

**MERTHYR TYDFIL  
COUNTY BOROUGH COUNCIL**



**Local Flood Risk Management Strategy**

**April 2013**

## MERTHYR TYDFIL COUNTY BOROUGH COUNCIL

### LOCAL FLOOD RISK MANAGEMENT STRATEGY

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## MERTHYR TYDFIL COUNTY BOROUGH COUNCIL

### LOCAL FLOOD RISK MANAGEMENT STRATEGY

#### 1 Executive Summary

1.1 The Flood Risk Regulations came into force in December 2009 and the Flood and Water Management Act became law in April 2010. Under this legislation Merthyr Tydfil Council Borough Council (MTCBC) has been identified as a Lead Local Flood Authority (LLFA) and has been given a number of key responsibilities.

1.2 The purpose of the Flood Risk Regulations is to transpose the European Commission (EC) Floods Directive (2007/60/EC), on the assessment and management of local flood risk, into domestic law in England and Wales and to implement its provisions.

In particular it places duties on the LLFAs to prepare a number of documents including:-

**1 Preliminary Flood Risk Assessment Report (PFRA) - 22<sup>nd</sup> June 2011**

Completed, approved by Welsh Government and forwarded to the EU

**2 Flood Hazard and Flood Risk Maps to be completed by 22<sup>nd</sup> June 2013**

**3 Flood Risk Management Plans to be completed by 22<sup>nd</sup> June 2015**

1.3 In addition MTCBC must develop, maintain, apply and monitor a strategy for local flood risk management.

This document -

#### **Merthyr Tydfil County Borough Council – Local Flood Risk Management Strategy**

sets out to satisfy this requirement of the Flood and Water Management Act 2010.

1.4 The level of flood risk within MTCBC was established as part of the process of producing the Preliminary Flood Risk Assessment Report the results of which are shown below.

#### **Level of Flood Risk**

A total of 22 grid squares have been identified by MTCBC as having a significant level of flood risk, referred to as Blue Squares. Of these squares 20 are contained within the Flood Risk Area, which covers an area of 58 km<sup>2</sup>.

Please refer to Section 9 - The assessment of local flood risk for the purpose of the strategy – Fig. 3 - MTCBC Flood Risk Area and Blue Squares for MTCBC taken out of the PFRA

The Key Flood Risk Indicators for the MTCBC Flood Risk Area have been calculated by the as follows:-

1	Human health consequences – Number of people (2.23 multiplier)	7,923
2	Other human health consequences – Number of critical services flooded	26
3	Economic consequences – number of non-residential properties flooded	818

The assessment of Flood Risk is ongoing and will be updated to include for any flooding events within the borough since the preparation of the PFRA.

In addition Flood Risk will be re-assessed following the completion of new flood modelling and the preparation of Flood Hazard and Flood Risk Maps.

For the purpose of this Strategy the flood risk in the whole of the borough has been considered which includes the Flood Risk Area, the two Blue Squares outside the area, which are situated in Quakers Yard, and all other areas considered at lower risk.

1.5 MTCBC has set a high level strategy as follows:-

**“Endeavour to reduce Flood Risk in all of the areas identified as being subject to significant flood risk”.**

1.6 The National Strategy, prepared by the Welsh Government, has set out four Overarching Objectives for the management of flood risk. In considering its strategy MTCBC has identified 17 Detailed Objectives that will seek to deliver the Overarching Objectives.

#### **1.6.1 Overarching Objective 1**

**Reducing the impacts on individuals, communities businesses and the environment;**

- 1 Reduce distress by reducing the number of people exposed to the risk of flooding.
- 2 Reduce community disruption by reducing the number of residential and commercial properties affected by the risk of flooding.

- 3 Reduce risk to life by reducing the number of people exposed to risk of flooding of significant depth and velocity.
- 4 Reduce disruption to critical infrastructure or prepare plans to allow the operations to be maintained.
- 5 Protect and improve Sites of Special Scientific Interest (SSSIs) and Sites of Importance for Nature Conservation (SINCs)
- 6 Contribute to the delivery of Merthyr Tydfil Biodiversity Action Plan
- 7 Minimise Damage to known Historic Assets

### **1.6.2 Overarching Objective 2**

#### **Raising awareness of and engaging people in the response to flood**

- 8 Provide systems to give early warning of potential flooding to individuals and communities.
- 9 Provide efficient systems for the management and maintenance of surface assets.
- 10 Reduce economic damage
- 11 Endeavour to reduce cost of management

### **1.6.3 Overarching Objective 3**

#### **Providing an effective and sustained response to flood events**

- 12 Improve naturalness including the creation/restoration/protection of natural channels and water bodies with minimal modifications
- 13 Protect and where possible Improve water quality
- 14 Provide Flood Risk Management Plans for each area subject to flood risk
- 15 Ensure that measures are sustainable
- 16 Ensure that MTCBC works in partnership with all other Risk Partners and works collaboratively with adjacent Authorities

**1.6.4 Overarching Objective 4 Prioritising investment in the most at risk communities.**

17 Ensure that investment decisions for the implementation of flood risk management schemes are made on a consistent, defensible basis and are subject to cost benefit analysis

1.7 The Welsh Government has also given the following seven high level themes which have been considered by MTCBC for the implementation of the Strategy

- 1 Development planning and adaptation.
- 2 Flood forecasting, warning and response.
- 3 Land, cultural and environmental management.
- 4 Asset management and maintenance.
- 5 Studies assessments and plans.
- 6 High level awareness and engagement (to increase individual and community resilience).
- 7 Monitoring (of the local flood risk issues)

1.8 MTCBC has identified a total of 39 detailed measures which will ensure the delivery of the objectives.

The measures have been identified within three categories namely:

- 1 Prevention of flooding.
- 2 Preparedness for flooding.
- 3 Protection against flooding.

Each measure has been given a time scale for implementation as follows:

- 1 Short term 0 – 20 years.
- 2 Medium term 20 – 50 years.
- 3 Long term 50 – 100 years



**1.9 This Strategy has been developed on the following principles:**

- 1 A high level objective has been set to reduce flood risk in the borough.**
- 2 The four overarching objectives as defined in the National Flood Risk Management Strategy document have been used as the framework in which the strategy has been developed.**
- 3 A series of 17 detailed objectives have been adopted in order to satisfy the requirements of the four overarching objectives.**
- 4 The seven themes identified in the Local Flood Risk Management Strategy Guidance for delivery of the Strategy have been adopted by MTCBC.**
- 5 A total of 39 measures have been identified in order to implement the objectives.**
- 6 In addition the strategy aims to satisfy additional requirements including collaborative working with other Risk Partners and Sustainable Development.**
- 7 The strategy also aims to interface with other major strategies and plans developed by MTCBC including MTCBC Local Development Plan.**
- 8 The need for the strategy to make a positive contribution towards meeting the objectives of the Water Framework Directive and the implementation of the River Basin Management Plan for the Severn River Basin District**

**1.10 In order for The Strategy to be successful it is essential that significant funding be made available in addition to the normal funding arrangements from Welsh Government. This funding will be required to cover the following operations:**

- 1 Development of the Flood Risk Management Plans for each of the areas subject to significant levels of flood risk.**
- 2 Investigations to allow the Plans to be prepared**
- 3 Funding at a much more significant level will be required in order to implement the measures which will be identified as part of the Plans.**

## MERTHYR TYDFIL COUNTY BOROUGH COUNCIL

### LOCAL FLOOD RISK MANAGEMENT STRATEGY

#### 2 Introduction

2.1 The Flood Risk Regulations came into force in December 2009 and the Flood and Water Management Act became law in April 2010. Under this legislation Merthyr Tydfil Council Borough Council (MTCBC) has been identified as a Lead Local Flood Authority (LLFA) and has been given a number of key responsibilities.

2.2 The purpose of the Flood Risk Regulations is to transpose the European Commission (EC) Floods Directive (2007/60/EC), on the assessment and management of local flood risk, into domestic law in England and Wales and to implement its provisions.

In particular it places duties on the LLFAs to prepare a number of documents including:-

**1 Preliminary Flood Risk Assessment Report (PFRA) - 22<sup>nd</sup> June 2011**

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**2 Flood Hazard and Flood Risk Maps to be completed by 22<sup>nd</sup> June 2013**

**3 Flood Risk Management Plans to be completed by 22<sup>nd</sup> June 2015**

The Flood Risk Management Plans will be used to develop a list of measures, applicable to the area of the plan, which will endeavour to achieve the objectives set by this Strategy.

2.3 In addition MTCBC must develop, maintain (which includes updating and reviewing), apply and monitor a strategy for local flood risk management. This document, namely:

#### **Merthyr Tydfil County Borough Council – Local Flood Risk Management Strategy**

sets out to satisfy this requirement of the Flood and Water Management Act 2010.

2.4 Managing local flood risk is the responsibility of each LLFA. The Strategy sets out who the Risk Management Authorities are in MTCBC and their relevant functions. In developing this Local Strategy MTCBC has consulted with the public through an on-line survey, and the other Risk Management Authorities who are affected by the strategy.

2.5 Local flood risk is defined within the Act as being a flood risk from:

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

More detail of the flood risk is given below.

### **2.5.1 Catchment Characteristics**

The terrain within MTCBC is typical of all the valleys of South East Wales. The catchments consist of steep hillsides which are generally formed of impermeable clay overlaying various rock strata with steep flowing rivers in the valley floor. This combination of characteristics leads to the catchments being very “flashy” meaning that runoff from storms is almost instantaneous giving rise to high flows which generally subside very quickly in a time scale of minutes rather than hours or days. This is particularly relevant to surface water runoff and ordinary watercourses.

The Environment Agency have a supervisory duty on Main River Watercourses e.g. River Taff, under the requirements of the Water Resources Act 1991. Whilst these tend to be larger than the other “Ordinary” Watercourses within Merthyr Tydfil CBC, they still rapidly respond to rainfall within hours as opposed to days”.

### **2.5.2 Groundwater**

Groundwater flow, although not a major problem in MTCBC, is somewhat different to surface water runoff as rainwater has to penetrate through the clay before percolating through the rock strata and into the old mine workings. When the coalmines were operational groundwater was controlled by pumping excess water into local drainage systems. Existing culverts or ordinary watercourses were used before the water discharged into local rivers. Since the closure of the mines pumping has ceased and many of the mine workings have filled with water. The water generally escapes through old mine entrances such as adits and mine shafts. Occasionally water from old mine workings discharges in unexpected locations.

The Strategy will allow for investigation of the location of mine water flows and their likely volume if there is evidence to indicate that such flows could present a flood risk.

It is also common for mine water to be coloured red which is usually a sign that the water is ferruginous meaning that it contains iron salts which are detrimental to the quality of the watercourse below the discharge point.

It is proposed that, if required, measures will be introduced which will remove the iron salts from the mine water and thus improve the quality of the water downstream of the discharge.

### **2.5.3 Surface Water Runoff**

Flooding from surface water runoff is usually caused by intense rainfall either after periods of persistent rainfall, which has saturated the catchment, or following a period of dry weather, causing the ground surface to become hard and impermeable. Both scenarios result in high runoff characteristics of the catchment leading to high peak flows.

Flooding in these circumstances is often exacerbated by lack of cut off ditches and drains, ditches being filled in or piped, or the poor maintenance of ditches and watercourses by riparian owners. Damage to stream and other drains may also be caused by developers or livestock.

Increases to the runoff characteristics of the catchment may be caused by farmers ploughing at right angles to contours rather than parallel to them, removal of top soil, removal of vegetation, including the felling of trees or other site clearance. Runoff will be altered if an area is subject to a new development such as housing. These issues are all likely to give rise to increases in surface water flows. Controls will be imposed to restrict the maximum rate of runoff from these developments to a level no greater than the existing although the total runoff may increase.

### **2.5.4 Highway Drainage**

Flooding from highway drainage usually takes place as a result of short duration storms of very high intensity. Flooding often commences due to the inability of gullies to take the volume of water. This is usually as a result of gullies being blocked by debris washed off the roads filling the gullies. MTCBC mitigate the effects of gullies blocking by having an operational procedure that ensures that gullies are cleaned at least twice a year.

Highway drainage may also be a source of pollution from hydrocarbons. This usually occurs when prolonged dry periods are followed by intense rainfall. This is particularly adverse for the first flush of runoff. The Management Plans will look at the possibility of installing measures such as swales and reed beds that will improve water quality.

### **2.5.5 Ordinary Watercourses**

The most frequent form of flooding in ordinary watercourse arises from the blockage of grids at the entrance to the culverts. This usually occurs when intense rainfall causes leaf fall and other vegetation to enter the watercourse resulting in a build up of debris at the front of the grids. MTCBC have an operational procedure which is designed to minimise this risk by carrying out routine maintenance and pre-emptive cleaning prior to heavy rain when forecast.

Measures will be introduced to replace substandard grids with grids designed to modern standards including additional upstream sacrificial grids.

Flooding may also occur as a result of culvert failure due to the collapse of sidewalls, roofs or the scouring of culvert invert. This is particularly prevalent in older systems many of which have already exceeded their design life.

Flooding may also be caused by inadequate maintenance which is normally the responsibility of the riparian owners. Capacities of pipes are often significantly reduced by the build up of silt and debris within the culverts.

This type of flooding is difficult to manage proactively as it requires a significant level of resources to effectively inspect all culverts, therefore inspections will be restricted to systems where there is evidence that the capacity has been adversely affected.

Although culvert capacity has not been found to be the most significant form of flooding within ordinary watercourses it has been considered as part of this Strategy. Surveys and calculations will be carried out to determine the maximum flow rates within significant culverts by consideration of intake conditions and hydraulic capacities. More detailed runoff calculations will be carried out for some catchments and where pipes are shown to be of inadequate capacities consideration will be given to improving the intake or in exceptional circumstances their replacement with suitably sized alternatives or the construction of additional relief culverts or channels.

Illegal connections to existing culverts and the culverting of watercourses without consent also presents a potential source of flooding. It is anticipated that where illegal works are identified the Council as the LLFA will utilise its recently acquired powers to remedy the situation.

### **2.5.6 Channels**

Flooding within channels is usually caused by lack of maintenance. Where channels are in the ownership of MTCBC operational procedures are in place to ensure that the capacity of the channel is not impaired. Inspection of channels, where there is a significant risk of flooding, is carried out on a regular basis and debris removed. The grass is not usually cut as this is helpful in the reduction of pollution. Trees and shrubs are not usually removed as their root system often helps to stabilise the ditches, however, where flows are impeded trees and shrubs will be cut back as appropriate.

### **2.5.7 Combined Sewers**

There are numerous combined sewers within the borough that take foul sewage and surface water. These are all in the ownership of Dŵr Cymru / Welsh Water. Flows in these pipes are usually controlled through the installation of Storm Water Overflows (CSOs), which causes excess surface water to be removed from the system and discharged into natural drainage channels.

This method of controlling flows causes sewage to be discharged into the surface water drainage system and has an affect on the quality of the water.

MTCBC will work collaboratively with our risk partner Dŵr Cymru / Welsh Water to identify all CSOs and to establish their efficiency and the quality of the water being discharged.

Where necessary, MTCBC will expect Dŵr Cymru / Welsh Water to introduce measures which will reduce the quantity of foul sewage being discharged from the Combined Sewer System into surface water systems.

- 2.6 Merthyr Tydfil County Borough Council, as an LLFA, has developed The Strategy in keeping with the four overarching objectives for flood and coastal erosion risk management in Wales as set out in the Welsh Government's National Strategy as listed below:

#### **Overarching Objective 1**

**Reducing the impacts on individuals, communities businesses and the environment.**

#### **Overarching Objective 2**

**Raising awareness of and engaging people in the response to flood.**

#### **Overarching Objective 3**

**Providing an effective and sustained response to flood events.**

#### **Overarching Objective 4**

**Prioritising investment in the most at risk communities.**

- 2.7 Strategic objectives have been developed around the potential adverse consequences of flooding for human health, the environment, cultural heritage, economic activity.

The table developed by the Environment Agency and reproduced below has been used as the starting point for the development of detailed objectives by MTCBC.

### **Flood Risk Management Objectives**

- 1 **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 depth x velocity of flow)
  - Reduce disruption to critical infrastructure (or maintain operation of)
- 2 **Economic:**
  - Reduce economic damage (e.g. Annual Average Damages AAD)
  - Reduce cost of management (note: a risk management outcome for use in appraisal)
- 3 **Environmental:**
  - Reduce damages to Natura 2000 / SSSIs / BAP sites (or improve sites)
  - Improve naturalness (reduce modification of channels / waterbodies)
  - WFD objectives: improve water quality / ecological status (or not deteriorate) – hydromorph and diffuse pollution issues

- 2.8 The Act has placed a number of statutory duties on Local Authorities in their new role as LLFAs including:-

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

- 2.9 In addition to these duties, each LLFA has a number of permissive powers, which make provision for a LLFA to act in respect of flood risk management. These powers do not, however, require a LLFA to act, rather they allow action to be taken if required. The permissive powers include:-

- 1 Powers to request information.

- 2 Powers to designate certain structures or features that affect flood or coastal erosion risk.
- 3 The expansion of powers to undertake works to include broader risk management actions.
- 4 The ability to cause flooding or coastal erosion under certain condition.

2.10 LLFAs in Wales will also take on the role of the Sustainable Drainage System (SuDS) Adopting and Approving Body in relation to sustainable drainage systems. In this role MTCBC will be responsible for both approving the original design of the SuDS and adopting and maintaining the finished system. The consenting of works in ordinary watercourses has also been transferred to the LLFA from the Environment Agency.

2.11 The allocation of responsibility for local flood risk is replicated in the Flood Risk Regulations 2009. These Regulations allocate specific responsibility to LLFAs for conducting assessments in relation to and mapping and planning (for flood risk areas identified in the assessment) for the risks of flooding from everything other than main rivers, the sea and reservoirs to LLFA.

2.12 Section 10(4) of the Act, sets out the following requirements for what must be included within a Strategy:-

- 1 The Risk Management Authorities in the Local Authority's area.
- 2 The flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area.
- 3 The objectives for managing local flood risk.
- 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.
- 9 How the strategy contributes to the achievement of wider environmental objectives.

A section has been included in the Strategy to cover each of these requirements.



- 2.13 MTCBC must submit a signed-off draft of the Local Strategy and any associated guidance to the Welsh Minister for Environment and Sustainable Development for review allowing at least two months for a response.

The Strategies must to be completed by end of January 2013 for submission to, and approval by, the Welsh Government.

Upon receipt, the Welsh Minister may approve the draft strategy and any associated guidance, with or without modification, or reject it.

This document has been prepared by Merthyr Tydfil County Borough Council in order to comply with this requirement.

