



**CYNGOR SIR CEREDIGION
CEREDIGION COUNTY COUNCIL**

FLOOD RISK REGULATIONS 2009

**PRELIMINARY FLOOD RISK
ASSESSMENT REPORT
CP1/PFRA**

**Approved by Cabinet on 21st June 2011
Minute C1051**

Engineer -

Mr H.T. Morgan BSc, C. Eng, MICE
Director of Highways, Property and Works
Ceredigion County Council
County Hall
Market Street
Aberaeron
SA46 0AT

Preliminary Flood Risk Assessment Report

	Page
1. Introduction	3
2. Lead Local Flood Authority Responsibilities	6
3. Methodology and Data Review	8
4. Historic Flood Risk	12
5. Future Flood Risk	16
6. Flood Risk Area	20
7. Next Steps	21

Annex 1 – Record of Past Floods

Annex 2 – Future Floods

Preliminary Flood Risk Assessment Report

Executive Summary

Ceredigion County Council has been defined as Lead Local Flood Authority (LLFA) under the Flood Risk Regulations 2009, and as such is required to identify those areas within the County which are at risk of flooding from surface water flooding, groundwater flooding, ordinary watercourse flooding and flooding from canals with significant consequences, and to produce a Preliminary Flood Risk Assessment (PFRA) based on those areas.

As a Lead Local Flood Authority, Ceredigion County Council must submit their PFRA to the Environment Agency by 22nd June 2011.

The Environment Agency has produced a national flood risk map using agreed methodology which has identified clusters of areas above an agreed national flood risk threshold. Only one such cluster has been identified in Ceredigion - Aberystwyth.

As the affected population within Aberystwyth is below the 5,000 people threshold, it does not qualify as an 'Indicative Flood Risk Area' as defined under the Regulations.

No further action is therefore required under the Flood Risk Regulations 2009.

However, Aberystwyth, along with other areas identified as being above the threshold of 'local significance' will form the basis of the Authority's local flood risk management strategy which will be supported by the preparation of the PFRA based on those locally determined criteria, and by the continuing collection of information of local flood events thereafter.

1 Introduction

Preliminary Flood Risk Assessment

Under the Flood Risk Regulations 2009, Ceredigion County Council as a **Lead Local Flood Authority (LLFA)** is required to undertake the preparation of a **Preliminary Flood Risk Assessment (PFRA)** for their administrative area.

The two pieces of legislation which provide the drivers behind the preparation of the PFRA are:

- the **Flood Risk Regulations 2009** (which transposes the EC Floods Directive into domestic law)
- and the **Flood & Water Management Act 2010 (FWMA)**

Under these pieces of legislation, all Unitary Authorities are designated as a LLFA and have been allocated key responsibilities in relation to local flood risk management.

They place particular duties on the **Environment Agency (EA)** and LLFAs to prepare a number of related documents, these being:

- Preliminary Flood Risk Assessments
- Flood Hazard and Flood Risk Maps
- Flood Risk Management Plans

The duty to prepare PFRAs is described in the Regulations as:

Section 10.

Duty to prepare preliminary assessment reports: lead local flood authorities

- (1) A lead local flood authority must prepare a preliminary assessment report in relation to flooding in its area.***
- (2) A lead local authority is not required to include in its report information about flooding from a source mentioned in regulation 9(1)(b) unless the authority thinks that it may affect flooding from another source.***
- (3) The Environment Agency –***
 - (a) must review a preliminary assessment report prepared under this regulation, and***
 - (b) may recommend modifications***
- (4) Following a review, a lead local flood authority may review its preliminary assessment report.***
- (5) The Agency's power to require information under regulation 36 includes power to require a lead local flood authority to provide a preliminary assessment report by a specified date.***

Regulation 9(1)(b) mentioned above states that the Environment Agency must prepare preliminary assessment reports relating to flooding from:

- the sea
- main rivers
- reservoirs

Therefore, the preliminary assessment report to be prepared by Ceredigion County Council needs to consider past and possible future flooding from the following sources:

- surface water
- groundwater
- ordinary watercourses
- canals

Which have significant harmful consequences for human health, economic activity and the environment.

