framework Directive establishes new and better ways of protecting and improving rivers, lakes, groundwater, transitional (where freshwater and sea water mix) and coastal waters. In order to achieve this, in 2009 the Environment Agency produced 3 River Basin Management Plans in Wales setting out measures to protect and improve the water environment. These are currently being implemented and will be revisited in 2015, 2021 and 2027, to ensure that the water bodies status does not deteriorate from standards set in 2009 as part of the initial River Basin Management Plans.

It is important that measures to manage local flood risk do not cause deterioration of water bodies and should consider opportunities to improve water bodies in conjunction with local flood risk management.

UK Civil Contingencies Act (2004)

The Civil Contingencies Act 2004, and accompanying non-legislative measures, delivers a single framework for civil protection in the United Kingdom capable of meeting a full range of challenges such as flooding. The Act is separated into two substantive parts: local arrangements for civil protection (Part 1) and emergency powers (Part 2).

UK Climate Change Act 2008

The Climate Change Act 2008 requires a UK-wide climate change risk assessment every five years, accompanied by a national adaptation programme

for England-only and non-devolved matters that is also reviewed every five years. The Act has given the UK and Welsh Governments powers to require public bodies and statutory organisations such as water companies to report on how they are adapting to climate change.

UK Conservation of Habitats and Species Regulations 2010

The Conservation of Habitats and Species Regulations 2010 transpose the Habitats Directive 92/43/EEC into UK law. The Regulations aim to help maintain and enhance biodiversity in the UK and throughout the EU, by conserving natural habitats and protecting priority species and their habitats. The requirement to identify and designate sites of Community importance for habitat type and species, known as Special Areas of Conservation is a key aspect of the regulations. In addition, the Regulations provide strict protection measures for particularly rare and threatened species and require that assessments are undertaken before permissions or consents are granted within European sites.

UK Environmental Assessment of Plans and Programmes (Wales) Regulations 2004

The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 transpose into law European Directive 2001/42/EC "on the assessment of the effects of certain plans and programmes on the environment", commonly known as the Strategic Environmental Assessment (SEA) Directive. The aim of the Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development. The SEA process identifies the likely significant environmental effects that are likely to result from a plan or programme and should show how the results of the environmental assessment have been taken into account in the implementation of the plan or programme. Guidance is available on the Welsh Government website.

UK Flood and Water Management Act (2010)

The Act implements Sir Michael Pitt's recommendations requiring urgent legislation, following his review of the 2007 floods. It establishes for the first time responsibility for all sources of flooding establishing the duties of Lead Local Flood Authorities (LLFA) to be responsible ensuring flood risk is managed within an area. LLFA have a duty to prepare their Strategy which will set out how they will manage Local Flood risk within their area.

UK Flood Risk Regulations 2009

These Regulations transpose EU Directive 2007/60/EC. The Regulations impose duties on the Environment Agency and LLFA to prepare preliminary assessment reports about past floods in each river basin district, and the possible harmful consequences of future floods. The Environment Agency is also under a duty to prepare a preliminary assessment map of each river basin district. In turn, where identified, LLFA must prepare flood risk maps and flood hazard maps and a flood risk management plan for each area which has been identified as being at significant risk of flooding.

UK Land Drainage Act 1991

The Land Drainage Act 1991 outlines the duties and powers to manage land drainage for a number of bodies including the Environment Agency, Internal Drainage Boards, Local Authorities, Navigation Authorities and riparian owners.

UK Water Resources Act (1991)

The Water Resources Act 1991 (WRA) regulates water resources, water quality and pollution, and flood defence. The Water Resources Act was introduced in December 1991 along with four other pieces of legislation (Water Industry Act 1991, Land Drainage Act 1991, Statutory Water Act 1991 and the Water (Consequential Provisions) Act 1991). The Act governs the quality and quantity of water by outlining the functions of the Environment Agency (previously the National Rivers Authority). The WRA explains that the duty of the Agency is to "so far as is reasonably practicable" maintain, with water undertakers, secure and proper management of any reservoirs, apparatus or other works which belong to and are operated and controlled by them.