### **3 The Risk Management Authorities**

**3.1 Environment Agency Wales (The new Single Body - Natural Resources Wales will come into force on 1<sup>st</sup> April 2013)**

**3.2 Lead Local Flood Authority in Wales  
Merthyr Tydfil County Borough Council**

**3.3 Water Company  
Dŵr Cymru – Welsh Water**

**3.4 Additional Risk Partners**

#### **Internal Partners**

Planning Department  
Emergency Planning  
Environmental Health  
Finance

#### **External Partners**

Flood Risk Management Wales (RFCC)  
Emergency Services  
Fire  
Ambulance (Health Board)  
Police  
Housing Associations  
Merthyr Valley Homes Ltd  
Merthyr Tydfil Housing Associations  
Wales and West Housing  
National Flood Forum  
National Farmers Union  
Welsh Office of NFU  
Local Partnerships, forums, and community groups  
Royal Society for the Protection of Birds  
Land Owners and land/estate Managers  
Universities  
Developers Forum  
National House Builders  
National Parks Authorities  
Brecon Beacon national Park  
Network Rail  
Parish and Town Councils  
Local Resilience Forum  
Countryside Council for Wales  
Association of Drainage Authorities (ADA)  
Country Land and Business Association (CLA)  
SWTRA – South Wales Trunk Road Agency  
Forestry Commission Wales  
CADW

#### **4 The flood risk management functions that may be exercised by the Risk Management Authorities (RMA) in relation to Merthyr Tydfil County Borough Council**

4.0.1 When exercising their flood or coastal erosion risk management functions, or in exercising any other function in a manner that may affect flood or coastal erosion risk, all RMAs (except water companies), are required to act in a manner consistent with both the Local and National Strategies, and any associated guidance.

4.0.2 In exercising any other function in a manner which may affect a flood risk or coastal erosion risk, a Welsh Risk Management Authority must have regard to both the National and Local Strategies and any associated guidance.

4.0.3 Effective joint working between RMAs is fundamental to the effective delivery of the obligations under the Act. This is appreciated within the Act itself, which imposes a duty on all RMAs to co-operate to facilitate partnership working, the sharing of information and enhance communications.

#### **4.1 Environment Agency Wales (The new Single Body - Natural Resources Wales will come into force on 1<sup>st</sup> April 2013)**

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

4.1.2 Historically the Environment Agency has led on the management of the risks of flooding from main rivers and the sea. However, as a consequence of the Flood and Water Management Act 2010 certain changes have been made to the role and remit of the Environment Agency. In addition to flooding from rivers and the sea, the Environment Agency has new operational responsibilities in relation to coastal erosion and a wider oversight role for all flood and coastal erosion risk management in Wales.

4.1.3 This change means that the Environment Agency has a dual role of:-

- 1 Operational responsibilities for flooding from main rivers, the sea and coastal erosion.
- 2 Oversight responsibilities in relation to all flood and coastal erosion risk management in Wales.

- 4.1.4 The oversight change is integral to the delivery of national policy on flooding and coastal erosion risk management and has been taken forward to ensure that the Environment Agency has the remit to support the Welsh Government across the full range of flood and coastal erosion risks affecting Wales.
- 4.1.5 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, which is currently being piloted via their Floodline Warning Service.
- 4.1.6 The Flood and Water Management Act 2010 places a number of statutory duties on the Environment Agency including:
- 1 Co-operating with other authorities, including sharing data.
  - 2 Reporting to the Minister on flood and coastal erosion risk in Wales including the application of the National Strategy.
  - 3 The establishment of Regional Flood and Coastal Committees.
- 4.1.7 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:
- 1 Collect data on progress from Risk Management Authorities using existing avenues wherever possible.
  - 2 Report factual information to Welsh Government.
  - 3 As requested, provide interpretive advice to the Welsh Government.
- 4.1.8 In addition to their statutory duties, the Environment Agency has a number of what are called permissive powers. These are powers that allow them to do something, but do not compel them to and include:
- 1 Powers to request information.
  - 2 The ability to raise levies for local flood risk management works, via the Regional Flood and Coastal Committees.
  - 3 Powers to designate certain structures or features that affect flood or coastal erosion risk.
  - 4 The expansion of powers to undertake works to include broader risk management actions.
  - 5 The ability to cause flooding or coastal erosion under certain conditions.

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

4.1.10 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.

## **4.2 Lead Local Flood Authority (LLFA) Merthyr Tydfil County Borough Council**

4.2.1 Within the Flood and Water Management Act 2010, Merthyr Tydfil County Borough Council has been established as a Lead Local Flood Authority for its administrative area. MTCBC is also the highway authority for the area having responsibility for managing all adopted highways which are not included within the remit of the National Trunk Road Agency

4.2.2 Under the term of the Flood and Water Management Act 2010, the MTCBC is responsible for what is termed 'local flood risk'. This includes the risk of flooding from ordinary watercourses, surface runoff and ground water.

4.2.3 Local Authorities have always had certain responsibilities in relation to ordinary watercourses, and in practice most Local Authorities took the lead in dealing with surface water flooding incidents prior to the changes contained within the Flood and Water Management 2010. This is, however, the first time responsibility for the risk of flooding from surface runoff has been allocated to any body in law.

4.2.4 The Flood and Water Management Act 2010 places a number of statutory duties on MTCBC in its new role as LLFA including:

- 1 The preparation of local flood risk management strategies.
- 2 A duty to comply with the National Strategy.
- 3 To co-operate with other authorities, including sharing data.
- 4 A duty to investigate all flooding within its area, insofar as a LLFA consider it necessary or appropriate.
- 5 A duty to maintain a register of structures and features likely to affect flood risk.

6 A duty to contribute to sustainable development.

7 Consenting on Ordinary Watercourses

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

1 Powers to request information.

2 Powers to designate certain structures or features that affect flood or coastal erosion risk.

3 The expansion of powers to undertake works to include broader risk management actions.

4 The ability to cause flooding or coastal erosion under certain conditions.

4.2.6 LLFA in Wales will also take on the role of the 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.

4.2.7 The minimum statutory content of Local Strategies is set out in Section 10 of the Flood and Water Management Act 2010 and LLFAs are required to consult with the public in preparing them. Local Strategies must set out the objectives and measures for managing local flood risks along with the timescales and costs of implementation.

4.2.8 To fully enable a MTCBC to implement its new roles and responsibilities in respect of local flood risk certain functions previously held by the Environment Agency have been transferred. This includes (from April 2012) taking responsibility for the consenting and licensing of all works on ordinary watercourses.

4.2.9 The allocation of responsibility for local flood risk is replicated in the Flood Risk Regulations 2009. These Regulations allocate specific responsibility to LLFAs for conducting assessments in relation to and mapping and planning (for flood risk areas identified in the assessment) for the risk of flooding from everything other than the main rivers, the sea and the reservoirs to LLFA.

### **4.3 Dŵr Cymru – Welsh Water**

- 4.3.1 Water companies, when exercising their flood or coastal erosion risk management functions in relation to an area within Wales, must have regard to the relevant Local Strategies and any associated guidance
- 4.3.2 Water and sewerage companies are responsible not only for the provision of water, but also for making appropriate arrangements for the drainage of foul water, the treatment of waste, surface water sewers and combined sewers. They have primary responsibility for floods from water and sewerage systems, which can include sewer flooding, burst pipes or water mains or floods caused by system failures.
- 4.3.3 No changes have been made to the operational arrangements for water and sewerage companies in respect of flood risk.
- 4.3.4 The Flood and Water Management Act 2010 places a number of statutory duties on Water and sewerage companies including:
- 1 A duty to act consistently with the National Strategy;
  - 2 A duty to have regard to the content of the relevant Local Strategy;
  - 3 Co-operation with other Authorities, including sharing data.
- 4.3.5 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.

## **5 The objectives for managing local flood risk**

5.1 In November 2011 the Welsh Government published the overarching strategy “The National Strategy for Flood and Erosion Risk Management in Wales”. This document identifies four Overarching Objectives that must be addressed within Local Strategies. The Overarching Objectives are:-

### **The four overarching objectives are:**

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

5.2 In their guidance document – “Local Flood Risk Management Strategies” – Local Strategy – November 2011 the Welsh Government has listed objectives in relation to social, economic and environmental risk. These objectives have been used by MTCB as a foundation for the establishment of a objectives which will ensure the delivery of this The Strategy.

### **5.2.1 Flood Risk Management Objectives**

- 1 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 depth x velocity of flow)
  - Reduce disruption to critical infrastructure (or maintain operation of)
- 2 Economic:**
  - Reduce economic damage (e.g. Annual Average Damages AAD)
  - Reduce cost of management (note: a risk management outcome for use in appraisal)
- 3 Environmental:**
  - Reduce damages to Natura 2000 / SSSIs / BAP sites (or improve sites)
  - Improve naturalness (reduce modification of channels / waterbodies)
  - WFD objectives: improve water quality / ecological status (or not deteriorate) – hydromorph and diffuse pollution issues



5.2.2 The environmental improvements desired throughout this strategy must conform with countryside and wildlife legislation and will be planned to improve habitats that protected species use. Opportunities to connect habitats will be focussed upon. It is a fact that environmental improvements often have subsequent positive impacts upon health and well-being, socioeconomic and cultural issues; generically included in the term 'ecosystem services'. These will be considered in detail where specific action plans are developed due to the specific, varied and differing needs of each site, area and community.

5.3 In considering the high level strategy for the management of local flood risk within Merthyr Tydfil County Borough Council four options have been considered, they are as follows:-

### **High Level Strategy Options**

#### **1 Do Nothing**

Potentially there would be greater social risk together with an increasing economic and environmental damage.

#### **2 Maintain Flood Risk Management at Current Levels**

Existing flood defence would be maintained at their current standards but as a result of climate change the flood risk would be increased.

#### **3 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 Reduce Flood Risk**

Take action to reduce social, economic and environmental impact due to flooding.

5.4 Clause 3.3.4 of the Local Flood Risk Management Strategies guidance document advises that high level strategic objectives should be developed around the reduction of potential adverse consequences of flooding for human health, the environment, cultural heritage, economic activity and if considered appropriate on local community facilities, non-structural initiatives and/or on the reduction of the likelihood of flooding. By adopting this approach, MTCBC have ensured that the objectives of this Strategy are consistent with those required under the Flood Risk Regulations 2009 and will assist in ensuring that this common approach is maintained across Wales.

**In order to comply with these objectives and requirements of the National Strategy Merthyr Tydfil County Borough Council has set its high level strategy as follows:**

**“Endeavour to reduce Flood Risk in all of the areas identified as being subject to significant flood risk”.**

With the level of information currently available it is not possible to give a more precise strategic objective but as further surface water modelling is completed together with flood risk and hazard maps and flood risk management plans being produced it is anticipated that a precise percentage level of improvement will be set.

- 5.6 The Welsh Government Guidance further states that when developing Local Strategies, LLFAs may wish to consider both high level strategic objectives and more detailed objectives.

In considering objectives MTCBC, as the LLFA, has taken account of the requirements of the National Strategy and the strategic aims and objectives provided within the National Strategy have been translated into meaningful objectives for the local area of Merthyr Borough, focusing on the **Prevention, Protection and Preparedness** (including Climate Adaption) elements.

## **5.7 Detailed Objectives**

Merthyr Tydfil County Borough Council has set the following detailed objectives as part of the Local Flood Risk management Strategy. These objectives are Specific, Measurable, Achievable, Reasonable and Time Constrained.

All objectives will be implemented using the most up to date and relevant information available.

### **5.7.1 Overarching Objective 1**

**Reducing the impacts on individuals, communities businesses and the environment;**

- 1 Reduce distress by reducing the number of people exposed to the risk of flooding.
- 2 Reduce community disruption by reducing the number of residential and commercial properties affected by the risk of flooding.
- 3 Reduce risk to life by reducing the number of people exposed to risk of flooding of significant depth and velocity.

- 4 Reduce disruption to critical infrastructure or prepare plans to allow the operations to be maintained.
- 5 Protect and improve Sites of Special Scientific Interest (SSSIs) and Sites of Importance for Nature Conservation (SINCs)
- 6 Contribute to the delivery of Merthyr Tydfil Biodiversity Action Plan
- 7 Minimise Damage to known Historic Assets

### **5.7.2 Overarching Objective 2**

#### **Raising awareness of and engaging people in the response to flood**

- 8 Provide systems to give early warning of potential flooding to individuals and communities.
- 9 Provide efficient systems for the management and maintenance of surface assets.
- 10 Reduce economic damage
- 11 Endeavour to reduce cost of management

### **5.7.3 Overarching Objective 3**

#### **Providing an effective and sustained response to flood events**

- 12 Improve naturalness including the creation/restoration/protection of natural channels and water bodies with minimal modifications
- 13 Protect and where possible Improve water quality
- 14 Provide Flood Risk Management Plans for each area subject to flood risk
- 15 Ensure that measures are sustainable
- 16 Ensure that MTCBC works in partnership with all other Risk Partners and works collaboratively with adjacent Authorities

**5.7.4 Overarching Objective 4 Prioritising investment in the most at risk communities.**

- 17 Ensure that investment decisions for the implementation of flood risk management schemes are made on a consistent, defensible basis and are subject to cost benefit analysis.

**5.8 When considering the measures to be used to achieve the objectives the following Action Plan has been developed to decide on the priority to be given to each measure.**

**In addition those measures which satisfy multiple objectives will be given greater priority than those which satisfy only one.**

**Measures will also be given higher priority if the environmental effects are likely to improve biodiversity and they provide social improvements such as access to the public.**

**MTCBC – STRATEGY ACTION PLAN**

- 1 Inform and ensure residents are aware of the level of risk they are facing.**
- 2 Provide an early warning system to allow residents time to move to a safe area.**
- 3 Encourage the residents to produce their own Flood Plan to reduce danger to themselves and damage to their property and its contents.**
- 4 Provide systems to prevent floodwater entering properties at risk.**
- 5 Endeavour to reduce flood risk by reducing the volume of water being generated by the upstream catchment.**
- 6 Introduce new flood relief systems such as culverts or drainage ditches.**
- 7 Build new flood defences or raise the level of existing flood defences.**

**MERTHYR TYDFIL COUNTY BOROUGH COUNCIL****LOCAL FLOOD RISK MANAGEMENT STRATEGY OVERARCHING OBJECTIVES AND DETAILED OBJECTIVES**

	<b>Objective</b>	<b>Social</b>	<b>Economic</b>	<b>Environmental</b>
	<b>Overarching Objective 1</b>  <b>Reducing the impacts on individuals, communities businesses and the environment.</b>			
1	Reduce distress by reducing the number of people exposed to the risk of flooding.	√	√	
2	Reduce community disruption by reducing the number of residential and commercial properties affected by the risk of flooding	√	√	
3	Reduce risk to life by reducing the number of people exposed to risk of flooding of significant depth and velocity.	√	√	
4	Reduce disruption to critical infrastructure or prepare plans to allow the operations to be maintained.	√	√	
5	Protect and improve Sites of Special Scientific Interest (SSSIs) and Sites of Importance for Nature Conservation (SINCs)	√	√	√
6	Contribute to the delivery of Merthyr Tydfil Biodiversity Action Plan	√		√
7	Minimise Damage to known Historic Assets	√		√
	<b>Overarching Objective 2</b>  <b>Raising awareness of and engaging people in the response to flood</b>			
8	Provide systems to give early warning of potential flooding to individuals and communities.	√	√	
9	Provide efficient systems for the management and maintenance of surface assets.	√	√	
10	Reduce economic damage	√	√	
11	Endeavour to reduce cost of management		√	

## LOCAL FLOOD RISK MANAGEMENT STRATEGY OVERARCHING OBJECTIVES AND DETAILED OBJECTIVES

	Objective	Social	Economic	Environmental
	<b>Overarching Objective 3</b>  <b>Providing an effective and sustained response to flood events</b>			
12	Improve naturalness including the creation/restoration/protection of natural channels and water bodies with minimal modifications	√	√	√
13	Protect and Improve water quality	√		√
14	Provide Flood Risk Management Plans for each area subject to flood risk	√	√	√
15	Ensure that measures are sustainable		√	√
16	Ensure that MTCBC works in partnership with all other Risk Partners and works collaboratively with adjacent Authorities	√	√	
	<b>Overarching Objective 4</b>  <b>Prioritising investment in the most at risk communities.</b>			
17	Ensure that investment decisions for the implementation of flood risk management schemes are made on a consistent, defensible basis and are subject to cost benefit analysis.		√	

## **6 The measures proposed to achieve objectives**

6.1 Following agreement of the objectives given above, Merthyr Tydfil County Borough Council, as the Lead Local Flood Authority, has set a total of 39 measures in order to deliver the objectives. Details of these objectives are given below.

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

6.2 A wide range of measures has been considered, both structural and non-structural for the short (0-20 years), medium term (20-50 years) and longer term (50-100 years).

The benefits which will be achieved by each measure have also been considered. Measures which will achieve multiple benefits will be promoted wherever possible.

When measures are considered to satisfy Objective 11 – Endeavour to reduce the cost of Management, the environmental effect of changes to the management regime will be considered. It is essential that the changes will not have an adverse effect on the implementation of other objectives.

6.3 Through its legislative and guidance framework the Welsh Government has identified measures under seven high level themes for LLFAs to consider in preparing their strategies. These themes are:

- 1 Development planning and adaptation (encompassing both new and adaptations to existing developments/landscapes).**
- 2 Flood forecasting, warning and response.**
- 3 Land, cultural and environmental management.**
- 4 Asset management and maintenance.**
- 5 Studies assessments and plans.**
- 6 High level awareness and engagement (to increase individual and community resilience).**
- 7 Monitoring (of the local flood risk issues).**

All seven high level themes and associated measures have been considered in detail below.

6.4 Both the current and potential future risks have been considered to enable Merthyr Tydfil County Borough Council to manage and build in adaptation thinking and planning.

6.5 The following plans have been considered to ensure that the information provided within each can be aligned within the Strategy.

They have also been used to help determine measures as they set the strategic context for overall flood risk management at catchment level.

- 1 Taff and Ely Catchment Flood Management Plan Summary Report - January 2010 Managing Flood Risk – Environment Agency Wales
- 2 Water for life and livelihoods – River Basin Management Plan - Severn River Basin District – Defra – Welsh Assembly Government and Environment Agency

A full list of the documents consulted is given in Appendix 7 List of documents consulted

6.6 In the preparation of this report use has been made of existing policies, plans and strategies in identifying measures.

These include:-

- 1 Merthyr Tydfil – Local Development Plan 2006-2021 – Adopted 25<sup>th</sup> May 2011 – Merthyr Tydfil County Borough Council
- 2 Habitats Regulations Assessment Screening Report – Merthyr Tydfil County Borough Council – Local Development Plan – August 2008 Enfusion
- 3 Merthyr Tydfil County Borough Council Local Development Plan 2006-2021 Deposit Plan – Sustainability Appraisal (SA) Strategic Environmental Assessment (SEA) – Sustainability Appraisal Report – September 2008 – Enfusion – Including Appendices 1 and 2  
Appendix 3 – December 2006  
Appendix 4 – December 2006  
Appendix 5 – September 2008 - Enfusion  
Appendix 6 – September 2008 - Enfusion  
Appendix 7 – September 2008 – Enfusion
- 4 The Water Framework Directive (2000/60/EC)
- 5 Environment Agency - Water for life and livelihoods - River Basin Management Plan Severn River Basin District (December 2009)

6.7 The measures to be identified in the subsequent Flood Risk Management Plans will compliment and accord with those within this Local Strategy.

6.8 In order to identify the measures MTCBC has engaged, and will continue to engage, with the affected community to outline the risks now and in the future. Community engagement in the past has involved the attendance at local Flood Forum meetings and as part of the development of this Strategy



an on-line survey accessible through the MTCBC webpage was put in place.