In Ceredigion's case, this is limited to flooding from surface water and ordinary watercourses due to the absence of any record of groundwater flooding, and the absence of canals within the County.

The administrative area of Ceredigion County Council covers approximately 1800 km², and falls within the Western Wales River Basin District, served by a single water company (Dwr Cymru Welsh Water), and by the Environment Agency (Wales) predominantly from their Haverfordwest offices.

Aims and Objectives

The PFRA is a high level screening exercise to locate areas in which the risk of **Surface Water** and **Ordinary Watercourse** flooding is significant.

Flood risk can be described as the combination of the probability of a flood occurring and the consequences that flood would cause if it occurred.

The key objectives are:

- to identify relevant partner organisations involved in future assessment of flood risk and to formalise arrangements for partnerships and collaboration for the collection, assessment and recording of flood risk data and information
- to outline the methodology adopted for the preparation of the PFRA with respect to the availability of data, data sources, and recording procedures;
- to assess historic flood events within the study area from local sources of flooding (surface water and ordinary watercourses), and the consequences and impacts of these events;

- to establish an evidence base of flood risk information, expanded through the recording of future flood events which can then be used to inform the preparation of Ceredigion's Local Flood Risk Strategy;
- to produce a recording mechanism which will enable the Authority to assess the potential harmful consequences of future flood events within in accordance with the relevant criteria
- to review the provisional national assessment of indicative Flood Risk Areas provided by the Environment Agency (Wales)

Following the completion of the PFRA by the Authority and its subsequent acceptance by the Environment Agency (Wales), there will be further duties imposed on the Authority as a direct result of the information included in, and conclusions drawn from the PFRA.

These further duties are:

- the preparation of **Flood Hazard Maps** and **Flood Risk Maps** to identify the level of hazard and risk from flooding within each flood risk area which will then be used to inform the Flood Risk Management Plans. This work is to be completed by 22nd June 2013.
- the preparation of **Flood Risk Management Plans** to set out risk the management objectives and strategies for each flood risk area. This work is to be completed by 22nd June 2015.

2 Lead Local Flood Authorities Responsibilities

Coordination of Flood Risk Management

As the designated LLFA, Ceredigion County Council is responsible for leading local flood risk management within its area.

Much of the local knowledge and technical expertise necessary for Ceredigion County Council to fulfill this duty already lies within the Authority, although relevant information is also held by partner organisations.

Therefore, as part of the preparation of the PFRA, officers have sought to engage stakeholders both external and internal to the Authority representing the following organisations and authorities:

- **Dwr Cymru Welsh Water**
- **Environment Agency (Wales)**
- **Mid and West Wales Fire & Rescue Service**
- **All Town and Community Councils**
- **Ceredigion County Council Highways Maintenance Section**
- **Ceredigion County Council Emergency Planning Section**

These working arrangements will be formalised to ensure clear lines of communication, mutual co-operation and management of the flood risk to ensure that there is the provision of a coordinated and holistic approach to flood risk management across the Authority.

Further Responsibilities

The preparation of a PFRA is just one of several responsibilities of LLFAs under the new legislation

A number of other duties and responsibilities have arisen from the Flood Risk Regulations and the Flood & Water Management Act, including:

Investigation of flooding events – LLFAs have a duty to investigate and record details of significant flood events within their Authority.

Maintenance of an Asset Register – LLFAs have a duty to maintain a register of structures or features which it considers have an effect on flood risk, including details on ownership and condition. This register must be available for inspection and the Minister will be able to impose further regulations relating to the content of the register.

Local Strategy for Flood Risk Management – LLFAs are required to develop, maintain, apply and monitor a local strategy for flood risk management in its area.

Works Powers – LLFAs have powers to undertake works to manage flood risk from surface water consistent with the local flood risk management strategy for the area.

Designation powers – LLFAs have powers to designate structures affecting flooding or coastal erosion in order to safeguard assets that are relied upon for flood or coastal erosion risk management.