Wales : Planning Policy Wales (Edition 5, November 2012)

The Planning Policy Wales document contains current land use planning policy for Wales. It provides the policy framework for the effective preparation of local planning authorities' development plans. This is supplemented by 21 topic based Technical Advice Notes (TANs), the related flood risk ones are set out below.

• Technical Advice Note (TAN) 3: Simplified Planning Zones (1996)	Sets out the procedures that should be followed when designating Simplified Planning Zones.
• Technical Advice Note (TAN) 5, Nature Conservation and Planning (2009)	Provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation.
• Technical Advice Note (TAN) 6 – Planning for Sustainable Rural Communities (2010)	Supports national planning policy on sustainable rural communities. This policy is set out in Planning Policy Wales.
• Technical Advice Note (TAN) 9: Enforcement of Planning Control (1997)	Advice on the enforcement of planning control in situations where unauthorised development has occurred.
• Technical Advice Note (TAN) 12: Design (2009)	Provides advice on good design.
• Technical Advice Note (TAN) 14: Coastal Planning (1998)	Advice on key issues relating to planning for the coastal zone, including recreation and heritage and shoreline management plans.
• Technical Advice Note (TAN) 15: Development and Flood Risk (2004)	Provides technical guidance which supplements the policy set out in Planning Policy Wales in relation to development and flooding.
• Technical Advice Note (TAN) 22: Sustainable Buildings (2010)	Technical guidance to help local planning authorities and developers to implement the national planning policy on sustainable buildings.

Procedural guidance is given in Welsh Office / National Assembly for Wales / Welsh Government circulars.

Wales : Planning Policy Wales, TAN 15 - Development and Flood Risk (2004)

Technical Advice Note 15 (TAN15) sets out the Welsh Government's policy on development and flood risk. It identifies that flood risk should be taken into account at all stages of the planning process. It sets out a precautionary approach that seeks to avoid inappropriate development in areas at risk of flooding and to direct new development away from the areas of highest risk shown on Development Advice Maps. Where new development is, exceptionally, necessary in such areas, the policy objective is to mitigate flood risk to an acceptable level for the lifetime of the development without increasing flood risk elsewhere, taking into account the impacts of climate change.

Appendix D. List of Documents Consulted

Blaenau Gwent - Deposit Local Development Plan – March 2011

Blaenau Gwent - Preliminary Floor Risk Assessment - Report V1.0 - June 2011

Environment Agency – Flooding in Wales: A national assessment of flood risk – 2009

Environment Agency - Improving community and citizen engagement in flood risk management decision making, delivery and flood response – December 2005

Flood & Water Management Act 2010

Flood Risk Regulations 2009

Welsh Government - Adapting to Climate Change: Guidance for Flood and Coastal Erosion Risk Management Authorities in Wales, December 2011

Welsh Government – Local Flood Risk Management Strategies, Local Strategy – November 2011

Welsh Government – National Strategy for Flood and Coastal Erosion Risk Management in Wales – November 2011

Appendix E. Communicating with the public, raising awareness and encouraging local leadership.

Communities offer a wide range of perspective and experiences relating to flooding that can be invaluable in helping to create the vision and response for flood risk management.

By encouraging their participation, Local Authorities can achieve a more complete picture of flood risk and better understand and promote solutions. In return, it is incumbent on all to understand the effects and limitations of flood risk management actions and to act responsibly to help themselves and others.

Ensuring people are well informed about flood risk management services is crucial to building trust and a strong reputation for local authorities.

There are some communities that are acutely aware of the importance of flood risk management and have taken action in their own local areas. These communities are typically those that have experienced at first hand the effects of flooding.

There will always be the handful of enthusiastic people in any community who are keen to tackle the threat of flooding, however, it is the task of the LLFAs to encourage all the others to do something. In order to make real progress in reducing the risk of flooding, communities will need to be involved and collective action will need to be seen as both desirable and normal.

LFAs are vitally important in setting the local leadership. Communities are more likely to respond to local leadership who share their concerns and interests. Community leaders can have direct access to people, understand local issues and sensitivities and can sustain activity over time.