Discussions will continue in order to agree any proposed measures to mitigate the risks and what communities and individuals can also do for themselves. Some measures will be introduced which will mitigate directly the flood risk to individual communities. Other measures proposed will not mitigate the risks directly, but will improve the knowledge and understanding of those risks in a given area and these measures will be clearly communicated to the communities affected.

6.9 In determining objectives and measures MTCBC has worked with other Risk Management Authorities within its area including Dŵr Cymru – Welsh Water, and The Environment Agency. MTCBC realises the benefits of collaborative working, including shared solutions and funding, and also to ensure that there is a shared vision and agreed outcomes. Much more detailed interaction with our risk partners will take place during the preparation and implementation of the Flood Risk Management Plans.

6.10 In developing objectives and measures MTCBC has also consider the impacts of climate change to ensure that the measures are designed and are resilient to the changing climate. Sustainable development is a central core operating principle of the Welsh Government and has and will continue to be reflected through the work of MTCBC, in line with the statutory duty set out in Section 27 of the Act.

Climate change and its impact on flooding has been and will be considered by MTCBC and will be a factor in any flood alleviation plans. MTCBC adaptation programmes are integral to the Local Strategy.

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:

- 1 By 2050 average annual temperatures are projected to increase by 2.3°C
- 2 Summer daily maximum temperatures are projected to increase by 3.4°C
- 3 Winter minimum temperatures are projected to increase by 2.5°C
- 4 Rainfall is projected to increase in winter on average by 14 per cent and decrease in summer by 16 per cent
- 5 Sea levels around Wales are predicted to rise by approximately 20cm by 2050

- 6 Storm intensity in summer and winter will increase, leading to more severe storms and larger waves attacking our shores

The evidence of the increasing risks from flooding is underpinned by a series of reports produced in the last few years including the Foresight: Future Flooding Study, the Stern Review on the Economics of Climate Change and most recently, the Pitt Review into the Summer 2007 Floods.

The Welsh Government is working with the Environment Agency to develop updated guidance on what Risk Management Authorities should plan for in relation to climate change when undertaking flood or coastal erosion risk management works. This guidance will be taken into account by MTCBC in its preparation of Flood Risk Management Plans

Other guidance to aid the assessment of climate change is already available and these include the Flood and Coastal Erosion Risk Management Appraisal Guidance (FCERM-AG), Technical Advice Note 15 (Tan 15) and others which are listed within FCERM-AG. This guidance will be taken into account during the preparation of the Plans.

- 6.11 Further information and advice on how to improve individual resilience to flooding is also available from the Environment Agency via their 'Floodline' service and this information has been considered in the preparation of this strategy.

- 6.12 The WG Guidance document sets out numerous pieces of advice relating to the identification of measures proposed to achieve the objectives given in section 5 of this report.

Each measure has been considered in detail relating to the current situation and what may be required in the future to achieve the objectives set out in this Strategy.

The objectives related to each measure have been established together with benefits and time scale for implementation.

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## **6.13 Development Planning and Adaption**

### **6.13.1 Sustainable and Strategic Development Planning Prevention**

**Objectives 1, 2, 3, 4, 5, 6, 12, 13, 15**

The Merthyr Tydfil Local Development Plan 2006-2021 sets out the Council's priorities for the development and use of land in the County Borough and the policies to implement them up until 2021. New development allocations have avoided floodplain areas (zones C1 and C2) within Merthyr Tydfil County Borough and an appropriate policy (BW8: Development and the Water Environment) has been incorporated into the plan which continues to direct new development away from zone C and towards suitable land in zone A and zone B.

#### **Policy BW8 states:**

Proposals for built development will only be permitted where:-

- 1 They avoid identified river flood plains in order that these areas continue to fulfil their flood flow and water storage functions.
- 2 They do not have an adverse effect on the quality and/or quantity of surface waters or groundwater resources, and where opportunities exist, they incorporate measures to improve existing water quality.
- 3 Adequate water and sewerage systems exist, or are reasonably accessible, or are capable of being provided prior to the development becoming operational without placing unacceptable pressure on existing capacity or causing unacceptable environmental harm.

In addition, development proposals will be required to avoid exacerbating flood risk locally and elsewhere within the river catchment by incorporating sustainable drainage systems (SuDS) for the disposal of surface water.

Alternative methods of surface water disposal will only be considered where a developer demonstrates that the incorporation of SuDS is inappropriate for practical or environmental reasons.

As The Strategy is implemented through the Plans it may become evident that there is a potential conflict between the LDP and the Strategy. Areas of land identified within the LDP as being suitable for development may be deemed unsuitable when the detailed Plans are produced. The LDP cannot be altered until the next review but the Planning Department would be made aware of the potential conflict and at the next review the LDP will be amended to take the Plans into account.

#### **The Welsh Government has defined the zones in Tan 15: Development and Flood Risk as follows:**

- 1 Zone A – Considered to be at little or no risk of fluvial or tidal/coastal flooding

- 2 Zone B – Areas known to have been flooded in the past evidenced by sedimentary deposits
- 3 Zone C – Based on Environment Agency extreme flood outline, equal to or greater than 0.1% (river, tidal or coastal)
- 4 Zone C1 – Areas of the floodplain which are developed and served by significant infrastructure, including flood defences
- 5 Zone C2 – Areas of the floodplain without significant flood defence infrastructure

### **Benefits**

- 1 The Local Development Plan (LDP) provides a strategic policy framework which facilitates the effective management of flood risk by directing new development away from those areas which are at a high risk of flooding.
- 2 New developments will be encouraged within areas that are at low risk of flooding

### **Time Scale for Implementation**

2006-2021

### **Short Term 0-20 Years**

## **6.13.2 Strategic Flood Risk Assessment (SFRA) / Strategic Flood Consequences Assessment (SFCA) Prevention Objective 1, 2, 3, 4, 10**

A Strategic Flood Consequence Assessment (SFCA) was undertaken as part of the LDP process (See Appendix 9 of LDP). This process will be repeated and updated for future versions of the LDP.

Environment Agency (EA) Wales recommends a 3-stage approach to completing an SFCA. In preparing the Merthyr Tydfil LDP, the Council made use of existing data sources and carried out an informal analysis based on engineering judgements in line with the precautionary principle outlined in TAN 15: Development and Flood Risk (2004). This stage utilised existing information to determine:-

- 1 Whether flooding is a significant issue within the plan area.
- 2 Where in the plan area flooding occurs.
- 3 How new development can avoid adding to that risk.
- 4 which of the potential allocations lie outside zone C

The following were considered:-

- 1 Flooding from all potential sources at a strategic scale, including fluvial flooding, groundwater flooding, flooding from overland flows, flooding from artificial drainage systems, and flooding from infrastructure failure, including reservoirs and sewers.
- 2 Existing flood risk management infrastructure including the standard of protection provided by existing defences together with an assessment of any physical features which would increase or reduce flooding.
- 3 The potential increase in flood risk to existing developments due to the increased run-off from developments in all flood zones, and potential solutions, such as those offered by Sustainable Drainage Systems (SuDS).
- 4 Any physical features, either natural or man-made, which could breach or would convey flood flow to other areas not considered to be directly at risk from the source.

In undertaking a desktop analysis that equates to the first stage of SFCA, the Council successfully achieved the allocation of development sites in the lowest risk areas of the County Borough whilst still fulfilling the LDP's overall strategy for growth. Further stages of SFCA were therefore not required.

#### **Benefits**

- 1 SFCA allowed the consequences of flooding to inform the location of new development in the LDP.
- 2 SFCA also enabled consideration of potential increases in surface water runoff arising from new development, including the potential application of sustainable drainage systems.

#### **Time Scale for Implementation**

2006 – 2021

#### **Short Term 0-20 Years**

### **6.13.3 Water Cycle Strategies**

#### **Prevention**

#### **Objective 13**

A Water Cycle Strategy is an opportunity for MTCBC and all our partner organisations to work together to identify the water services infrastructure needed to support and enable sustainable development in the Borough. The strategy identifies what infrastructure is needed, when it is required, how much it will cost, and who should pay.

The overall objective of a Water Cycle Strategy is to provide a sustainable approach to the provision of water services infrastructure. The following topics have been covered as part of this process:

### **Water Cycle Strategy covers the following elements:**

- 1 Flood Risk Management:** Identifying areas where development is likely to increase flood risk (both on-site and downstream) and to suggest necessary improvement measures.  
This Local Flood Risk Management Strategy deals with this issue and the Flood Risk Management Plans will identify specific measures for individual sites.
- 2 Water Supply:** Reviewing the existing water supply sources and identifying any required upgrades to ensure adequate water provision for new developments.  
This will require ongoing dialogue with Dŵr Cymru/Welsh Water as one of our Risk Partners. They are required to take account of the Local FRM Strategy in what they propose
- 3 Drainage:** Reviewing the underlying geology for growth sites to understand the possible SUDS (sustainable urban drainage systems) to help minimise the environmental impacts of growth. This involves future implementation of SUDS, for which consultation is not yet available. Currently there is a link to Planning applications where drainage implications are considered by the Drainage and Highways Department.
- 4 Waste Water:** Understanding the current capacity of sewage works and the sewer network to identify whether any upgrades are required to accommodate new developments.  
This requires dialogue with Dŵr Cymru/Welsh Water. They are required to take account of the Local Strategy in what they propose and this will take place through dialogue and collaboration as part of the Local Strategy process of consultation
- 5 Ecology:** Identifying the impact of growth relating to water quality, nature conservation areas and protected species, then suggesting possible mitigation measures where required.  
The SEA as part of the FRM Strategy covers this.
- 6 Sustainable Infrastructure:** Suggesting how water services infrastructure can contribute to sustainable development in terms of increased water efficiency and reduced water consumption in new developments.  
There are obligations on the Planning process to consider sustainability. Dŵr Cymru/Welsh Water input will also be required as part of the dialogue between all parties.

### **Benefits**

- 1 To ensure the management of water resources in a sustainable way
- 2 To manage and develop sewage systems for future developments

### **Time Scale for Implementation**

#### **Short term 0 – 20 years**



#### **6.13.4 Relocation Prevention Objectives 1, 2, 3, 4, 10, 11**

MTCBC do not have a policy relating to the relocation of residents living in housing which is subject to flood risk and it is not anticipated that significant numbers of properties, if any, will be identified which will require the relocation of residents.

If houses are identified as being in areas of significant flood risk, which would endanger life, then the following procedure will be followed to endeavour to reduce flood risk:

- 1 Inform and ensure residents are aware of the level of risk they are facing.
- 2 Provide an early warning system to allow residents time to move to a safe area.
- 3 Encourage the residents to produce their own Flood Plan to reduce danger to themselves and damage to their property and its contents.
- 4 Provide systems to prevent floodwater entering the property.
- 5 Endeavour to reduce flood risk by reducing the volume of water being generated by the upstream catchment.
- 6 Introduce new flood relief systems such as culverts or drainage ditches.
- 7 Build new flood defences or raise the level of existing flood defences.

If after implementing or assessing the effectiveness, these measures are considered impracticable for reasons of cost or engineering then MTCBC will endeavour to relocate residents to the most convenient available vacant housing. If there are significant numbers of properties involved then MTCBC will consider how alternative houses may be provided on locally available land which has been allocated for housing.

It is anticipated that the property owner would be responsible for the cost of relocation or that their properties would be compulsorily purchased by MTCBC at current market value.

#### **Benefits**

- 1 Reduce the risk to residents by removing them from housing in areas which are subject to severe flood risk

#### **Time Scale for Implementation Long term 50 – 100 years**

### **6.13.5 Mineral and Waste Plans Prevention**

#### **1 Minerals**

##### **Objective 1, 2, 3, 4, 13**

In respect of **minerals**, LDP policy requires mineral proposals to be acceptable in terms of hydrological and hydro-geological factors. Mineral extraction schemes also need to incorporate restoration proposals which will need to address final landform and land use matters.

##### **Policy TB8: Mineral Proposals, states:**

Proposals for mineral extraction and associated development will only be allowed where:-

- 1 They would not result in unacceptable environmental impacts.
- 2 They would not result in an unacceptable impact on the health and amenity of neighbouring land uses including the effects of dust, noise, vibration and traffic.
- 3 They are acceptable in terms of geological, hydrological and hydro-geological factors.
- 4 They would not conflict with transportation considerations including access, parking, traffic generation, and enjoyment of public rights of way.
- 5 They would not have an unacceptable impact on land stability.
- 6 They include acceptable proposals for progressive and final restoration, aftercare and beneficial after-use.
- 7 They maximise opportunities to re-use and recycle mineral waste.

The production and use of alternative and recycled materials will be supported as substitutes for naturally occurring aggregates.

A survey will be carried out of all ground water discharges from all mine workings to establish the location and quality of the water. Where the water is found to contain iron salts which are adversely affecting the quality of surface water measures will be designed to remove the salts.

##### **Benefits**

- 1 Policy framework contributes to managing flood risk and protecting the water environment.

##### **Time Scale for Implementation**

2006 – 2021

**Short term 0 – 20 years**

## **2 Waste**

### **Objective 1, 2, 3, 4, 13**

In respect of **waste**, LDP policy identifies B2 employment sites as 'areas of search' for waste management facilities.

#### **Policy AS7: Waste Management Facilities – locations of choice, states:**

The LDP adopts a hierarchical approach to waste management whereby the preferred option is waste minimisation/avoidance; followed by product re-use; then recovery, firstly through recycling and composting and secondly through energy from waste; and finally, safe disposal.

Using regional search criteria, the following locations are identified in order to help meet regional and local waste management needs:-

- 1 B2 employment sites – as areas of search for appropriate waste management facilities to meet the estimated land requirement of up to 3.2 hectares.
- 2 Trecatty – safeguarded for continued necessary landfill of residual and unavoidable wastes.

Where new waste facilities fall outside B2 employment sites, applicants will be required to demonstrate why these identified areas of search are unsuitable for the development proposed.

Appendix 7 of the LDP acknowledges that there are areas within existing B2 employment sites that fall within DAM zone C2 which are unlikely to be suitable for certain waste facilities. Developers are encouraged to consult the Local Planning Authority or the Environment Agency for further information on any site that is potentially at risk from flooding.

A survey will be carried out to identify where leachate is being discharged from refuse tips both current and historic and from cemeteries. Where such discharges are found to be detrimental to the quality of surface water measures will be designed to either stop the leachate being discharged or the leachate will be intercepted and treated.

#### **Benefits**

- 1 Policy framework contributes to managing flood risk and protecting the water environment.

#### **Time Scale for Implementation**

2006-2021

**Short term 0 – 20 years**

### **6.13.6 Sustainable Drainage (SuDS)**

#### **Prevention**

**Objective 1, 2, 3, 4, 12, 13, 15**

#### **Engineering Issues**

Within the Flood and Water Management Act 2010, Merthyr Tydfil County Borough Council has been designated as a Lead Local Flood Authority for its administrative area.

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

MTCBC have a commitment to promote the use of SuDS wherever new sites are developed or brown field sites are re-developed.

The philosophy of SUDS is to replicate, as closely as possible, the natural drainage from a site before development.

The objectives of sustainable drainage are quality, quantity and amenity and biodiversity.

It is anticipated that SUDS will achieve the following:

- 1 Reduce runoff rates, thus reducing the risk of downstream flooding.
- 2 Reducing the additional runoff volumes and runoff frequencies that tend to be increased as a result of urbanisation, and which can exacerbate flood risk and damage receiving water quality.
- 3 Encourage natural groundwater recharge to minimise the impact on aquifers and river base flows in the receiving catchment.
- 4 Reducing pollutant concentration in stormwater, thus protecting the quality of the receiving water body.
- 5 Acting as a buffer for the accidental spills by preventing direct discharge of high concentrations of contaminants to the receiving water body.
- 6 Reducing the volume of surface water runoff discharging to combined sewer systems, thus reducing discharges of polluted water to watercourses via Combined Overflows (CSO) spills.
- 7 Contributing to the enhanced amenity and aesthetic value of developed areas.
- 8 Providing habitats for wildlife in urban areas and opportunities for biodiversity enhancement.

The following techniques will be considered as part of SUDS – filter strips, swales, infiltration basins, wet ponds, extended detention basins, constructed wetlands, filter drains and perforated drainpipes, infiltration devices, pervious surfaces and green roofs.

Extracts above have been taken from The SUDS Manual prepared by CIRIA.

### **Planning Issues**

Policy BW8 of the LDP requires new developments to incorporate SUDS to avoid exacerbating local flood risk locally and elsewhere within the river catchment.

### **Benefits**

- 1 Policy framework contributes to managing flood risk, protecting water quality and reducing environmental damage.
- 2 Improve the quality of surface water

### **Time Scale for Implementation**

2006 – 2021

**Short term 0 - 20 years**

## **6.13.7 Contaminated Land**

### **Prevention**

#### **Objective 13**

MTCBC maintains a register of all the contaminated land it is aware of, however, it is not considered to be complete or accurate.

It is proposed that further survey work and site investigations will be carried out in order to improve the accuracy and completeness of the information available regarding contaminated land within areas subject to significant flood risk.

Where contaminated land is known to be present within areas subject to flood risk the land will be made more resistant to flooding. This may include the construction of drainage ditches or earth bunds to direct water away from areas which are likely to cause contaminated material to adversely affect the quality of surface water.

The following clauses relating to contaminated land are taken from MTCBC LDP 3.18.1 – 3.18.4

- 1 One of the requirements of the planning system is to guide development in order to lessen the risk from both natural and man-made hazards including risks from land contamination. Whilst the system should not necessarily prevent the development of such land (although this could be the most appropriate response in some cases), it should ensure that any development undertaken is suitable for the land concerned and that the physical constraints of the land are fully taken into account.
- 2 The responsibility for determining the extent of contamination rests with the developer who must also ensure that the land is suitable for the proposed development. However, the Council must take into account any implications on public health and ensure that new

development is not undertaken without an understanding of the risks involved; also, that development does not take place without appropriate remediation, having regard to both the natural and built environment.

- 3 The LDP recognises that primarily because of Merthyr Tydfil's industrial legacy, certain areas of land in the County Borough remain potentially contaminated. Furthermore, that the remediation of such land may be required before it can be brought back into beneficial use. As a means of alerting interested parties to the potential of contamination, the Council is required to maintain a register of contaminated land and this has been taken into account in preparing the LDP. The register is also used to inform developers whether potential risks are known to exist and to what extent further investigations may be necessary.
- 4 The above policy is intended to protect public safety whilst helping to realise one of the primary aims of the LDP i.e. to promote regeneration through the use of suitable and appropriate brownfield land rather than greenfield sites. Within this context, it is recognised that on some sites, in order to successfully fund decontamination works, a phased approach to remediation may be necessary.

The LFRMS will have an approach which is consistent with the LDP.

#### **Policy BW18: Contaminated land**

Development proposed on a site known or reasonably believed to be contaminated, will require a site assessment to establish the nature and extent of the contamination prior to determining the application. Development will not be permitted unless it is demonstrated that effective measures can be taken to treat or control any contamination in order not to:-

- 1 Expose occupiers of the development land and neighbouring land to unacceptable risk.
- 2 Contaminate any watercourse, water body or aquifer.
- 3 Cause the contamination of adjoining land or allow the contamination to continue.

Where suitable remedial measures are agreed with the Authority, these must be completed before the development commences.