In addition, the following duties will also be imposed on LLFA's in the near future as a result of the legislation:

SuDS Approving Body – LLFAs will be designated as the SuDS Approving Body (SAB) for any new drainage systems serving more than one property, and therefore must approve, adopt and maintain any such sustainable drainage systems (SuDS) proposed within their area.

Flood Defence Consenting Authority – LLFA's will shortly be taking over responsibility for the consenting of discharges into, and works involving ordinary watercourses from the Environment Agency.

3 Methodology and Data Review

The PFRA is a high-level screening exercise used to identify areas where the risk of flooding is considered to be significant, and the approach for producing this PFRA was based upon the Environment Agency's PFRA Final Guidance, which was released in December 2010.

The PFRA is based on readily available information.

As stated in the previous section, the following authorities and organisations were approached to share data for the preparation of the PFRA and asked to provide such information on flooding events as was readily available:

Environment Agency (Wales) – provided:

- 'Flood Map for Surface Water' showing areas which could flood from surface water in storms with a '1 in 30' and '1 in 200' annual chance of occurring
- 'Areas Susceptible to Surface Water Flooding'
- 'Flood Map' showing the extent of flooding from rivers with a catchment of more than 3 km² with a '1 in 100' and '1 in 1000' annual chance of occurring
- 'National Receptor Dataset' providing information on social, economic, cultural and environmental receptors
- details of areas considered above the flood risk threshold based on the Ordnance Survey National Grid of 1 km square. (these areas checked against information held by Ceredigion County Council and information provided by other agencies as detailed below)

Dwr Cymru Welsh Water - provided details of past incidents of sewer surcharging from surface water and will provide details of future incidents

Mid and West Wales Fire & Rescue Service – provided details of occasions on which they have been required to provide assistance in relation to flooding events

Town and Community Councils – provided details of location within their administrative area which have suffered flooding as a result of surface water and/or ordinary watercourses

Ceredigion County Council Highways Maintenance and Emergency Planning Sections – provided details of flooding incidents registered through the 'Mayrise' system which logs all calls received through the Departments' call centre and out of hours duty officers. As well as information held by the Authority on its GIS mapping system which records data provided by CADW, CCW, Forestry Commission, National Grid, and various other bodies, giving details of their assets.

Historic Flood Risk

The information provided was collated into a consistent format and reviewed/examined in order to identify areas within the Authority which have historically experienced significant flooding based on the criteria of economic damage, environmental and cultural consequences and impact on the local population.

Future Flood Risk

The identification of Flood Risk Areas through the PFRA should also take into account future floods.

The assessment of future flood risk was undertaken through a technical review of the Environment Agency's Flood Map for Surface Water which uses a numerical hydraulic model to predict the extent of flood risk from two rainfall events (1 in 30 and 1 in 200 annual chance of occurring).

Flood Risk Areas

The information collated regarding both historic and future flood risk will be used to formally identify 'Flood Risk Areas' based on *flood risk indicators* used to determine the impacts of flooding on human health, economic activity, cultural heritage and the environment.

The Key flood risk indicators are:

Human Health - Number of residential properties.

Critical Services - Hospitals, Police/Fire/Ambulance Stations, Schools, Nursing Homes etc

Economic Activity - Number of non-residential properties.

Length of road or rail

Area of agricultural land

Cultural Heritage - Cultural heritage sites/World Heritage Sites

Environment Designated Sites - SSSIs, SACs, SPAs etc and BAP habitat

The first three indicators above have been selected by the Welsh Assembly Government and the Environment Agency (Wales) in order to identify areas where flood risk and potential consequences exceed a pre-determined national threshold.

The indicators used to identify places above the flood risk thresholds, based on the Flood Map for Surface Water (deep - for 1 in 200 annual probability rainfall) are:

- > 200 No. people affected (based on residential property numbers x 2.34)
- >1 No. critical service affected
- > 20 No. non-residential properties affected

within each 1km² square as based on the Ordnance Survey National Grid.