It should be recognised that a consistent message needs to be conveyed when engaging with communities. Likewise, in setting levels of service and service standards, there is a need for all Risk Management Authorities to ‘buy-in’ to the overall aims of the LLFA.

The key to success will be the attitude Local Authorities have and approach taken in engaging communities, developing a two-way dialogue, recognising that local people’s views are important and can influence the decisions which affect them.

This will involve working with communities early on to understand their concerns, interests and priorities. The LLFA may still make the final decision but they will have worked with others in developing the solution. Through this process the communities will understand the role of the LLFA and why certain decisions have been made.

In deciding how best to engage with the community, to meet both the needs of the LLFA and the needs of the community, you will need to consider and agree:

what do you want to do?; why do you want to work with the community and why do they want to work with you?; who do you need to work with?

The Environment Agency has experience of engaging with communities and has a national Stakeholder and Community Relations Team which can be accessed through the Environment Agency regional offices, who should be contacted for further details and information.

The Welsh Government Flood Risk Management toolkit is also available, which aims to provide guidance on how Risk Management Authorities can effectively engage with communities to raise awareness of flooding. The toolkit is available from the Welsh Government website63.

Appendix F. LFRMS Measures Option Assessment

Appendix G. Flood Consultation and Summary of Feedback from Consultation

The Local Flood Risk Management Strategy public questionnaire undertaken highlighted the following results:

Awareness of the role of BGCBC as a LLFA	68% 32%	were not aware of BGCBC as a LLFA of participants were aware of this arrangement
Current understanding of flood risk in the locality	74% 13% 10% 5%	not at risk of flooding are aware that they are at risk, but have not been affected before the local community has been affected previously by flooding have been affected by flooding
Participants affected by flooding in the last 10 years	98% 2%	have not been affected have been affected in their local community
Steps taken to prepare for flooding	38% 32% 24% 9% 6% 3%	no steps taken finding out more information non specific signed up for flood warnings prepared a flood plan attended a local action group
The greatest impact on flooding	 35% 33% 27% 16% 11%	participants thought the following had the greatest impact on flooding: surface water large rivers sewers ground water small watercourses
Views on what the overall Flood Management Objectives should be noting the financial implications	63% 34% 2%	reduce the risk by addressing everywhere that is considered a potential risk to manage the risk of flooding and address previous flood locations manage the risk of flooding and maintain it at its current level

Continued…..

What the highest priority should be when it comes to Flood Risk Management	63% 41% 38% 31% 15% 8% 5%	homes local amenities roads businesses protecting the environment gardens / fields out buildings
The most concerns in regards to flood risk management	37% 29% 28% 27% 22% 22% 11%	climate change and increasing rain fall planning / responding to flooding emergencies funding availability for flood alleviation schemes maintenance of watercourses property values availability of insurance rural land management
What BGCBC and its Partners should be doing to manage Flood Risk	93% 85% 83% 80% 73% 40%	frequently cleaning road gullies / watercourses working with local communities to help them prepare for flooding managing assets like culverts to reduce flooding working with planners to ensure new developers do not worsen the situation constructing flood defence schemes in high priority areas Constructing flood defence schemes where possible
Where BGCBC should invest in flood risk reduction schemes	45% 33% 20%	working with organisations with drainage responsibilities and local residents / businesses to fund flood alleviation schemes working with organisations with drainage responsibilities to fund flood alleviation schemes raising funds from different avenues to contribute towards flood defence improvements
Those who should contribute to the flood reduction scheme	88% 85% 75% 72% 53% 50% 28% 20%	local authorities developers environmental initiatives international funds landlords businesses residents community groups

Appendix H. Glossary of Terms

A

Act – a Bill approved by both the House of Commons and the House of Lords and formally agreed to by the reigning monarch (known as Royal Assent).

B

Bill – a proposal for a new law, or a proposal to change an existing law that is presented for debate before Parliament.