#### **Benefits**

- 1 To improve the quality and completeness of information relating to contaminated land
- 2 To prevent contaminated material adversely affecting the quality of surface water.

#### **Time Scale for Implementation**

2006 – 2021

**Short term 0 - 20 years**

### **6.13.8 Historic Assets**

#### **Preparedness**

##### **Objective 7**

MTCBC has developed a plan and database showing the location of all historic assets within the borough, including Scheduled Ancient Monuments, Listed Buildings, Conservation Areas, Registered Historic Parks and Gardens and Registered Historic Landscapes

When the revised surface modelling is carried out and the Hazard and Risk Maps prepared details of all such assets will be established which are located within flood risk areas.

Surveys will be carried out to establish what measures, where practicable, will be required in order to provide additional resistance from the entry of flood water to historic assets in a manner which is sympathetic to their architectural and historic interest.

Consideration will also be given to the potential positive and negative impacts of flood risk management works on historic assets.

#### **Benefits**

- 1 To ensure that information is available to design measures which will provide historic assets with increased resistance to flood water.
- 2 To ensure that full account can be taken of the positive and negative impacts of flood risk management works on historic assets.

#### **Time Scale for Implementation**

##### **Short term 0 - 20 years**

### **6.14 Flood Forecasting, Warning and Response**

#### **6.14.1 Flood Awareness**

##### **Preparedness**

##### **Objective 1, 2, 3, 4, 7, 8, 10, 11**

Both the EA and Local Resilience Unit (LRU) have continually worked closely together over the past couple of years in raising awareness of flooding to communities within Merthyr Tydfil County Borough. The production of leaflets (by Both the EA and MTCBC LRU) also a production of an e-tool CD disc that has template plans targeted at the family and community levels, as well as information on incidents such as flooding. In the summer of 2008 the EA and MTCBC produced an awareness drive within the council's Contact Paper/ Newsletter for the autumn addition. The Contact Newsletter is a free supplement where every household within the County Borough receives a copy. In addition to the above the Environment Agency also embarked on their Big Welly Tour with an event held in Merthyr Tydfil Town Centre on 6th August 2010 - **Flooded with good advice**

It is proposed that this scheme will be extended to cover areas subject to flood risk from ordinary watercourses and surface water.

### **Benefits**

- 1 Raise awareness of flood risk within the communities of MTCBC

### **Time Scale for Implementation**

Ongoing

**Short term 0 20 years**

## **6.14.2 Flood Warning**

### **Preparedness**

**Objective 1, 2, 3, 4, 7, 8, 10, 11**

On Receipt of Severe Weather Warning via the Met Office this goes into a specially setup mailbox which then distributes the warning to relevant officers and departments of the council. If the warning is received outside office hours the warning is sent to the council's Lifeline Control Room who then contact the "on call" duty Engineers and Emergency Planning Officers.

The appetite for the Extended Floodline Service (EFS) was originally born out of the recommendation within the Lessons Learned Report (Autumn 2000) that Floodline should be developed to become a "one stop shop" to help with all flooding problems.

In response to this, a Pilot Study which involved 26 Local Authorities was undertaken in Devon, Cambridgeshire and Hertfordshire between April 2003 and September 2004. Due to budgetary and resource constraints during 2005 and 2006 implementation of the service was delayed. The pilot looked at the value of the extension, provided a variety of lessons learned, and helped to refine the objectives of the project and reduce the number of risks to delivery.

The motivation behind the pilot project was based upon the need to provide Floodline customers with more localised information previously not available through the service. Local authorities were approached to provide contact numbers and information on commonly asked questions related to:

- 1 Roads affected by flooding.
- 2 Local services and amenities affected by flooding.
- 3 Local flooding information contact details.
- 4 Flooding evacuation plans.
- 5 Sandbag distribution schemes.



The pilot study indicated that a scripted service and an optional call transfer facility could be implemented without compromising the existing quality of the Floodline service. The pilot study also highlighted the complications of maintaining correct information and the limited scope of the information provided.

The new EFS Project is focussing on extending the service to Local Authorities in England and Wales only. The EFS infrastructure will complement future expansion into other areas like Scotland and Northern Ireland but this will depend on the available infrastructure in these areas. Scotland will remain on the main Floodline Service only. The final number of English and Welsh Local Authorities included in the EFS will depend on their commitment to a set of minimum standards and their ability to handle call transfers from Floodline.

The project does not change the Environment Agency's remit to provide information about fluvial and coastal flooding only. The additional information listed above will be provided to Floodline by the Local Authorities. The project's overall objective will be to provide a vehicle for localised flood information and contact details to be given to Floodline callers

#### **Benefits**

- 1 To give local communities as much warning of potential flooding as possible to allow residents to take appropriate action.

#### **Time Scale for Implementation**

Currently in place and will be continued

**Short term 0 – 20 years**

### **6.14.3 Flood Forecasting**

#### **Preparedness**

**Objective 1, 2, 3, 4, 7, 8, 10, 11**

It is unlikely that advance warning would be possible for flooding resulting from surface water drainage problems or a breach in a canal bank, reservoir dam or sea wall.

However, the Flood Guidance Statement is issued daily by the Flood Forecasting Centre which shows a rolling five day forecast of flood risk at county level for England and Wales. These are categorised into fluvial and coastal and/or surface water flooding risk Awareness of this type of problem is dependent upon Local Authorities monitoring potential trouble spots together with information received from the general public.

#### **Benefits**

- 1 To give local communities and individuals the maximum amount of warning possible

#### **Time Scale for Implementation**

Currently in place and ongoing

**Short term 0-20 years**

#### **6.14.4 Emergency Response Plans**

##### **Preparedness**

##### **Objective 1, 2, 3, 4, 7, 8, 10, 11**

At present there are three response plans in place, two specifically for any flooding incidents, which are at three different levels:

- 1 Merthyr Tydfil CBC Emergency Response Flood Plan.
- 2 South Wales Local Resilience Forum Multi Agency Plan.
- 3 Merthyr Tydfil CBC Major Incident Plan.

##### **Merthyr Tydfil CBC Emergency Response Flood Plan:-**

As a Category 1 Responder under the Civil Contingencies Act 2004 Merthyr Tydfil County Borough Council (the Council), has to recognise its responsibilities to all its communities when they suffer disruption which affects their social and economic well being. The Council is fully committed to its community leadership role in assisting members of the public to react to and cope with these disruptions. Implicate to the Community Leadership role is the identifications of and partnership working with other concerned or involved agencies.

In flooding incidents within its area the Council considers its partners to be :-

- 1 The Environment Agency Wales.
- 2 Glas Cymru.
- 3 The South Wales Police Force.
- 4 The South Wales Fire and Rescue Service.
- 5 The Welsh Ambulance Service NHS Trust.
- 6 Capita Glamorgan.

In order to fulfil its responsibilities the Council has established in partnership with the above mentioned organisations a joint forum which is intended to manage the planning for and response to flooding in its area.

The forum will be known as The Merthyr Tydfil Flood Review Group. The Group will meet quarterly under the joint chair of the Environment Agency Wales and Merthyr Tydfil Count Borough Council.

The Group will:-

- 1 Assess the flood risks from all sources within the County Borough's boundaries.
- 2 Examine and canvass for or sponsor flood prevention schemes.

- 3 Arrange joint training and exercising.
- 4 Act as a focal point for debate and public interaction.
- 5 Identify the roles and responsibilities of all bodies which have a role in flood management.
- 6 Review flooding incidents.
- 7 Review and prepare plans for flood defence and response.

#### **Benefits**

- 1 To manage the response of MTCBC and its Risk Partners to various emergencies including flooding.
- 2 To give support to the communities during and after emergencies.

#### **Time Scale for Implementation**

Ongoing

**Short term 0 – 20 years**

### **6.14.5 Community Flood Plans**

#### **Preparedness**

**Objective 1, 2, 3, 4, 7, 8, 10, 11**

MTCBC has only one Community Flood Plan in place covering Troedyrhiw community. This area was chosen by the Environment Agency as it is considered to be one of the communities at greatest risk of river flooding within Wales.

A Flood forum was set up by the EA bringing together representatives of the community of Troedyrhiw, local Councillors, Environment Agency employees and staff members from MTCBC Emergency Planning Group.

Although the forum was established to produce a Community Plan relating to main river, in this case the river Taff, it is considered as an appropriate grouping to consult as part of the preparation of the FRM Plans as the same community is also subject to flooding from surface water, ordinary watercourses and their interface with the river Taff. It is anticipated, therefore, that the Troedyrhiw Flood Forum will be reconvened as part of the public consultation required to produce the Plans.

During the preparation of the Community Flood Plans consideration should be given to including environmental improvements where appropriate.

In addition MTCBC Emergency Planning department is planning to establish Flood Forums at Abercanaid and Pentrebach, Plymouth Ward, Bedlinog, Aberfan/Merthyr Vale, Heolgerrig and Quakers yard in order to produce Community Flood Plans for these areas.

These additional Flood Forums will be set in place within the next two years and therefore consultation will not be possible as part of the preparation of

this Strategy, however, the time scale will allow consultation with these group as part of the preparation of the Flood Risk Management Plans.

### **Benefits**

- 1 The local communities will be made more aware of the risks of flooding to their properties.
- 2 The plans will allow individual house holders to prepare their own Flood Risk Plans.
- 3 The social, and economic effects of any likely flooding will be reduced

### **Time Scale for Implementation**

It is anticipated that the additional Community Flood Plans proposed for MTCBC will be completed in collaboration with the Environment Agency and MTCBC Emergency Planning Department within the next 5 years

#### **Short term 0-20 years**

## **6.14.6 Multi-Agency Flood Plans**

### **Preparedness**

**Objectives 1, 2, 3, 4, 7, 8, 10, 11**

#### **South Wales Local Resilience Forum Multi Agency Plan:**

The plan details the arrangements in place for responding to a flood emergency in the South Wales Local Resilience Forum (LRF) Area. It is designed to form an Annexe to the **South Wales Multi Agency Approach to Major Emergencies** (SW MAAME) document that details the generic arrangements in place to respond to emergencies. It also clarifies the responsibilities of organisations involved in the management of flood incidents.

This plan provides information on the flood hazard and takes into account the risks identified in the South Wales Community Risk Register (as illustrated over page) produced by the South Wales LRF and the EA Wales Community Flood Risk Register

Community Risk register reference	Flood description	Risk rating
HL16	Major local coastal & tidal flooding	Very High
H17	Storms & Gales	Medium
HL17	Significant localised coastal & tidal flooding	Very High
HL18	Major local fluvial flooding	Very High
HL19	Significant local fluvial flooding	High
H19	Major coastal & tidal flooding affecting more than one UK region	Medium
H20	Single large urban area flooded by defence failure	Low
HL20	Localised extremely hazardous flash flooding	Very High
H21	Major fluvial flooding affecting more than one UK region	High
H44	Major reservoir or dam failure / collapse	High

### Benefits

- 1 To manage the response of MTCBC and its Risk Partners to various emergencies including flooding.
- 2 To give support to the communities during and after emergencies.

### Time Scale for Implementation

Ongoing

Short term 0 – 20 years

### 6.14.7 Major Incident Plans

#### Preparedness

Objectives 1, 2, 3, 4, 7, 8, 10, 11

#### Merthyr Tydfil CBC Major Incident Plan:-

It is Important to note that the above plans would be used in conjunction with the major incident plan. Merthyr Tydfil County Borough Council accepts its responsibility to “care for” the population in emergency situations. Towards this end it has prepared and will maintain a plan capable of dealing with all unusual peace time eventualities, ranging from Major Incidents to small but possibly unusual emergency situations. There are a wide variety of disaster situations but most natural disasters in this country take the form of flooding, severe snow conditions or freak storms accompanied by high winds. Hazards associated with South Wales include unstable coal and other waste tips, hillsides and disused mines adjacent to residential areas.

Further hazards may include fire, explosion, the emission of toxic fumes, radiation, structural collapse, accidents arising from manufacturing processes or in the storage or conveyance of hazardous materials and in all forms of transport. The scale of casualties arising from a serious traffic accident or from an air crash involving a wide bodied jet airliner are such that it is easy to imagine a disaster situation happening at any moment.

Whilst there are no specific sites or installations in the Merthyr Tydfil County Borough that require off site plans to deal with a major incident (though there are Major Accident Hazard gas pipelines). Consideration must be given to the hazards that exist in neighbouring Local Authorities which, in the event of a major incident, could have an impact on the population and the Authority.

Major Incidents are dealt with in three generally accepted phases;

- 1 Mitigation of the effects.
- 2 Restoration to normality.
- 3 Rehabilitation of those involved as soon as possible.

The Local Authority role is initially to support the Emergency Services and later to take full responsibility for the restoration and rehabilitation phases.

Major Incident situations are mentioned above but it is fully recognised that other emergency situations could arise involving great damage to property or the environment but posing no apparent threat to life and limb. The plan is therefore intended to be sufficiently flexible to cope with these lesser situations since a lack of immediate attention could result in an escalation of an innocuous situation into something more serious.

Local Authorities have a general duty of care to maintain public services and to assist local residents in distress and they should play a major part in co-ordinating the response of the various organisations involved. The need for the complete co-ordination and integration of Local Authority, Emergency and Voluntary Services plans to deal with such eventualities is vital and this is dealt with in this plan.

It must be stressed that this plan does not seek to usurp the authority normally vested in the various disciplines but rather to ensure that there is co-ordination of effort in order that a speedy and effective conclusion may result where there is a need to invoke emergency procedures.

In particular the plan is not intended in any way to compromise the existing emergency procedures of the Police, Fire and Ambulance Services. The plan has been prepared giving due consideration of the guidelines laid down in the Cabinet Office document 'Dealing with Disaster' and the 'Standards for Civil Protection in England and Wales'.

In the application of this plan Merthyr Tydfil County Borough Council will not discriminate against any persons regardless of sex, race, colour language, religion, political, or other opinion, national or social origin, association with

national minority, property, birth or other national status as defined under Article 14, European Convention Human Rights (ECHR)

### **Benefits**

- 1 To manage the response of MTCBC and its Risk Partners to various emergencies including flooding
- 2 To give support to the communities during and after emergencies

### **Time Scale for Implementation**

Ongoing

**Short term 0 – 20 years**

## **6.15 Land, Cultural and Environmental Management**

### **6.15.1 Land Management**

#### **Prevention**

**Objective 1, 2, 3, 4, 5, 6, 10, 11, 12, 13, 16**

#### **Planning Issues**

Land management across the County Borough of Merthyr Tydfil is implemented by a wide range of individuals and organisations with no effective ability to strictly control these matters. The vast majority of land management will be influenced by European and national strategic decisions, particularly agricultural policy and funding.

Where there are opportunities to influence land managers, such as currently through grant funded initiatives, then it will be possible to encourage continuation or changes in land management where land managers are supportive.

Unfortunately there is little certainty on the future extent and direction of such grant schemes, however, wherever possible partner organisations and land managers will certainly be required to maximise the use of such grant funding so as to integrate land management solutions to include consideration of contributions to flood minimisation.

The Local Authority has included the consideration of flooding and erosion matters in the Open Spaces Strategy Audit of sites in order that these matters are encouraged to be considered by the relevant land manager.

#### **Engineering Issues**

In order to reduce total runoff and/or control peak flows from catchments above areas identified as being subject to flood risk MTCBC will consider introducing various methods of catchment management.

Where forestry planting has been introduced MTCBC will enter into discussions with land owner to discuss felling and tree planting programmes to minimise increases in runoff after felling or reductions to peak flows in the medium term. It is anticipated that the Forestry Commission as one of the

Risk Partners with MTCBC will be engaged in consultation to control these processes.

Control over the construction of drainage systems within the forestry will also be discussed.

MTCBC as the LLFA will also consult with Farm Unions and local farmers to discuss methods of farming, such as the direction of ploughing, which affects the nature of the runoff from farmland. The planting of shelter belts will also be considered.

The use of fertiliser and other chemicals used in the farming industry will also be discussed in an attempt to limit contamination of downstream watercourses.

When considering the various options to implement this measure the possibility of including public access will be reviewed and those options which provide the most beneficial access will be given higher priority.

### **Benefits**

- 1 Integrated land management opportunities benefitting a range of themes simultaneously, theoretically broadening the scope and increasing the likelihood of funding for projects that will improve land water management.
- 2 Reduction of surface water runoff and peak flows.
- 3 Reduction of contamination to surface water runoff.

### **Time Scale for Implementation**

Ongoing

**Short Term and medium term 0 – 50 years**

## **6.15.2 Resilience Preparedness Objectives 5, 6, 12**

Resilience relating to properties is covered in 5.4 below.

Within MTCBC a culture of resilience to flood will be adopted in relation to property and land subject to flood risk. This will entail the restoration of land and property as quickly as possible following a flood event. The standard of restoration will be set appropriately to return habitats to their previous condition without significant change.

Where land contains Sites of Special Scientific Interest (SSSIs), Sites of Importance for Nature Conservation (SINCs) or BAP habitats, measures will be adopted which will minimise the risk of flooding where flooding is considered to be of detriment to the habitat. It must however be accepted, that total removal of risk will not be possible. As such the sites will be appropriately managed to increase the ability of the environments to cope with any changing conditions that may arise.



Where land containing SSSIs or SINCs is identified as being subject to flood risk surveys and reports will be carried out to identify the potential damaging effects of flooding and what measures could be implemented to reduce the flood risk and/or increase the resilience to long-term changes.

Such measures may include the construction of swales, drainage ditches or small earth bunds to divert surface water from the most sensitive areas, or altering land management (3.1).

**Benefits**

- 1 To maintain, enhance and increase the resilience of existing habitats particularly SSSIs BAP habitats and SINCs.
- 2 To restore habitats to their original condition as soon as possible.

**Time Scale for Implementation**  
**Short term 0 – 20 years**

**6.15.3 Resistance**  
**Protection**  
**Objectives 5, 6, 12**

Within MTCBC a culture of resistance to flood risk will be adopted in relation to property and land subject to flood risk. This will entail the implementation of measure which will reduce the risk of flood water entering properties and land which would be adversely affected by flooding. Resistance relating to properties is covered in 5.5 below.

**Benefits**

- 1 To maintain, enhance and increase the resilience of existing habitats particularly SSSIs BAP habitats and SINCs.

**Time Scale for Implementation**  
**Short term 0 – 20 years**

**6.15.4 Restoration**  
**Prevention**  
**Objective 5, 6, 12, 13**

**Planning Issues**

Most restoration is envisaged to be dealt with via the Planning system, as such there will be opportunities for relevant statutory bodies to contribute. Notwithstanding this matter there will be a preference for using ‘soft’ engineering solutions (rather than ‘hard’) for the management of water on restoration sites. Only when there is clear evidence that such solutions are not appropriate due to site specific or localised issues will ‘hard’ landscaping options be considered.

## **Engineering Issues**

Traditionally MTCBC has been subject to extensive mining for coal and iron ore. Various forms of deep mining have been used resulting in numerous large deposits of waste material on the surface in the form of tips. All coal and iron ore extraction by this method has now ceased within the Borough.

In more recent years coal extraction by opencast mining has been adopted and although significant excavations are carried out as part of the extraction process the sites are typically progressively restored, before works are completed. A number of opencast sites are currently in operation including Ffros y Fran at Cwm Bargoed.