The agreed locations of the individual squares (or cluster of squares) within Ceredigion satisfying any of the above criteria are:

- Talybont
- Aberystwyth
- Llanbadarn Fawr
- Tregaron
- Lampeter
- New Quay
- Cardigan
- Llangrannog
- Aberporth
- Llechryd
- Aberaeron
- Felinfach (Aeron Valley)
- Gilfachreda
- Drefach
- Talgarreg

These are indicated on **Map 3.1**

In order to identify those areas which are then to be considered as Indicative Flood Risk Areas, it is further necessary to apply the following methodology as provided by the Environment Agency (Wales):

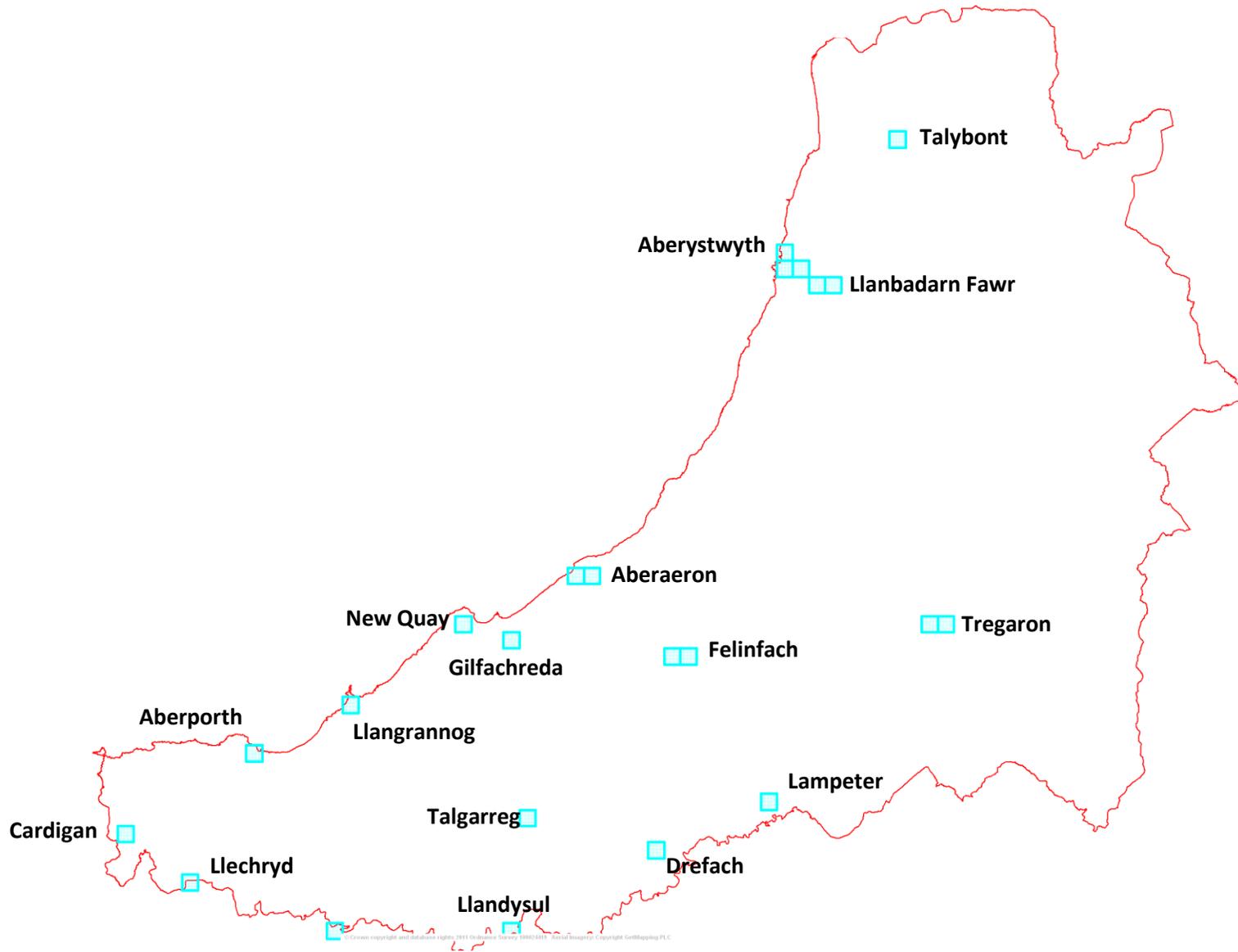
Indicative flood risk areas are based on clusters formed from all 3km squares that contain 4 or more Places above the Flood Risk Thresholds (1km squares) that are touching.