C

Catchment – An area that serves a river with rainwater that is every part of land where the rainfall drains to a single watercourse is in the same catchment.
CCW – Countryside Council for Wales
CFMP – Catchment Flood Management Plans – plans that provide an overview of the flood risk across each river catchment and estuary. They recommend ways of managing those risks now and over the next 50 – 100 years.
Climate Change – the change in average conditions of the atmosphere near the Earths surface over a long period of time.
Coastal erosion – the wearing away of coastline, usually by wind and/or wave action.
Coastal erosion risk – measures the significance of potential coastal erosion in terms of likelihood and impact.
Coastal erosion risk management – anything done for the purpose of analysing, assessing and reducing a risk of the wearing away of coastline.
Coastal Flooding – Occurs when coastal defences are unable to contain the normal predicted high tides that can cause flooding, possible when a high tide combines with a storm surge (created by high winds or very low atmospheric pressure).
Culvert – a covered structure under road, embankment etc, to direct the flow of water.

D

Defences – A structure that is used to reduce the probability of floodwater or coastal erosion affecting a particular area.
Draft Bill – a Bill published in draft before introduction before Parliament.
Drainage Authorities – Organisations involved in water level management, including IDBs, the Environment Agency and RFCCs.

E

EAW /EA – Environment Agency Wales and Environment Agency – a Welsh Government sponsored Public Body responsible to the Welsh Ministers and an Executive Non-departmental Public Body responsible to the Secretary of State for Environment, Food and Rural Affairs.

F

FCERM – Flood and Coastal Erosion Risk Management.

FCERM Function – defined by Sections 4 and 5 of the Flood and Water Management Act 2010 as being a function, which may be exercised by a risk

management authority for a purpose connected with either flood risk management or coastal erosion.
Flood – any case where land not normally covered with water becomes covered by water.
Flood and Water Management Act 2010 – an Act of Parliament updating and amending legislation to address the threat of flooding and water scarcity, both of which are predicted to increase with climate change.
Flood risk – product of the probability of flooding occurring and the consequences when flooding happens.
Flood risk management – the activity of understanding the probability and consequences of flooding, and seeking to modify these factors to reduce flood risk to people, property and the environment. This should take account of other water level management and environmental requirements, and opportunities and constraints.
Flood risk management measures – The way in which flood risks are to be managed.
Flood Risk Management Wales (FRMW) – The Regional Flood and Coastal Committee (RFCC) for Wales
Flood Risk Regulations 2009 – Regulations which transpose the EC Floods Directive (Directive 2007/60/EC on the assessment and management of flood risks) into domestic law and to implement its provisions.
Floodline Warnings Direct – is a free service that provides flood warnings direct to you by telephone, mobile, email, SMS text message and fax.

G
Groundwater – water held underground in the soil or in pores and crevices in rock.
Groundwater Flooding – Occurs when water levels in the ground rise above the natural surface. Low lying areas underlain by permeable strata are particularly susceptible.

H
Habitats Regulation Assessment (HRA) – the Conservation of Habitats and Species Regulations (SI 490, 2010), Termed the 'Habitats Regulations', implements the EU 'Habitats Directive' (Directive 92/43/EEC) on the Conservation of natural habitats and of wild flora and fauna) and certain elements of the 'Birds Directive' (2009/147/EC). This legislation provides the legal framework for the protection of habitats and species of European importance in Wales.

I
IDB – Internal Drainage Board – Independent statutory bodies responsible for land drainage in areas of special drainage need in Wales and England. They are long established bodies operating predominantly under the Land Drainage Act 1991 and have permissive powers to undertake work to secure drainage and water level management of their districts.

L
LLFA – Lead Local Flood Authority – (Local Authority) the County Council or the County Borough Council for the area.
Local Flood Risk: defined within the Flood and Water Management Act 2010 as including surface runoff, groundwater and ordinary watercourses.

Local Flood Risk Strategy: required in relation to Wales by Section 10 of the Flood and Water Management Act 2010 local flood risk strategies are to be prepared by lead local flood authorities and must set out how they will manage local flood risks within their areas.

M

Main River – A watercourse shown as such on the Main River Map, and for which the Environment Agency has responsibilities and powers.

Main River Map – the definitive map showing which watercourses have been classified as a Main River.