In addition there has been a tradition of quarrying for building stone and aggregates. This type of operation generally leaves a vertical excavation forming a scar on the landscape.

Over the last 50 years the Welsh Government and its predecessors have funded numerous schemes within the Borough to restore sites which have been subject to mineral extraction and where significant derelict land has been left untreated. When such engineering works are planned it is the policy of MTCBC to restore sites to a land form which blends well with the surrounding landscape and produces a natural land appearance. This form of restoration usually includes planting trees and seeding for stabilisation, which reduce surface water runoff. These sites will be managed, particularly the woodlands, in order to maximise the stabilisation of the restored land and to minimise surface water flow.

Drainage on these sites usually takes the form of drainage ditches, swales, French drains, surface water sewers and lined channels. These techniques usually restore the surface water runoff to a level similar to green field values particularly after the vegetation has been established and the site matured.

Any site which subjected to major earthworks is likely to cause significant silt pollution to the local surface water and ordinary watercourses. In order to control the discharge from the site and to ensure that the quality of the water meets the Environment Agency standards for Discharge Consent the developer will have to install a series of settlement ponds. The ponds will need to be cleared of silt on a regular basis and the discharge will be monitored.

It is the policy of MTCBC to restore all derelict land, where appropriate, to beneficial use.

## **Benefits**

- 1 To create semi-natural environments and appropriate management which are the two main factors which will influence the ecological benefits.
- 2 To restore land to prior use or sustainable communal use wherever possible.

## **Time Scale for Implementation Short and medium term 0- 50 years**

### **6.15.5 Environmental Enhancement Prevention Objective 5, 6, 12, 13, 15**

Typically environmental enhancements schemes are either linked to development sites or are publicly funded grants to improve existing, predominantly urban, areas. As such there is a high potential impact that can be gained from careful consideration on such schemes. The Local Authority will:

- 1 Include improvements in surface water management in all publicly funded schemes.
- 2 Request demonstration of water management techniques in all Landscaping Masterplans submitted as part of Planning Conditions.
- 3 Request the removal of invasive non-native species from/bordering enhancement/development sites followed by secondary planting to minimise re-growth and erosion.
- 4 To create semi-natural environments and appropriate management which are the two main factors which will influence the ecological benefits.

#### **Benefits**

- 1 Decreased surface water runoff on new developments and publicly funded environmental enhancements.

#### **Time Scale for Implementation Short, Medium and Long term 0 – 100 years**

### **6.15.6 Water Bodies Protection Objective 6, 12, 13**

MTCBC has four water bodies which have are Registered under the Reservoirs Act 1975 and two others which have recently been removed from the register which are listed below.

All these water bodies have an affect on the control and flow of surface water.

#### **Water Bodies Registered under the Reservoirs Act 1975**

- 1 **Pontsticill and Pentwyn Reservoir** – Registered under the Reservoir Act 1975  
Owner - Dŵr Cymru/Welsh Water  
Grid Reference – SO 061 119 or 3061 2119  
Area – 1.412sqk  
Volume – 15,457,000cum  
SWLRF Reservoir Inundation Plans Complete

Off-site Plan – MTCBC Emergency Planning  
Completed by March 2012  
On-site Plan – Dŵr Cymru/Welsh Water  
Complete

- 2 Llwyn-on Reservoir** – Registered under the Reservoir Act 1975  
Grid Reference SO 011 113 or 3011 2113  
Owner - Dŵr Cymru/Welsh Water  
Area – 0.5828sqk  
Volume – 5,505,000cum  
SWLRF Reservoir Inundation Plans Complete  
Off-site Plan – MTCBC Emergency Planning  
Completed by March 2012  
On-site Plan – Dŵr Cymru/Welsh Water  
Complete and tested in a 2 day table top and live exercise calling in the resources dealing with dam failure.
- 3 Top Pond also known as New Pond** – Registered under the Reservoir Act 1975  
Owner – Merthyr Tydfil County Borough Council  
Grid Reference – SO 069 086 or 3069 2086  
Area – 0.035sqk  
Volume – 125,125cum  
Inundation Plans Complete  
Off-site Plan – MTCBC Emergency Planning  
On-site Plan – MTCBC Engineers  
The on and off-site plans have not been prepared.  
In November 2012 it is anticipated that the responsibility for lower tier reservoirs in MTCBC will be with MTCBC.  
It is anticipated that both plans will be completed with 12 months of MTCBC being given the responsibility
- 4 Cyfarthfa Lake** - Registered under the Reservoir Act 1975  
Owner – Merthyr Tydfil County Borough Council  
Grid Reference – SO 039 073 or 3039 2073  
Area – 0.024sqk  
Volume – 27,000cum  
Inundation Plans Complete  
Off-site Plan – MTCBC Emergency Planning  
On-site Plan – MTCBC Engineers  
The on and off-site plans have not been prepared.  
In November 2012 it is anticipated that the responsibility for lower tier reservoirs in MTCBC will be with MTCBC.  
It is anticipated that both plans will be completed with 12 months of MTCBC being given the responsibility

#### **Water Bodies removed from the Registered under the Reservoirs Act 1975**

- 1 Fish Pond also known as Middle Pond**  
Removed from Register of Large Raised Reservoirs on 7 July 1087  
Grid Reference SO 072 082 or 3072 2082  
Owner – Merthyr Tydfil County Borough Council Area – 0.5828sqk

Volume – originally 26,390cum but reduced to 17,000cum due to siltation on 9 July 1987

Off-site Plan – MTCBC Emergency Planning

On-site Plan – MTCBC Engineers

The on and off-site plans have not been prepared.

In November 2012 it is anticipated that the responsibility for lower tier reservoirs in MTCBC will be with MTCBC.

It is anticipated that both plans will be completed with 12 months of MTCBC being given the responsibility

## **2 Blue Pond**

Removed from Register of Large Raised Reservoirs on 18 August 1987

Grid Reference – SO 078 069 or 3078 3069

Area – 0.02sqk

Volume – 31,850cum but incapable of holding more than 25,000cum

Off-site Plan – MTCBC Emergency Planning

On-site Plan – Owner

The on and off-site plans have not been prepared.

In November 2012 it is anticipated that the responsibility for lower tier reservoirs in MTCBC will be with MTCBC.

It is anticipated that both plans will be completed with 12 months of MTCBC being given the responsibility although the owner will be responsible for the cost of providing the on-site plan

## **Other Significant Water Bodies**

### **1 Abercanaid Pond – Webbers Pond**

Owner – Merthyr Tydfil and District Naturalists Society

Grid Reference SO 056 033 or 3056 2033

Area 0.4 hectares

Volume

## **Water Bodies over 2,000m<sup>2</sup> (0.2ha) in area**

The following ponds have been identified as falling within this category:

- 1 PARC TAFF BARGOED Lakes SO 103979– 3ha
- 2 PARC Taff Bargoed Reedbeds SO 102199– 4ha
- 3 Duck Cottage Pond SO 065060 – 0.3ha
- 4 Pond 56 SO 084063 – 0.64ha
- 5 Pond 60 SO 084067 – 0.4ha
- 6 Pond 64 SO 078064 – 0.55ha
- 7 Pond 65 SO 081062 – 0.2ha
- 8 Pond 66 SO 081060 – 0.21ha
- 9 Pond 67 SO – 082050 – 2.4ha
- 10 Incline Top House Pond SO 075059 – 0.2ha
- 11 Horse Pond SO 077045 – 0.2ha
- 12 Bedlinog Angling Pond SO 087019 – 0.45ha
- 13 Nant Llwynog Wetland SO 099018 – 0.25ha

MTCBC propose to prepare a database of all water bodies which may be man made or naturally formed depressions, within the Borough which have a surface area greater than 2,000m<sup>2</sup> (0.20 ha) and could therefore have a significant affect on surface water flooding. A survey will be carried out to identify these structures within the next two years

MTCBC implemented a detailed Pond Survey in 1999-2000 in partnership with the Environment Agency. This survey will be used as the basis for identifying and revisiting significant sized/located ponds within the County Borough.

### **Benefits**

- 1 To be prepared for any emergency resulting from a failure in any water retaining structure.
- 2 Provides protection to local residents.

### **Time Scale for Implementation**

A re-survey of water bodies with area greater than 2,500 m<sup>2</sup> will be carried out within two years.

### **Short term 0 – 20 years**

## **6.15.7 Habitat Creation Protection Objective 6, 12, 13**

### **Planning Issues**

Habitat creation is inexorably linked to land management (see 3.1 above) and with the same issues and opportunities. In general most habitats created are those rare or in decline and have a net positive impact upon water management: by far the main broad types of habitat created locally are woodland, hedge, ponds and wetlands.

### **Engineering Issues**

In order to reduce total runoff and/or control peak flows from catchments above areas identified as being subject to flood risk MTCBC will create new habitats having characteristics which will reduce the total runoff or reduce the peak level of surface water discharge from the site.

Where there is currently a catchment with high runoff characteristics such as open amenity grassland the following broad habitats types may be created in the vicinity to control surface water flows:

When considering the various options to implement this measure the possibility of including public access will be reviewed and those options which provide the most beneficial access will be given higher priority.

- 1 Woodland
- 2 Wetland
- 3 Attenuation ponds
- 4 Hedgerows

Where woodland planting is to be considered MTCBC will enter into discussions with the Forestry Commission, Coed Cymru and Countryside Council for Wales, emerging Single Environment Body as Risk Partners as well as the local land owner and Farming Unions.

Where wetlands and storage ponds are considered consultation will also take place with the Environment Agency and Countryside Council for Wales; emerging Single Environment Body.

### **Benefits**

- 1 Improvements to water management including reduced surface water runoff and increased water retentive capacity.
- 2 Improve bio-diversity and creation of BAP habitats.

### **Time Scale for Implementation**

**Short, Medium and long term 0 – 100 years**

## **6.16 Asset Management and Maintenance (SAMPs)**

### **6.16.1 System Asset Management Plans**

#### **Protection**

#### **Objectives 9, 11**

Under the Flood and Water management Act 2010 MTCBC as a LLFA is required to maintain a register of structures or features, which in the opinion of the authority, are likely to have a significant effect on a flood risk in the borough. Information must be recorded about each of the structures and features including ownership and the state of repair.

In order to satisfy this requirement MTCBC has set up a database using Microsoft Access and layers within ArcMap Geographic Information System (ArcMap GIS), which have the following information recorded:

- 1 An Excel spreadsheet and GIS layer showing all Dŵr Cymru / Welsh Water surface water sewers and combined sewers above 400mm diameter and the associated manholes.
- 2 Records within the Access database and GIS layer showing all known culverted watercourses 400mm diameter and above and all associated manholes, intakes and outlets, owned by MTCBC, Network Rail, SWTRA and other land owners.
- 3 Records within the Access database and GIS layer showing all significant open channels, ponds and reservoirs.

More recently MTCBC has purchased three modules of a bespoke system for Asset Management from STM. It is this system, which will be used in the future for the management of drainage structures including the following:

- 1 Database of all pipes, culverts, channels, drainage ditches, manholes, intakes and outfalls.

- 2 GIS layers of all pipes, culverts, channels, drainage ditches, manholes, intakes and outfalls.
- 3 Records of all inspections carried out to grids or culverts
- 4 Records of cleaning of grids and gullies.

To date MTCBC has used their Access database to keep the following information:

- 1 A register of those structures and features likely to have a significant effect on flooding.
- 2 The replacement cost of culverts owned by MTCBC.
- 3 List of all MTCBC owned culvert intake structures.

The system of database and GIS layers will be used by MTCBC to manage drainage assets. Further information is required and the following surveys and calculations will be carried out:

- 1 Calculation of capacity of each culvert.
- 2 Identification of intake structures below current currently acceptable design standards, which will need to be upgraded.
- 3 Identification of all owners and their contact details.
- 4 Current condition of each significant culvert.

Where areas are identified which are subject to a high level of flood risk one of the measures which will be considered in order to reduce flood risk will be the construction of new surface water culverts or channels.

### **Benefits**

- 1 Provide details of all existing drainage structures which are likely to affect flood risk.
- 2 Give easy and efficient access to available information.
- 3 Provide condition surveys and maintenance records for all drainage structures.
- 4 Maintain records of cleaning and inspection of grids and gullies.

### **Time Scale for Implementation** **Short term – 0 – 20 years**



## **6.16.2 Defence/Structure Management Protection**

### **Objective 1, 2, 3, 4, 7, 9, 10, 11**

MTCBC has a number of formal flood defences, which have been plotted within the GIS system. These defences are largely earth formed embankments, which have been constructed by the Environment Agency.

A survey will be implemented in order to establish a list of the defences within the borough, details of their construction and condition.

In addition MTCBC has a number of informal flood defences, which may include items such as boundary walls to properties, embankments constructed for highway schemes, individual properties, or even kerb lines. Although these features were not constructed as flood defences, in some cases they defend properties against flooding and in others they affect the route of surface water during floods and therefore can significantly affect flood risk.

It is proposed that some informal structures controlled by individuals or government organisations be identified as part of the Hazard and Risk Management Plans to be prepared by June 2012. This information will then be included in the MTCBC database of drainage assets.

Where it is established that existing flood defences need to be raised or new flood defences constructed “soft engineering” solutions will be given priority.

### **Benefits**

- 1 To exclude flood water from areas identified as subject to flood risk.

### **Time Scale for Implementation Sort and Medium term 0 – 50 years**

## **6.16.3 Channel Construction and Maintenance**

### **Protection**

#### **Objectives 1, 2, 3, 4, 12**

Drainage channels, which have been identified as being significant to flood risk, have been included in the MTCBC database of drainage structures and the appropriate GIS layers.

Where these structures are in the ownership of MTCBC they are maintained by the MTCBC Drainage Department. Channels may include ordinary watercourses, lined channels, drainage ditches and swales.

Maintenance is carried out on an “as required” basis and may include the following:

- 1 Cutting of grass and shrubs where this may impede flows and reduce channel capacity.

- 2 Repairs to concrete inverts or bank protection where damage has occurred, which could undermine the integrity of the channel.

It is proposed as part of this strategy that surveys will be carried out of all channels, which are considered to be significant in terms of flood risk. The surveys will identify details of the construction materials, size and shape of the channel and its condition.

From this survey information a detailed programme of work will be drawn up for the maintenance and/or replacement of all existing channels. Works will be considered which will improve the naturalness of existing channels including the protection and restoration of channels and corridors.

Following the next round of surface water modelling and the preparation of Hazard and Risk Maps, the Flood Risk Management Plans will be prepared. These plans will identify individual measures to be implemented in each flood risk area, which may include the construction of additional channels to carry excess surface water from areas of high flood risk.

Where channels have been constructed to “hard” engineering design consideration will be given to restoring these channels to a more natural construction.

### **Benefits**

- 1 To bring all channels on significant watercourses to be fit for purpose.
- 2 To ensure that all channels are well maintained.

### **Time Scale for Implementation**

#### **Short term 0 – 20 years**

## **6.16.4 Culvert Construction and Maintenance**

### **Protection**

#### **Objectives 1, 2, 3, 4, 10, 11, 15**

Culverts and pipes, which have been identified as being significant to flood risk, have been included in the MTCBC database of drainage structures and on the GIS layers.

Where these structures are in the ownership of MTCBC or have been classified as being of strategic importance they are maintained by the MTCBC Drainage Department.

Where access inside the culverts is relatively easy and the culvert is regarded as being of strategic importance they are inspected on an annual basis.

Most of the culverts, which are in MTCBC ownership, do not fall into this category and therefore their condition is unknown and maintenance is carried out on an “as required” basis and may include the following:

- 1 Repairs to culvert inverts and walls where the construction is in masonry.
- 2 Replacement of sections of culvert, which have collapsed using modern pipes.
- 3 Replacement or repair of existing structures such as manholes, intakes and outlets.
- 4 Construct new or improved intakes to culverts where existing structures are reducing the operational capacity of culverts or causing risk of flooding due to blockage. The new structures will be designed and built in accordance with the Environment Agency Code of Practise for intakes.

It is proposed as part of this strategy that surveys will be carried out of all culverts, which are considered to be significant in terms of flood risk. The surveys will identify details of the construction materials, size and shape of the culvert and its condition.

From this survey information a detailed programme of work will be drawn up for the maintenance and/or replacement of all existing culverts.

Following the next round of surface water modelling and the preparation of Hazard and Risk Maps, the Flood Risk Management Plans will be written. These plans will identify individual measures to be implemented in each flood risk area, which may include the construction of additional culverts designed to modern standards to carry excess surface water from areas of high flood risk.

Where existing culverts need to be replaced due to inadequate capacity or the structure is failing, consideration will be given to their replacement with open channels in order to improve the naturalness of the system. Where this is not possible they will be replaced with culverts to modern design.

Within MTCBC there is a presumption against the culverting of watercourses and therefore culverting of new watercourses will only be considered as a measure of last resort.

### **Benefits**

- 1 To bring all culverts on significant watercourses to be fit for purpose.
- 2 To ensure that all culverts are well maintained.

### **Time Scale for Implementation**

#### **Short term 0 – 20 years**

## **6.17 Studies, Assessments and Plans**

### **6.17.1 Investigation**

#### **Preparedness**

#### **Objective 14**

In the preparation of this strategy and identification of measures, which may be implemented as part of the Risk Management Plans a number of issues have been identified in terms of the lack of information currently available within MTCBC. It is proposed that numerous surveys and investigations will be carried out in order to supplement the information already available.

A list of the surveys required is given below:

- 1 Where land containing SSSIs or SINCs is identified as being subject to flood risk surveys and reports will be carried out to identify the potential damaging effects of flooding and what measures could be implemented to reduce the flood risk.
- 2 Survey of water bodies with area greater than 2,000 m<sup>2</sup>.
- 3 Additional information required for the database and GIS layers:
  - 1 Calculation of capacity of each culvert and determine details of the catchment served.
  - 2 Identification of intake structures below current EA standards, which will need to be upgraded.
  - 3 Identification of all owners and their contact details.
  - 4 Current condition of each significant culvert.
- 4 Identify all features, which act as flood defence structures.
- 5 Survey all channels, which are considered to be significant in terms of flood risk. The surveys will identify details of the construction materials, size and shape of the channel and its condition.
- 6 Survey all culverts, which are considered to be significant in terms of flood risk. The surveys will identify details of the construction materials, size and shape of the culvert and its condition.
- 7 Further survey work and site investigations will be carried out in order to improve the accuracy and completeness of the information available regarding contaminated land within areas subject to significant flood risk.
- 8 Surveys will be carried out to establish what measures will be required in order to provide additional resistance to flood water to Historic Assets including Scheduled Ancient Monuments and Historic Listed Buildings so that.

- 9 A survey will be carried out to identify where leachate is being discharged from refuse tips both current and historic and from cemeteries. The nature of the leachate will be established and its affect on the quality of surface water.
- 10 A survey will be carried out of all ground water discharges from all mine workings to establish the location and quality of the water.
- 11 A survey will be implemented in order to establish a list of the defences within the borough, details of their construction and condition.
- 12 Topographical surveys will be carried out where required to allow construction schemes to be designed as part of the Flood Risk Management Plans

### **Benefits**

- 1 To have information available to identify where measures may be required.
- 2 To have information available to design new measures.