Clusters with fewer than 5000 people at risk have not been designated as Indicative Flood Risk Areas.

Indicators used to identify places above the flood risk thresholds, based on the new Flood Map for Surface Water (deep - for 1 in 200 annual probability rainfall):

- 1. Number of People > 200***
- 2. Critical Services (incl water & elec) > 1***
- 3. Number of Non-Residential Properties > 20***

As a result, no Indicative Flood Risk Areas have been identified within Ceredigion.



Map 3.1 – Flood Risk Area satisfying national threshold criteria based on a 1 in 200 annual probability rainfall event

4 Historic Flood Risk

Flood records were collected from the partner bodies/authorities outlined in chapter 3.

Records of historical flood events and flooding hotspots were collected across the Authority, and these flood events came from a range of flood sources – some of which will not be considered as part of this PFRA.

Coastal and Main River flooding will be considered by the Environment Agency as part of their PFRA preparation for those sources, and therefore this PFRA needs only consider flooding from:

- surface water (to include surcharging of sewers)
- groundwater
- ordinary watercourses
- canals

As there are no canals present within the County nor any records of flooding from groundwater, these two sources have not been considered further within this PFRA, and the PFRA will specifically deal with the following sources of flooding:

Surface Water - rainwater (including snow and other precipitation) which is on the surface of the ground (whether or not it is moving), and has not entered a watercourse, drainage system or public sewer. Flooding from surface runoff is sometimes called pluvial flooding. Note that the term 'surface water' is used generically to refer to water on the surface.

Sewer Flooding - sewer flooding is often caused by excess surface water entering the drainage network. LLFAs do not need to assess flooding from sewers, unless wholly or partly caused by rainwater or other precipitation entering or otherwise affecting the system. Floods of raw sewage caused solely, for example, by a sewer blockage do not fall under the Regulations. The Regulations also do not apply to floods from water supply systems, e.g. burst water mains.

Ordinary Watercourses - any river, stream, ditch, cut, sluice, dyke or non-public sewer which is not a main river.

Consequences of Historic Flooding

It has been difficult to draw conclusions on the significance of the historical flooding events recorded to date by the various bodies/authorities due to the level of information collated in respect of each event against each of the relevant criteria.

Therefore, for the purposes of this PFRA, Ceredigion County Council has agreed that a locally significant event is one which has either:

- affected 5 or more residential properties
- affected 1 or more critical services/infrastructure