N

National Strategy – the "National Strategy for Flood and Coastal Erosion Risk Management: Wales" produced by the Welsh Government in response to the requirement under Section 8 of the Flood and Water Management Act.

O

Ordinary Watercourse – all watercourses that are not designated Main River, and which are the responsibility of Local Authorities or, where they exist, Internal Drainage Boards.

P

PFRA – Preliminary Flood Risk Assessment as required by the Flood Risk Regulations 2009.

R

Reservoir – an artificial lake where water is collected and stored until needed. Reservoirs can be used for irrigation, recreation, providing water for municipal needs, hydroelectric power or controlling water flow.

Resilience – The ability of the community, services, area or infrastructure to avoid being flooded, lost to erosion or to withstand the consequences of flooding or erosion taking place.

RFCC – Regional Flood and Coastal Committee – an Environment Agency committee, responsible for consenting medium and long term plans and operational plans to the Agency's Board and Head Office. Monitors and reports on progress. In Wales there is only one RFCC and this is the FRMW (Flood Risk Management Wales) group.

Risk – measures the significance of a potential event in terms of likelihood and impact. In the context of the Civil Contingencies Act 2004, the events in question are emergencies.

Risk Assessment – A structured and auditable process of identifying potential significant events, assessing their likelihood and impacts and then combining these to provide an overall assessment of risk to inform further decisions and actions

Risk Management – anything done for the purpose of analysing, assessing and reducing a risk

Risk Management Authority – A Welsh risk management authority is defined in Section 6 of the Flood and Water Management Act 2010 as the Environment Agency, a lead local flood authority, a district council for an area for which there is no unitary authority, an IDB for an internal drainage district that is wholly or mainly in Wales and a water company that exercises functions in relation to an area in Wales.

Risk Management Schemes – a range of actions to reduce flood frequency and/or the consequences of flooding to acceptable or agreed levels.
River flooding – occurs when water levels in a channel overwhelms the capacity of the channel.

S
SEA – Strategic Environmental Assessment – A legal requirement in the UK for certain plans and programmes stipulated by the SEA Directive (2001/42/EC), to undergo Strategic Environmental Assessment (SEA). The SEA Directive is implemented in Wales by the Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 (SI 2004No. 1656, W170). The purpose of SEA is to provide for a high level of protection of the environment, to ensure the integration of environmental considerations into the preparation and adoption of plans and programmes, and to contribute to the promotion of sustainable development and environmental protection.
Sewer – An artificial conduit, usually underground, for carrying off sewage off sewage (a foul sewer) or rainwater (a storm sewer) or both (a combined sewer).
SMPs – Shoreline Management Plans – A large-scale assessment of the risks associated with coastal processes and helps reduce these risks to people and the developed, historic and natural environments.
Squeeze – In relation to costal squeeze, is the term used to describe what happens to coastal habitats that are trapped between a fixed landward boundary, such as a sea wall and rising sea levels and/or increased storminess. The habitat is effectively 'squeezed' between the two forces and can diminish in quantity and or quality.
Surface Water Flooding – In the urban context, usually means that surface water runoff rates exceed the capacity of drainage systems to remove it. In the rural context, it is where surface water runoff floods something or someone.
Surface water runoff – This occurs when the rate of rainfall exceeds the rate that water can infiltrate the ground or soil.
Sustainable Drainage systems (SuDS) – Helps to deal with excesses of water by mimicking natural drainage patterns.

T
Technical Advice Note 15: Development and Flood Risk – TAN 15 supports Planning Policy Wales and makes it clear how local authorities should make decisions about different types of development on flood plains, providing clear tests for justification and acceptability of flooding consequences, and enabling the consideration of risks over the lifetime of the new development.

W
Watercourse – A channel natural or otherwise along which water flows.
Water company – a company which hold an appointment under Chapter 1 of Part 2 of the Water Industry Act 1991 or a licence under Chapter 1A of Part 2 of that Act.
Welsh Local Government Association (WLGA) – represents the interests of Local Authorities in Wales. The three fire and rescue authorities, four police authorities and three national park authorities are associate members.
WFD – Water Framework Directive