### **Time Scale for Implementation**

#### **Short term 0 – 20 years**

## **6.17.2 Risk Assessment**

### **Preparedness**

#### **Objective 14**

A measure of the flood risk within MTCBC was established at part of the PFRA Report. The report identified 22 “Blue Squares” where the level of risk was deemed to be significant and a Flood Risk Area of 58km<sup>2</sup>. The Key Flood Risk Indicators for the MTCBC Flood Risk Area have been calculated by the as follows:-

1	Human health consequences – Number of people (2.23 multiplier)	7,923
2	Other human health consequences – Number of critical services flooded	26
3	Economic consequences – number of non-residential properties flooded	818

The assessment of Flood Risk is ongoing and will be updated to include for any flooding events within the borough since the preparation of the PFRA. As part of the requirements of the Flood Risk Regulations the Flood Risk in MTCBC will be reassessed and the following time scale has been draw up.

- 1 Updated Flood Map for Surface Water by December 2012.
- 2 Flood Hazard and Risk maps to be published by December 2012.

- 3 Flood Risk Management Plans to be published by December 2015.

The process listed above will result in a more detailed and accurate picture of the flood risk in MTCBC.

#### **Benefits**

- 1 To provide a more accurate measure of the flood risk within MTCBC.
- 2 To set a benchmark of flood risk for the Borough, that will be used to establish the reduction of flood risk as a result of implementing additional measures.

#### **Time Scale for Implementation** **Sort and medium term 0 – 50 years**

### **6.17.3 Strategy Plan** **Preparedness** **Objectives 14, 17**

This Local Flood Risk Management Strategy for MTCBC will provide the framework for the preparation of the Flood Risk Management Plans to be delivered by June 2015. The strategy will ensure that the plans will all be prepared on an equitable basis and will govern the process which will establish what measures are to be implemented in order to achieve the goal of reducing flood risk in all of the areas within MTCBC where significant flood risk has been identified.

The strategy will set in place a system for the prioritisation of measures to be implemented on the basis of the highest level of flood risk and most appropriate results from the cost benefit analysis process.

#### **Benefits**

- 1 Ensure that Flood Risk management Plans are all prepared in a consistent way.

#### **Time Scale for Implementation** **Short term 0 – 20 years**

### **6.17.4 Local Property-level flood Mitigation - Resilience** **Preparedness** **Objective 10**

MTCBC do not own Council Houses. Their housing stock was transferred to Merthyr Valley Homes in 2009. They do however own offices, schools, health centres, sheltered accommodation and other council related buildings.

The buildings vary in age but none of them have been built to withstand flooding. It is proposed that once the detailed flood modelling has been completed all Council owned buildings at risk will be identified. When these

properties are due for refurbishment two quotations will be obtained, one designed with flood resilience in mind and one designed to “normal” building standards. A cost benefit analysis will then be carried out to decide if the additional cost of building in flood resilience is deemed beneficial in that case. Funding will have to be identified to cover the additional cost.

Where new buildings are planned within areas at risk of flooding MTCBC will adopt a policy of using building standards which are resilient to water inundation.

Methods of achieving building resilience in flood risk areas may include the following:-

### **Use of flood resilient materials**

Ceramic tiled floors, flood proof skirting, steel kitchens units. Replace chipboard kitchens and bathroom units with plastic, steel or solid wood. Fit water resistant door and window frames. Replace usual plaster with a more water-resistant version such as lime plaster or cement render. Always use waterproof sealant on external walls and water resistant paint on internal walls. Use denser concrete screeds on concrete floors. Replace insulation with cell insulation which will survive flooding. Install concrete floors instead of timber suspended. Wall joints to be protected by installing a chemical damp proof course below joist level.

### **Use of flood resilient building techniques**

Walls re-plastered up to 1 metre above floor level with water resilient plaster, all main appliances on plinths, kitchens units with base units raised off the ground and raise electrical points and other services above flood level. Use tiled floors with rugs that can be removed easily. Buy airbricks with removable covers – put them on during flood, but remove afterwards to help drying process. Install expensive electric equipment such as boilers upstairs.

### **Benefits**

- 1 Less damaged will be caused to properties subject to flooding.
- 2 Buildings will be renovated and brought back into use more quickly.
- 3 The overall cost of the building life cycle will be reduced.

### **Time Scale for Implementation**

Building in resilience to existing properties will take place as properties are programmed for refurbishment and will only be considered when it has been established that they are within an area subject to flood risk. The time scale therefore for all Council owned properties to be refurbished is likely to be up to 50 years

### **Medium term 20-50 years**

**6.17.5 Local Property-level flood Mitigation - Resistance Protection**  
**Objectives 1, 2, 3, 4, 10**

Where areas of flood risk are identified giving flood water levels below 600mm in depth then measures will be considered which will prevent the ingress of water into individual properties.

Measures may include portable flood walls, flood guards to doors or the replacement of existing doors with doors with seals which will withstand the depth of water predicted by the modelling. These measures would need to be installed with non-return valves or double-check valves in the foul sewers to prevent flood water entering the properties through the sewer systems.

**Benefits**

- 1 To ensure that properties damaged by flooding will be brought back to a habitable state as quickly as possible.

**Time Scale for Implementation**  
**Sort and medium term 0 – 50 years**

**6.17.6 Pre-feasibility Studies, Feasibility Studies Preparedness**  
**Objectives 14**

When the Flood Risk Management Plans are being prepared various options will be identified of measures to be implemented. At this stage pre-feasibility plans will be carried out which will identify the measures most likely to achieve the desired reduction in flood risk at appropriate cost.

Following this process a much more limited number of measures will be selected for further more detailed feasibility studies.

**Benefits**

- 1 Ensure that the most appropriate measures are put forward for implementation.

**Time Scale for Implementation**  
This work will be carried out within the next four years to ensure that the Flood Risk Management Plans are all completed



### **6.17.7 Project Plans Preparedness Objectives 14**

On completion of the feasibility study referred to in 6.17.6 above each measure will be subjected to an appraisal based on the following criteria:

- 1 Does it contribute the MTCBC high level strategy of reducing flood risk?
- 2 What measurable effect does the measure have on reducing flood risk?
- 3 Is the scheme within a high priority flood risk area?
- 4 Does the cost benefit analysis show the scheme to be value for money?
- 5 Does the measure provide improved public access?
- 6 Is funding available to implement the scheme?

If the scheme satisfies these conditions then it will be forwarded to the Welsh Government for further appraisal.

#### **Benefits**

- 1 To identify flood risk in a more precise way.
- 2 Allows the preparation of measures to reduce flood risk.

#### **Time Scale for Implementation Sort and medium term 0 – 50 years**

## **6.18 High Level Awareness and Engagement**

### **6.18.1 Partnership Working Preparedness Objective 16**

Close working with the following partnerships will be implemented:

- 1 Other Risk partners.
- 2 Adjacent Local Authorities.
- 3 The Communities at risk .

#### **Benefits**

- 1 Collaborative working and integration to prioritise, plan and implement projects that will positively impact upon aims of this strategy. These include not only the implementation of physical projects but education

and awareness raising (a Merthyr Tydfil Biodiversity Action Plan Theme).

#### **Time Scale for Implementation**

Immediate & ongoing

**Short term 0 – 20 years**

### **6.19 Monitoring**

#### **6.19.1 Erosion Monitoring**

**Preparedness**

**Objective 5, 6**

It is not anticipated that MTCBC will be affected significantly by erosion. There may be some limited erosion in main river but that issue is not the subject of this report.

Minor erosion may take place in ordinary watercourses but the channels formed by streams within the Borough have been established over many years and therefore future erosion is not considered to be a significant problem. Erosion is more likely and prevalent on historic restoration sites. Where this is an ongoing issue further restoration or habitat creation or land management will be used to remedy/minimise erosion.

Erosion within steep stream beds does occur on a small scale which results in debris build up on screens at the entrance to culverts. This material would be noticed during the routine examination of the screens and arrangements made to remove the debris from the site.

In order to minimise the impact of debris restricting flows into culverts where possible new or improved grids will be constructed with additional grids upstream to collect the debris before it arrives at the culvert entrance.

#### **Benefits**

- 1 To enable corrective action to be taken if the affect of flooding is causing restrictions in channels and water courses.

#### **Time Scale for Implementation**

**Short term 0 – 20 years**

#### **6.19.2 Habitats Monitoring**

**Preparedness**

**Objective 5, 6, 11**

The monitoring of Sites of Importance for Nature Conservation (SINCs) forms part of LDP monitoring. As SINCs contain the vast majority of quality natural habitats this monitoring strongly correlates with Merthyr Tydfil Biodiversity Action Plan Habitat monitoring. Local BAP habitats of most relevance include: wetland, rivers and streams, (marshy) grassland; however other habitats will also have major impact such as broadleaved and coniferous woodland.

**Benefits**

- 1 Monitoring of change (reduction, increase, improvement of natural habitats).

**Time Scale for Implementation**

1year+ - ongoing

**Short term 0 – 20 years**

**6.19.3 Topographical Survey**

**Preparedness**

**Objective 14**

Topographical surveys will be carried out where required to allow construction schemes to be designed as part of the Flood Risk Management Plans

**Benefits**

- 1 To allow measures to be designed in detail for specific sites.

**Time Scale for Implementation**

**Short term 0 – 20 years**

**6.19.4 Aerial photography**

**Preparedness**

**Objectives 14**

Monitoring sites/habitats via aerial photography is possible. We receive aerial photographs of whole Borough once every 2 years and are available for viewing on GIS.

**Benefits**

- 1 Ability to monitor certain changes without a site visit.

**Time Scale for Implementation**

Ongoing

**Short term 0 – 20 years**

## **7 How and when the measures are expected to be implemented**

7.1 Under Section 6 a list of measures have been identified to implement the objectives listed in section 5 of this strategy. Within each measure the time scale for implementation has been given which complies with those given in the Welsh Government Guidance as listed below:

- 1 Short term (0-20 years)
- 2 Medium term (20-50 years)
- 3 Longer term (50-100 years).

7.2 Within this first version of the Strategy 39 measures have been identified in order to ensure that the 17 detailed objectives will be achieved. It is anticipated that detailed projects and construction scheme will be identified as part of the Flood Risk Management Plans which must be completed by June 2015. These Plans will have additional information available for their preparation including more accurate modelling and the Flood Hazard and Flood Risk Plans.

Future versions of the Strategy will therefore include details of the measures which will be identified in the preparation of the Plans and will also include detailed cost benefit analysis where appropriate.

7.3 Projects and construction schemes will be selected for detailed preparation and design on the basis of a prioritised system which will identify the level of flood risk based on a combination of social, economic and environmental issues. This system will be based on a series of priorities to be adopted by MTCBC. Once a scheme has been prepared an estimated cost will be provided and a cost benefit analysis carried out to determine its priority for obtaining financial support. Input will be provided by the Finance Department to establish the financial resources available and whether the proposal is realistic in terms of finance and time scale. The availability of physical resources in terms of design staff and construction facilities will also be considered.

7.4 Where projects and construction schemes have been identified in partnership with other Risk Management Authorities MTCBC will endeavour to agree how, by when and by whom these measures are expected to be implemented.

**8 The costs and benefits of those measures, and how they are to be paid for**

**8.0 In order for The Strategy to be successful it is essential that significant funding be made available, in addition to the normal funding arrangements from Welsh Government. Options for funding which have been considered are given below.**

8.1 A total of 39 measures have been identified within the Strategy in order to implement the 17 detailed objectives which have been agreed.

For each of the measures identified within the Local Strategy the associated costs, benefits (be they tangible or intangible) and how they are to be paid for will be determined. These details cannot be incorporated within this first version of the Local Strategy as no specific measures have been identified for implementation at particular locations.

These measures will be identified during the preparation of the Flood Risk Management Plans which will be published by December 2015 and will be included in the next iteration of the Strategy.

Before the measures can be detailed it will be necessary to complete the following processes as required by the Flood Risk Regulations 2009 Timetable published in the Guidance to Lead Local Flood Authorities – Selecting and reviewing Flood Risk Areas for local sources of flooding:-

- 1 Flood Hazard Maps to be published by 22 December 2013.
- 2 Flood Risk Maps to be published by 22 December 2013.
- 3 Flood Risk Management Plans to be published by 22 December 2015.

In addition the following procedures will have to be implemented to identify the measures which to be implemented at specific locations:

- 3 Modelling of individual areas identified as high risk.
- 4 Prioritisation of areas based on magnitude of flood risk.
- 5 Design of measures to be implemented.

Future versions of the Strategy will therefore include details of the measures which will be identified in the preparation of the Plans and will also include detailed cost benefit analysis where appropriate.

8.2 A cost/benefit analysis is ultimately dependant on the strategic priorities and the means of funding, which is why the Plans will address these issues together wherever possible. It is important to establish who is paying for and who is benefiting from any proposed measures, since the answers to these questions will largely determine the cost/benefit analysis process.

- 8.3 The Welsh Government will be undertaking a review of the appraisal guidance relating to the allocation of funding, and it is anticipated that this will be out for consultation in 2012. Until any revised guidance is published LLFA should continue to use the current PAG series supported by any specific additional or updating material provided by the Welsh Government.

The principles of a cost/benefit analysis as outlined in the Flood and Coastal Defence Project Appraisal Guidance FCDPAG3 “Economic Appraisal” should be employed.

It is acknowledged that measures, to date, have been based upon a cost/benefit ratio where the benefits are determined to be greater in the long term than the associated costs. Going forward, however, measures should retain the cost/benefit compliance, whilst ensuring that they are proportionate to the level of risk presented.

- 8.4 When considering the works required in delivering the Local Strategy, LLFA should be mindful of work ongoing to deliver the National Strategy, and also of works carried out by other organisations in the area, particularly other Risk Management Authorities. Early engagement with other Risk Management Authorities will assist with this by providing an opportunity to share and therefore gain a better understanding of the work program for each partner accordingly.

## **8.5 Potential Sources of Funding**

### **Public Funding**

#### **8.5.1 Funding from Welsh Government**

With less direct government funding available, it is clear that changes are needed to the traditional approaches to funding flood risk management. The current situation of government flood risk management funding is summarised below:

- 1 Under an agreement between LLFA and the Welsh Government, which expired on 31<sup>st</sup> 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.
- 2 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 31<sup>st</sup> 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.

- 3 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. Details of this funding have not yet been decided.

### **8.5.2 Funding through the Community Infrastructure Levy**

The Community Infrastructure Levy came into force in April 2010 and provides Merthyr Tydfil County Borough Council with an alternative source of potential funding for flood defence schemes. It allows the borough to raise funds from new development in their area in order to pay for the impact that the development has on local infrastructure. The funds raised by the levy are matched against a charging schedule of agreed projects. The levy is based on the concept that almost all development has some impact on infrastructure and services, so it is fair that development should contribute towards the cost of maintaining or upgrading local infrastructure. Local authorities are required to use this funding for infrastructure needed to support the development; it can be used to construct new infrastructure, increase the capacity of existing infrastructure or repair failing existing infrastructure. The Planning Act 2008 includes a broad definition of the infrastructure that can be covered by this scheme including transport, flood defences, schools, hospitals and parks.

The decision to put flood defence schemes on the charging schedule is up to the relevant borough council. Councils should look to put it on where it is relevant for ensuring future development. Flood defence schemes which only affect current development cannot be put on the charging schedule.

### **8.5.3 Funding through the European Union**

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

### **Private funding**

### **8.5.4 Section 106 funding – Developer Contributions**

Section 106 of the Town and Country Planning Act 1990 allows a local planning authority, such as Merthyr Tydfil 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.

One of the recommendations of 'Making Space for Water' was 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.

### **8.5.5 Water Company Funding**

Water companies invest money in flood alleviation schemes as part of their duties to remove properties from the DG5 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:

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

### **8.5.6 Local fundraising**

In addition to contributions from developers, another important funding mechanism will come from local fundraising from the local communities and businesses who stand to benefit from the proposed flood defence Schemes. Fundraising may appear to be a daunting task but the best place to start is with who stands to benefit from the project. Some examples of success stories include:

### **8.5.7 Other sources of funding**

In areas prone to flooding, where potential mitigation schemes are identified, Merthyr Tydfil County Borough Council will liaise with the local Federation of Small Businesses (FSB) to assist in putting together funding to support projects. While the FSB will not have a significant budget, its support can be used to raise local business support.

DEFRA is currently producing a good practice guide to support LLFA called 'Solutions for joint funding of surface water schemes'. This project will explain the funding mechanisms and time cycles, approval processes of key partners and benefits of joint funding of local flood risk management.

- 8.5.8 In the present financial climate funding of measures to implement The Strategy is likely to be a significant issue. Finance is unlikely to be available to fund major infrastructure projects and therefore it is essential that priority be given to projects which require little capital expenditure.



## **9 The assessment of local flood risk for the purpose of the strategy**

9.1 The PFRA completed by MTCBC, as required by the Flood Risk Regulations 2009, has been used to inform the development of this Local Strategy. The identification of the areas potentially at risk of flooding and the assessment of that risk contained therein has been used to determine what further investigation or studies are required and the measure needed to deliver the 17 objectives.

9.2 MTCBC, which has areas identified as being at significant flood risk, will be completing further specific analysis of these areas, providing Flood Hazard and Flood Risk Maps by 2013 and a full Flood Risk Management Plan for the relevant areas by June 2015.

Although these areas of significant flood risk areas and the further analysis do not cover the whole of an LLFA area, the information has been considered and addressed within this Local Strategy.

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

9.4 To decide on the significance of an individual flood Defra/WAG/EA have set key flood risk indicator which define a Flood Risk Area in Wales as having 5,000 people at risk or an individual 1km square where at least 200 people or 20 businesses or more than 1 critical service might be flooded to a depth of 0.3 metres and above by a rainfall event with a chance of 1 in 200 of occurring in any given year.

9.5 MTCBC has no information currently available relating to future flooding other than that provided by the EAW. It is the intension of MTCBC to carry out electronic modelling within the Flood Risk Area and all other areas at risk of flooding with the Borough, as part of the preparation of Flood Hazard and Flood Risk Maps and the Flood Risk Management Plan for the borough.

At this stage MTCBC does not have details of the capacity of the local drainage but this information will be calculated as part of the preparation work for the and the Flood Risk Management Plans.

9.8 A total of 22 Blue Squares have been identified by MTCBC, these are 1km grid squares which have a flood risk above the threshold given in 9.4 above. Using the methodology given in the Welsh Government Guidance 20 of these squares are contained within the Flood Risk Area of 58 km<sup>2</sup>.

The Flood Risk area within MTCBC covers most of the inhabited areas of the borough.

See Fig 3 below as extracted from the PFRA - MTCBC Flood Risk Area and Blue Squares

The Key Flood Risk Indicators for the MTCBC Flood Risk Area have been calculated by the as follows:-

1	Human health consequences – Number of people (2.23 multiplier)	7,923
2	Other human health consequences – Number of critical services flooded	26
3	Economic consequences – number of non-residential properties flooded	818

The assessment of Flood Risk is ongoing and will be updated to include for any significant flooding events within the borough since the preparation of the PFRA.

As part of the requirements of the Flood Risk Regulations the Flood Risk in MTCBC will be reassessed and the following time scale has been draw up.

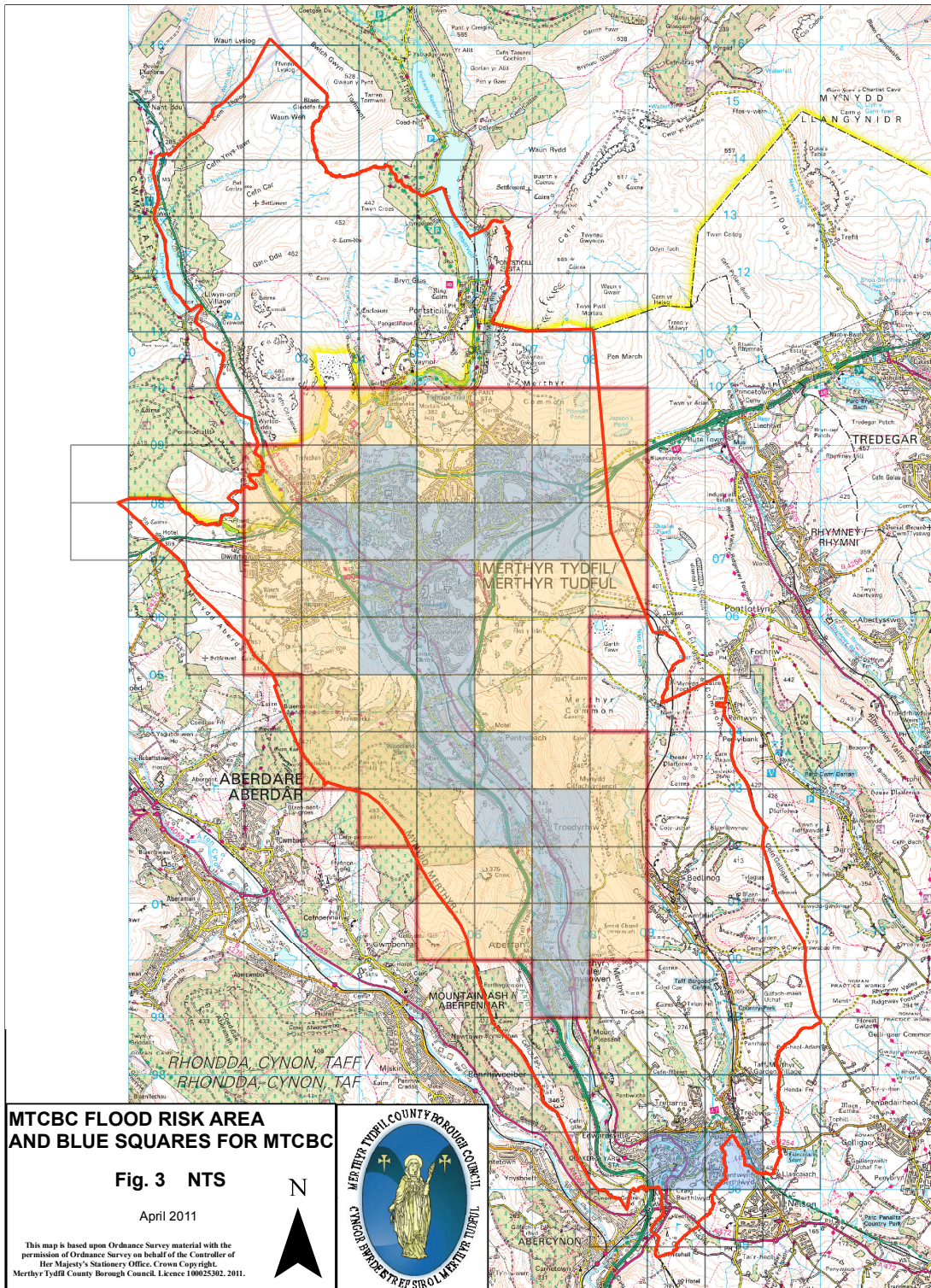
- 1 Updated Flood Map for Surface Water to be prepared by the Environment Agency by December 2012
- 2 Flood Hazard and Risk maps to be published by December 2012
- 3 Flood Risk Management Plans to be published by December2015

The process listed above will result in a more detailed and accurate picture of the flood risk in MTCBC.

As part of this LFRMS the flood risk in the whole of the borough has been considered which includes the Flood Risk Area, the two Blue Squares outside the area, which are situated in Quakers Yard, and all other areas considered at lower risk.

# Flood Risk Area and Blue Squares for MTCBC

## Fig. 3 from PFRA Report



## **10 How and when the strategy will be reviewed**

10.1 The National Strategy will be reviewed normally 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 which will include the following:

- 1 Updated Flood Map for Surface Water to be prepared by the Environment Agency by December 2012.
- 2 Flood Hazard and Risk maps to be published by December 2012.
- 3 Flood Risk Management Plans to be published by December 2015.

The process listed above will result in a more detailed and accurate picture of the flood risk in MTCBC.

Future versions of the Strategy will therefore include details of the measures which will be identified in the preparation of the Plans and will also include detailed cost benefit analysis where appropriate.

MTCBC consider that the first review of the Strategy should take place as soon as practicable after the completion of the Plans in 2015. Thereafter it is proposed that the Strategy will be reviewed on a six year cycle.

Local Strategies should be subject to continuous improvement and not be completed as one off exercises. Regular reviews will be built in to allow an alternative approach to be adopted with all of the relevant data being taken into consideration.

The review of the National Flood and Coastal Erosion Risk Management Strategy (NFCERMS) will take place in 2017. Changes to the NFCERMS will be taken into account in future reviews of the LFRMS.

## **11 How the strategy contributes to the achievement of wider environmental objectives**

MTCBC has considered and recorded in measures how their Local Strategies will contribute to the achievement of wider environmental objectives.

### **11.1 Water Framework Directive**

In keeping with the requirements of the Water Framework Directive (WFD) and the National Strategy, considering sustainable development and working with natural processes to provide solutions to flood risks will help to mitigate the effects on biodiversity. Risk management measures can significantly benefit biodiversity in protecting designated sites and contributing to improving and maintaining these in a favourable condition. The National Strategy encourages the provision of biodiversity enhancements and minimising any adverse affects and so must also be considered with Local Strategies.

MTCBC acknowledges the importance of the WFD and has taken into account these principles in establishing measures which will be introduced in order to implement The Strategy.

Significant consultation will take place with the Environment Agency regarding the WFD including River Basin Management Plans, which will significantly inform the development of the Flood Risk Management Plans. Later versions of this Strategy will ensure that the objectives of the WFD will be further reinforced within this Strategy.

### **11.2 Strategic Environmental Assessment (SEA)**

The Welsh Government determined that the National Strategy requires a Strategic Environmental Assessment (SEA). Given the nature, content and legal requirement to produce Local Strategies, we anticipate that LLFA will also be required to undertake and SEA.

It is 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.

MTCBC has commissioned ARUP to prepare an Environment Report.

In the development of the Plans it is anticipated that measures will be identified for implementation which may have environmental impact. It is anticipated that further proportionate environmental assessments will take place where appropriate as these Plans are developed.

It can be confirmed that the results from the SEA have been used as a guide in the development of the LFRM Strategy.

### **11.3 Habitats Regulations Assessment**

The Welsh Government also determined that the National Strategy required a Habitats Regulations Assessment (HRA) to be undertaken. Given the nature, content and legal requirement to produce Local Strategies, LLFA may also be required to undertake a HRA for their Local Strategies.

MTCBC has commissioned ARUP to prepare a HRA Screening Report

### **11.4 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.

#### **11.4.1 Community**

Stronger links with the local community groups are encouraged, enabling local expertise to assist in both the identification of the risks and their mitigation or resolution.

It has been established that working with communities in managing flood risk will help:

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

To date MTCBC has engaged with the community through a Flood Forum which has been established for the Troedyrhiw Area. This forum has not met for some time but will be re-convened as part of the measures identified in The Strategy.

In addition it is intended that Flood Forums will be established in Abercanaid and Pentrebach, Plymouth Ward, Bedlinog, Aberfan/Merthyr Vale, Heolgerrig and Quakers Yard.

MTCBC has also sort the views of the public regarding the preparation of The Strategy. This has been carried out by means of an on-line survey. Only 27 people responded in the original time scale and therefore more time was allocated but no further responses were received.

## 11.4.2 Risk Partners

Section 13 of the Flood and Water Management Act 2010 provides that Risk Management Authorities must co-operate with other relevant authorities in the exercise of their flood and coastal erosion risk management functions. Enabling the sharing of information between authorities in order to discharge this function.

It also allows for Risk Management Authorities to arrange for a flood risk management function to be exercised on its behalf by another Risk Management Authority:

MTCBC has commenced the process of collaborative working with other Flood Risk Management Authorities by:-

- 1 The process of consultation on the SEA and the draft Strategy.
- 2 Meeting with other Lead Local Flood Authorities through The South East Wales Flood Risk Management Group and informal support group for the same area which including all adjacent authorities.
- 3 Interaction with Welsh Water / Dwr Cymru to obtain details of their services within the Borough.
- 4 Meeting with all relevant internal partners within MTCBC.
- 5 Meeting with Forestry Commission.
- 6 Interaction with The Countryside Council for Wales as a Statutory Consultee.
- 7 Interaction with CADW as a Statutory Consultee.

It is the intension of MTCBC to continue and extend this process of collaborative working in order to complete and implement The Strategy.

## Appendix 1 - The Risk Management Authorities

### 3.1 Environment Agency Wales (The new Single Body - Natural Resources Wales will come into force on 1<sup>st</sup> April 2013)

#### Head Office

Tŷ Cambria House  
29 Newport Road  
Cardiff  
CF24 0TP

#### South East Area Office

Rivers House  
St Mellons Business Park  
Cardiff  
CF3 0EY

#### Contact

Name: Gary Purnell  
Phone Number: 08708 506506  
Email: [Gary.Purnell@environment-agency.gov.uk](mailto:Gary.Purnell@environment-agency.gov.uk)

#### Floodline

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

### Welsh Assembly Government

#### Contact

Name: Paul Critchly  
Email: [Paul.Critchly@Wales.GSI.gov.uk](mailto:Paul.Critchly@Wales.GSI.gov.uk)

### 3.2 Lead Local Flood Authority in Wales

#### Merthyr Tydfil County Borough Council

Civic Centre  
Castle Street  
Merthyr Tydfil  
CF47 8AN

#### Contact

Name  
Phone Number: 01685 725000  
Email: [customer.care@merthyr.gov.uk](mailto:customer.care@merthyr.gov.uk)  
Website: [www.merthyr.gov.uk](http://www.merthyr.gov.uk)

#### Merthyr Tydfil County Borough Council

Engineering and Highways Department  
Unit 20, Merthyr Tydfil Industrial Park  
Pentrebach  
Merthyr Tydfil  
CF48 4DR

#### Contact

Name: Jeremy Morgan  
Telephone Number: 01685 724931  
Email: [Jeremy.Morgan@merthyr.gov.uk](mailto:Jeremy.Morgan@merthyr.gov.uk)



### 3.3 Water Company

#### **Dŵr Cymru – Welsh Water**

Pentwyn Road

Nelson

Treharris

CF46 6LY

Head Office Phone Number: 01443 452300

Customer Services: 0800 052 0140

Website: [www.dwrcymru.co.uk](http://www.dwrcymru.co.uk)

#### **Contact**

Name: Nick Holt

Telephone Number:

Email: [nick.holt@dwrcymru.com](mailto:nick.holt@dwrcymru.com)

#### **Contact**

Name: Martin Chatham

Telephone Number:

Email: [martin.chatham@dwrcymru.com](mailto:martin.chatham@dwrcymru.com)

### 3.4 Additional Risk Partners

#### 3.4.1 Internal Partners

Planning Department

#### **Merthyr Tydfil County Borough Council**

Civic Centre, Castle Street, Merthyr Tydfil, CF47 8AN

#### **Contact**

Name: Chris Edwards

Telephone Number: 01685 726220

Email: [Chris.Edwards@merthyr.gov.uk](mailto:Chris.Edwards@merthyr.gov.uk)

Emergency Planning

#### **Merthyr Tydfil County Borough Council**

Civic Centre, Castle Street, Merthyr Tydfil, CF47 8AN

#### **Contact**

Name: Robert Gough

Telephone Number: 01685 725162

Email: [Robert.Gough@merthyr.gov.uk](mailto:Robert.Gough@merthyr.gov.uk)

Environmental Health

#### **Merthyr Tydfil County Borough Council**

Civic Centre, Castle Street, Merthyr Tydfil

CF47 8AN

#### **Contact**

Name: Andrew Walters

Telephone Number: 01685 725086

Email: [Andrew.Walters@merthyr.gov.uk](mailto:Andrew.Walters@merthyr.gov.uk)

Finance

**Merthyr Tydfil County Borough Council**

Civic Centre, Castle Street, Merthyr Tydfil  
CF47 8AN

**Contact**

Name: Stephen Jones

Telephone Number: 01685 725220

Email: [Steve.Jone@merthyr.gov.uk](mailto:Steve.Jone@merthyr.gov.uk)

### 3.4.2 External Partners

**Flood Risk Management Wales (RCEM)**

**Environment Agency Wales**

Ty Cambria 29 Newport road Cardiff CF24 0TP

**Contact**

Name: Stephen Cook

Telephone Number: 07818454599

Email: [Stephen.cook@environment-agency.wales.gov.uk](mailto:Stephen.cook@environment-agency.wales.gov.uk)

**Emergency Services**

**Fire**

Dynevor Street

Merthyr Tydfil

CF48 1BA

Email: [performance@southwales-fire.gov.uk](mailto:performance@southwales-fire.gov.uk)

**Ambulance (Health Board)**

**Cwm Taf Health Board**

Headquarters Ynysmeurig House Navigation Park

Abercynon CF45 4SN

Telephone: 01443 744800

**Contact**

Name: Debbie Owen

Email: [Debbie.owen2@wales.nhs.uk](mailto:Debbie.owen2@wales.nhs.uk)

**Police**

Police Station, Swan Street, Merthyr Tydfil

Mid Glamorgan, CF47 8ES

Telephone: 01685 722 541

Email: [PublicServiceCentre@south-wales.pnn.police.uk](mailto:PublicServiceCentre@south-wales.pnn.police.uk)

**Housing Associations**

**Merthyr Valley Homes Ltd**

Martin Evans House Riverside Court Avenue De Clichy Abermorlais

Merthyr Tydfil CF47 8LD

Telephone Number 01685 727727

Email: [info@mvhomes.org.uk](mailto:info@mvhomes.org.uk)

**Merthyr Tydfil Housing Associations**

11-12 Lower High Street Merthyr Tydfil Merthyr Tydfil  
Telephone Number: 01685 352800  
Email: [mtha@mtha.org.uk](mailto:mtha@mtha.org.uk)

**Wales and West Housing**

Head Office 3 Alexandra Gate Ffordd Pengam Tremorfa  
Cardiff CF24 2UD  
Telephone: 0800 052 2526  
Email: [contact@wwha.co.uk](mailto:contact@wwha.co.uk)

**National Flood Forum**

Old Snuff Mill Warehouse, Park Lane, Bewdley  
Worcestershire, DY12 2EL

**Contact**

Chief Executive  
Name: Paul Cobbing  
Telephone Number: 0777 3355181  
Email: [Paul.cobbing@floodforum.org.uk](mailto: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**

**Contact**

Name: Dafed Jarret  
Telephone Number: 01982 554222  
Email: [dafydd.jarret@nfu.org.uk](mailto:dafydd.jarret@nfu.org.uk)

**Local Partnerships, Forums, and Community Groups**

**Bedlinog Community Council**

**Contact:- Clerk to the Council**

Name: Mr Evan Thomas  
Address: 38 Gellideg Road, Maes-y-coed  
Pontypridd, CF37 1EJ  
Telephone Number: 01443 409392  
Email: [evan5@btinternet.com](mailto:evan5@btinternet.com)

**Royal Society for the Protection of Birds**

Sutherland House, Cowbridge Road East  
Cardiff, CF11 9AB

**Contact**

Name  
Telephone Number: 029 2035 3000  
Email: [cymru@rspb.org.uk](mailto:cymru@rspb.org.uk)

## **Land Owners and land/estate Managers**

### **National House Builders**

NHBC House, Davy Avenue, Knowlhill  
Milton Keynes, MK5 8FP

#### **Contact**

Name: Steve Evans  
Telephone Number: 02476 328868  
Email: [sevans@NHBC.co.uk](mailto:sevans@NHBC.co.uk)

### **National Parks Authorities**

126 Bute Street, Cardiff, CF10 5LE

#### **Contact**

Name  
Telephone Number: 029 2049 9966  
Email: [info@anpa.gov.uk](mailto:info@anpa.gov.uk)

### **Brecon Beacon National Park**

Plas y Flynnon, Cambrian Way  
Brecon, Powys, LD3 7HP

#### **Contact**

Name  
Telephone Number: 01874 624437  
Email: [planning.enquiries@breconbeacons.org](mailto:planning.enquiries@breconbeacons.org)

### **Network Rail**

Western House, 1 Holbrook Way, Swindon, SA1 1BD

#### **Contact**

Name: Dale Crutcher  
Telephone Number:  
Email: [dale.crutcher@networkrail.co.uk](mailto:dale.crutcher@networkrail.co.uk)

#### **Contact**

Name: Alex Hinshelwood  
Telephone Number: 07825376891  
Email: [alex.hinshelwood@networkrail.co.uk](mailto:alex.hinshelwood@networkrail.co.uk)

## **Parish and Town Councils**

### **Countryside Council for Wales**

Maes-y-Ffynnon, Penrhosgarnedd, Bangor  
Gwynedd, LL57 2DW

#### **Contact**

Name: Helen Fletcher  
Telephone Number: 02920 444606; 01792 326450; 07989 389521  
Email: [h.fletcher@ccw.gov.uk](mailto:h.fletcher@ccw.gov.uk)

**Association of Drainage Authorities (ADA)**

6 Electric Parade, Surbiton  
Surrey, KT6 5NT  
Telephone: 020 8399 7350

**Contact**

Name: Ian Moodie  
Telephone Number  
Email: [ian.moodie@ada.org.uk](mailto:ian.moodie@ada.org.uk)

**Country Land and Business Association (CLA)**

Unit 8, Broadaxe Business Park, Presteigne  
Powys, LD8 2LAQ  
Telephone: 01547 317085

**Contact**

Name: Ben Underwood  
Telephone Number:  
Email: [ben.underwood@cla.org.uk](mailto:ben.underwood@cla.org.uk)

**SWTRA – South Wales Trunk Road Agency**

12A Llandarcy House, The Courtyard, Llandarcy,  
Neath, SA10 6EJ

**Contact**

Name: Kevin Price  
Telephone Number: 01792 325963  
Email: [k.price@southwales-tra.gov.uk](mailto:k.price@southwales-tra.gov.uk)

**Contact**

Name: Ian Duguid  
Telephone Number: 01792 325911  
Email: [i.r.duguid@southwales-tra.gov.uk](mailto:i.r.duguid@southwales-tra.gov.uk)

**Forestry Commission Wales**

Rhodfa Padarn, Llanbadarn Fawr, Aberystwyth  
Ceredigion, SY23 3UR

**Contact**

Name: Peter Cloke  
Telephone Number: 03000 68205  
Email: [Peter.Cloke@forestry.gov.uk](mailto:Peter.Cloke@forestry.gov.uk)

**CADW**

Unit 5-7 Cefn Coed, Nantgarw, Cardiff  
Telephone: 01443 336000

**Contact**

Name: Suzanne Whiting  
Telephone Number: 01443 336000  
Email: [Suzanne.whiting@wales.gsi.gov.uk](mailto:Suzanne.whiting@wales.gsi.gov.uk)

## **Adjacent Local Authorities**

### **Caerphilly CB Council**

#### **Contact**

Name: Michelle Johnson

Telephone Number: 01495 235797

Email: [JOHNSM@CAERPHILLY.GOV.UK](mailto:JOHNSM@CAERPHILLY.GOV.UK)

### **Rhonda Cynon Taf C B Council**

#### **Contact**

Name: Andrew Stone

Telephone Number: 01443 490413

Email: [andrew.stone@rctcbc.gov.uk](mailto:andrew.stone@rctcbc.gov.uk)

### **Powys C B Council**

#### **Contact**

Name: Simon Crowther

Telephone Number:

Email: [simon.crowther@powys.gov.uk](mailto:simon.crowther@powys.gov.uk)

## Appendix 2 - National Strategy

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

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.

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

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

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.

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.

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

- 1 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;
- 2 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
- 3 promotes equality and does not exacerbate poverty;
- 4 is based upon a holistic understanding of the risks and consequences;
- 5 considers the full range of risk management responses;
- 6 facilitates long term resource planning; and
- 7 allows prioritisation of investment, resources and actions.

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:

- 1 **reducing the impacts** on individuals, communities, businesses and the environment from flooding and coastal erosion;
- 2 **raising awareness of and engaging people in the response to** flood and coastal erosion risk;
- 3 **providing an effective and sustained response** to flood and coastal erosion events; and
- 4 **prioritising investment** in communities most at risk.

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

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.

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.

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.



### **Annex 3 – 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/>):

- 1 Areas Susceptible to Surface Water Flooding
- 2 Areas Susceptible to Groundwater Flooding
- 3 Detailed River Network
- 4 Flood Zones 2
- 5 Flood Zones 3
- 6 Flood Defences
- 7 Flood Storage Areas
- 8 Areas Benefiting from Flood Defences
- 9 Flood Map for Surface Water 1:200 Rainfall
- 10 Flood Map for Surface Water 1:30 Rainfall
- 11 Flood Map for Surface Water DTM
- 12 Historic Flood Map
- 13 Historic Landfill
- 14 National Receptor Dataset – Property Points
- 15 National Receptor Dataset – Social, cultural and environmental (part 1)
- 16 National Receptor Dataset – Social, cultural and environmental (part 2)
- 17 Sealed Main Rivers
- 18 WFD Classification Data
- 19 WFD Risk Assessment Data
- 20 WFD Environmental objectives
- 21 WFD Measures/Actions
- 22 WFD River Waterbodies (River\_Waterbodies\_fRBMP)
- 23 WFD River Waterbody Catchments (River\_Waterbody\_Catchments\_fRBMP)
- 24 WFD River Basin Districts (RBD\_fRBMP)
- 25 WFD Lake Waterbodies (Lakes\_fRBMP)
- 26 WFD Coastal Waterbodies (Coastal\_fRBMP)
- 27 WFD Transitional (Estuarine) Waterbodies (Transitional\_fRBMP)
- 28 WFD Groundwaterbodies (Groundwaters\_fRBMP)
- 29 WFD Monitoring Network (Monitoring Network\_fRBMP)
- 30 WFD Artificial Waterbodies: Canals (AWB\_Canals\_fRBMP)
- 31 WFD Artificial Waterbodies: Surface Water Transfer Channels (AWB\_SWT\_fRBMP)
- 32 SSSI Ditches (AWB\_SSSI\_Ditches\_fRBMP)

## **Annex 4 – Relevant Policy, Regulations and Legislation**

### **Water Framework Directive**

1. The Water Framework Directive (WFD) 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 2003. Member States must aim to reach good chemical and ecological status in inland and coastal waters by 2015. It is designed to:
  - 1 Prevent deterioration in the classification status of aquatic ecosystems, protect them and improve the ecological condition of waters;
  - 2 Aim to achieve at least good status for all waters. Where this is not possible, good status should be achieved by 2021 or 2027;
  - 3 Promote sustainable use of water as a natural resource;
  - 4 Conserve habitats and species that depend directly on water;
  - 5 Progressively reduce or phase out releases individual pollutants or groups of pollutants that present a significant threat to the aquatic environment;
  - 6 Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
  - 7 Contribute to mitigating the effects of floods and droughts.
2. The Water Framework Directive establishes new and better ways of protecting and improving rivers, lakes, groundwater, transitional (where freshwater and seawater 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.
3. 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.

### **TAN 15 – Development and Flood Risk (2004)**

4. Technical Advice Note 15 (TAN15) sets out the Welsh Government's Planning 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.

### **Climate Change Act 2008**

5. 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.

### **Conservation of Habitats and Species Regulations 2010**

6. The Conservation of Habitats and Species Regulations 2010 transpose the Habitats Directive 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 permission or consents are granted within European sites.

### **Environmental Assessment of Plans and Programmes (Wales) Regulations Regulations 2004**

7. The Environmental Assessment of Plans and Programmes (Wales) Regulations 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 of programme and should show how the results of the environmental assessment have been taken into account in the implementation of the plan of programme. Guidance is available on the Welsh Government website.

### **The Land Drainage Act 1991**

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

### **Civic Contingencies Act (2004)**

9. 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)

## **Annex 5 – Communicating with the public, raising awareness and encouraging local leadership**

1. 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.
2. 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.
3. Ensuring people are well informed about flood risk management services is crucial to building trust and a strong reputation for local authorities.
4. 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.
5. 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.
6. LLFAs 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.
7. 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.
8. 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.
9. 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.
10. 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?

11. 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.
12. 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 website.

## Annex 6 – Glossary of Terms used within this Strategy

### 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 Earth's 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 an/or the consequences of flooding to acceptable or agreed levels.

**River flooding** – occurs when water levels in a river 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 coastal 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

## **Appendix 7 List of Documents Consulted**

### **1 MTCBC Information**

- 1 Merthyr Tydfil – Local Development Plan 2006-2021 – Adopted 25<sup>th</sup> May 2011 – Merthyr Tydfil County Borough Council
- 2 Habitats Regulations Assessment Screening Report – Merthyr Tydfil County Borough Council – Local Development Plan – August 2008 Enfusion
- 3 Merthyr Tydfil County Borough Council Local Development Plan 2006-2021 Deposit Plan – Sustainability Appraisal (SA) Strategic Environmental Assessment (SEA) – Sustainability Appraisal Report – September 2008 – Enfusion – Including Appendices 1 and 2  
Appendix 3 – December 2006  
Appendix 4 – December 2006  
Appendix 5 – September 2008 - Enfusion  
Appendix 6 – September 2008 – Enfusion  
Appendix 7 – September 2008 – Enfusion

### **2 Environment Agency Information**

- 1 Land Management CFMP Tool – Development of a software tool to investigate the potential impact of changes in rural land use and land management on flood generation – Environment Agency
- 2 Improving the flood performance of new buildings Flood resilience construction – May 2007 – Consortium managed by CIRIA – Department for Communities and Local Government : London – Communities and Local Government, Environment Agency, DEFRA
- 3 Taff and Ely Catchment Flood Management Plan Summary Report - January 2010 Managing Flood Risk – Environment Agency Wales
- 4 Preparing your property for flooding – A guide for householders and small businesses – Environment Agency
- 5 Personal Flood Plan – Environment Agency
- 6 Flooding from groundwater – Practical advice to help reduce the impact of flooding from groundwater – Local Government Association – Environment Agency
- 7 Flood and Coastal Risk Management Appraisal Guidance (FCERM-AG)
- 8 Water for life and livelihoods – River Basin Management Plan Severn River Basin District – Defra – Welsh Assembly Government and Environment Agency

### **3 Welsh Government Information**

- 1 National Strategy for Flood and Coastal Risk Management in Wales - November 2011 – Welsh Government
- 2 Local Flood Risk Management Strategies – Local Strategy – November 2011 – Welsh Government
- 3 Strategic Environmental Assessment – Statement of Environmental Particulars – Flood and Coastal Erosion Risk Management: Development of a National Strategy for Wales – June 2011 – Welsh Government
- 4 Flood Risk Management – Community Engagement Toolkit – October 2011 – Welsh Government
- 5 Adapting to Climate Change: Guidance for Flood and Coastal Erosion Risk Management Authorities in Wales – December 2011 – Welsh Government
- 6 Sustainable Development: Guidance to Risk Management Authorities Section 27 – Sustainable Development – November 2011 – Welsh Government
- 7 Planning Policy Wales Technical Advice Note 15: DEVELOPMENT AND FLOOD RISK – July 2004 – Welsh Assembly Government
- 8 Habitat Regulations Assessment: Flood and coastal Erosion Risk Management: Development of National Strategy for Wales – June 2011
- 9 Strategic Environmental Assessment – Environmental Report – Flood and Coastal Erosion Risk Management: Development of a National Strategy for Wales – Welsh Assembly Government – 10 May 2011
- 10 National Principles of Public Engagement in Wales – Participation Cymru – Welsh Government
- 11 Practitioner’s Manual for Public Engagement - Participation Cymru – Welsh Government – March 2012

### **4 Legislation**

- 1 Land Drainage Act 1991
- 2 Flood Risk Regulations 2009
- 3 Flood and Water Management Act 2010

## **5 Other**

- 1 The Effects of Flooding on Mental Health – December 2011 – Health Protection Agency
- 2 Codes for Sustainable Homes – Technical Guide – November 2010 – Department for Communities and Local Government

## **Appendix 8 - Consultations**

### **Flood Risk Management Authorities**

#### **Environment Agency Wales**

- 1 10 May 2012 - To discuss collaborative working with communities at risk of Flooding

#### **Water Company - Dŵr Cymru – Welsh Water**

#### **CADW**

#### **Countryside Council for Wales (CCW)**

### **Internal Risk Partners**

#### **Project Team**

- 1 10 June 2012 – Planners, Emergency Planning, Environmental Health

#### **Planning Department**

- 1 7 June 2012 – To discuss LFRMS, SEA and RHA
- 2 8 June 2012 – To agree brief for SEA and HRA
- 3 26 June 2012 – To appoint Arup as the consultant for SEA and HRA Screening – Discussion re – content of LFRMS Report
- 4 28 June 2012 – To review objectives and allocate personnel to draft measures
- 5 13 July 2012 – To review information on measures provided by the Planning Department

#### **Emergency Planning**

- 1 19 June 2012 – To discuss emergency plans already completed, programme for the development of additional plans and information available on critical services
- 2 11 July 2012 – To discuss the information supply by Emergency Planning in relation to their measures

#### **Estates**

- 1 18 June 2012 – To discuss buildings owned by MTCBC and building resilience

#### **Environmental Health**

- 1 21 June 2012 – to discuss information available regarding contaminated land, permitted sites, programme for the collection of additional data and clean up after flooding.

### **External Risk Partners**

#### **Forestry Commission**

- 1 19 July 2012 – to discuss policies on planting and felling trees, pest and weed control and drainage

- 2        2 August 2012 - to establish details of policies on planting and felling trees, pest and weed control and drainage

**Public Consultation**

Our on-line survey was put onto our webpage on Tuesday 26 June 2012

**Collaborative Working**

Sharing of staff between MTCBC and CCBC

Regular contact with our adjacent authorities

**Support Group**

An informal support group has been set up of which MTCBC is a member

- 1        28 June 2012 – To discuss programme for LFRMS, SEA and HRA

**Appendix 9 – Detailed Objectives and Measures**

MERTHYR TYDFIL COUNTY BOROUGH COUNCIL		Overarching Objective 1							Overarching Objective 2				Overarching Objective 3				Overarching Objective 4	
		Reducing the impacts on individuals, communities businesses and the environment.							Raising awareness of and engaging people in the response to flood				Providing an effective and sustained response to flood events				Prioritising investment in the most at risk communities.	
FLOOD RISK MANAGEMENT STRATEGY DETAILED OBJECTIVES AND MEASURES		Reduce distress by reducing the number of people exposed to the risk of flooding.	Reduce community disruption by reducing the number of residential and commercial properties affected by the risk of flooding.	Reduce risk to life by reducing the number of people exposed to risk of flooding of significant depth and velocity.	Reduce disruption to critical infrastructure or prepare plans to allow the operations to be maintained.	Protect and improve Sites of Special Scientific Interest (SSSIs) and Sites of Importance for Nature Conservation (SINCs)	Contribute to the delivery of Merthyr Tydfil Biodiversity Action Plan	Minimise damage to known historic assets	Provide systems to give early warning of potential flooding to individuals and communities.	Provide efficient systems for the management and maintenance of surface assets.	Reduce economic damage	Endeavour to reduce cost of management	Improve naturalness including the creation/restoration/protection of natural channels and water bodies with minimal modifications	Protect and Improve water quality	Provide Flood Risk Management Plans for each area subject to flood risk	Ensure that measures are sustainable	Ensure that MTCBC works in partnership with all other Risk Partners and works collaboratively with adjacent Authorities	Ensure that investment decisions for the implementation of flood risk management schemes are made on a consistent, defensible basis and are subject to cost benefit analysis.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<b>6.13</b>	<b>Development Planning and Adaption</b>																	
6.13.1	Sustainable and Strategic Development Planning	√	√	√	√	√	√						√	√		√		
6.13.2	Strategic Flood Risk Assessment (SFRA) / Strategic Flood Consequences Assessment (SFCA)	√	√	√	√						√							
6.13.3	Water Cycle Strategies												√					
6.13.4	Relocation	√	√	√	√						√	√						
6.13.5	Mineral and Waste Plans	√	√	√	√								√					
6.13.6	Sustainable Drainage (SuDS)	√	√	√	√								√	√		√		
6.13.7	Contaminated Land												√					
6.13.8	Historic Assets							√										
<b>6.14</b>	<b>Flood Forecasting, Warning and Response</b>																	
6.14.1	Flood Awareness	√	√	√	√			√	√		√	√						
6.14.2	Flood Warning	√	√	√	√			√	√		√	√						
6.14.3	Flood Forecasting	√	√	√	√			√	√		√	√						
6.14.4	Emergency Response Plans	√	√	√	√			√	√		√	√						
6.14.5	Community Flood Plans	√	√	√	√			√	√		√	√						
6.14.6	Multi-Agency Flood Plans	√	√	√	√			√	√		√	√						
6.14.7	Major Incident Plans	√	√	√	√			√	√		√	√						

MERTHYR TYDFIL COUNTY BOROUGH COUNCIL		Overarching Objective 1							Overarching Objective 2				Overarching Objective 3				Overarching Objective 4	
		Reducing the impacts on individuals, communities businesses and the environment.							Raising awareness of and engaging people in the response to flood				Providing an effective and sustained response to flood events				Prioritising investment in the most at risk communities.	
FLOOD RISK MANAGEMENT STRATEGY DETAILED OBJECTIVES AND MEASURES		Reduce distress by reducing the number of people exposed to the risk of flooding.	Reduce community disruption by reducing the number of residential and commercial properties affected by the risk of flooding.	Reduce risk to life by reducing the number of people exposed to risk of flooding of significant depth and velocity.	Reduce disruption to critical infrastructure or prepare plans to allow the operations to be maintained.	Protect and improve Sites of Special Scientific Interest (SSSIs) and Sites of Importance for Nature Conservation (SINCs)	Contribute to the delivery of Merthyr Tydfil Biodiversity Action Plan	Minimise damage to known historic assets	Provide systems to give early warning of potential flooding to individuals and communities.	Provide efficient systems for the management and maintenance of surface assets.	Reduce economic damage	Endeavour to reduce cost of management	Improve naturalness including the creation/restoration/protection of natural channels and water bodies with minimal modifications	Protect and Improve water quality	Provide Flood Risk Management Plans for each area subject to flood risk	Ensure that measures are sustainable	Ensure that MTCBC works in partnership with all other Risk Partners and works collaboratively with adjacent Authorities	Ensure that investment decisions for the implementation of flood risk management schemes are made on a consistent, defensible basis and are subject to cost benefit analysis.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<b>6.15</b>	<b>Land, Cultural and Environmental Management</b>																	
6.15.1	Land Management	√	√	√	√	√	√			√	√	√	√				√	
6.15.2	Resilience					√	√					√						
6.15.3	Resistance					√	√					√						
6.15.4	Restoration					√	√					√	√					
6.15.5	Environmental Enhancement					√	√					√	√		√			
6.15.6	Water Bodies						√					√	√					
6.15.7	Habitat Creation						√					√	√					
<b>6.16</b>	<b>Asset Management and Maintenance (SAMPs)</b>																	
6.16.1	System Asset Management Plans									√	√							
6.16.2	Defence/Structure Management	√	√	√	√			√	√	√	√							
6.16.3	Channel Construction and Maintenance	√	√	√	√							√						
6.16.4	Culvert Construction and Maintenance	√	√	√	√					√	√					√		



MERTHYR TYDFIL COUNTY BOROUGH COUNCIL		Reducing the impacts on individuals, communities businesses and the environment.							Raising awareness of and engaging people in the response to flood				Providing an effective and sustained response to flood events				Prioritising investment in the most at risk communities.	
FLOOD RISK MANAGEMENT STRATEGY DETAILED OBJECTIVES AND MEASURES		Reduce distress by reducing the number of people exposed to the risk of flooding.	Reduce community disruption by reducing the number of residential and commercial properties affected by the risk of flooding.	Reduce risk to life by reducing the number of people exposed to risk of flooding of significant depth and velocity.	Reduce disruption to critical infrastructure or prepare plans to allow the operations to be maintained.	Protect and improve Sites of Special Scientific Interest (SSSIs) and Sites of Importance for Nature Conservation (SINCs)	Contribute to the delivery of Merthyr Tydfil Biodiversity Action Plan	Minimise damage to known historic assets	Provide systems to give early warning of potential flooding to individuals and communities.	Provide efficient systems for the management and maintenance of surface assets.	Reduce economic damage	Endeavour to reduce cost of management	Improve naturalness including the creation/restoration/protection of natural channels and water bodies with minimal modifications	Protect and Improve water quality	Provide Flood Risk Management Plans for each area subject to flood risk	Ensure that measures are sustainable	Ensure that MTCBC works in partnership with all other Risk Partners and works collaboratively with adjacent Authorities	Ensure that investment decisions for the implementation of flood risk management schemes are made on a consistent, defensible basis and are subject to cost benefit analysis.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<b>6.17</b>	<b>Studies, Assessments and Plans</b>																	
6.17.1	Investigation														√			
6.17.2	Risk Assessment														√			
6.17.3	Strategy Plan														√			√
6.17.4	Local Property-level Flood Mitigation - Resilience										√							
6.17.5	Local Property-level Flood Mitigation - Resistance	√	√	√	√					√								
6.17.6	Pre-feasibility Studies, Feasibility Studies														√			
6.17.7	Project Plans														√			
<b>6.18</b>	<b>High Level Awareness and Engagement</b>																	
6.18.1	Partnership Working																√	
<b>6.19</b>	<b>Monitoring</b>																	
6.19.1	Erosion Monitoring					√	√					√						
6.19.2	Habitats Monitoring					√	√											
6.19.3	Topographical Survey														√			
6.19.4	Aerial Photography														√			