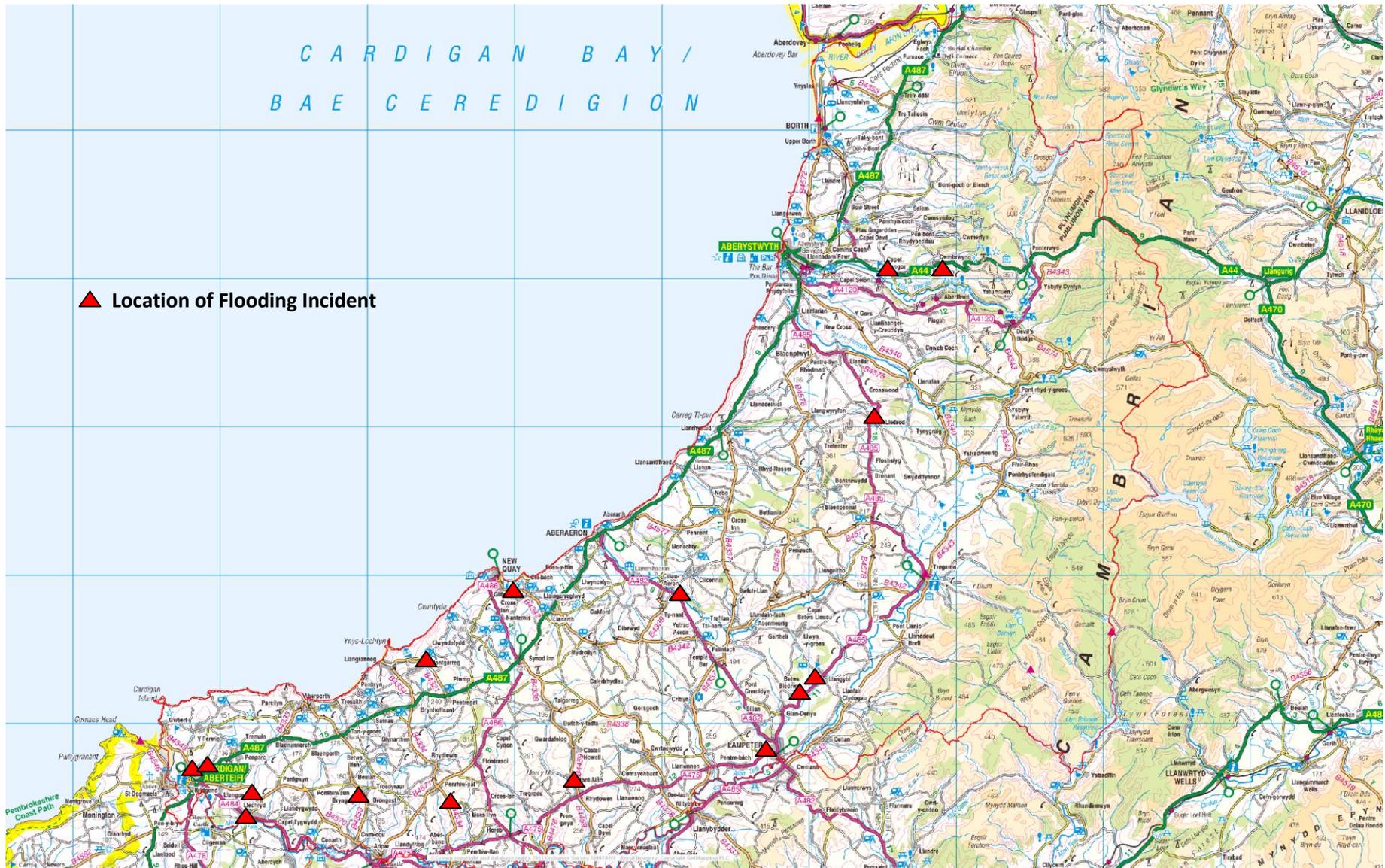
Where works have been undertaken by the Authority to alleviate or mitigate such flooding events, or the incident does not meet the specified criteria as being 'locally significant', then these incidents do not form part of this PFRA.

Flood ID	Name	Description
1	Cardigan	Flooding of 30 No. properties due to exceedance of non-main river. Estimated return period of 1 in 50 years.
2	Lledrod	Flooding of 19 No. properties due to exceedance of the ordinary watercourse and drainage systems.
3	Lampeter	Over 16 properties were affected by surface water flooding due to exceedance of the drainage systems on 11th June 2007. Assumed return period of 1 in 30.
4	Cwrtnewydd, Lampeter	Flooding of 14 No. properties due to exceedance of non-main river. Estimated return period of 1 in 10 years.
5	Llangoedmor	Flooding of 12 No. properties due to the surface water runoff exceedance of the drainage systems.
6	Capel Bangor	Overtopping and breaching of Melindwr Ordinary Watercourse affecting 10 properties. Return period estimated at 1 in 15.
7	Heol Onnen/Heol Bedw, Cardigan	Flooding of 8 No. properties due to the exceedance of the ordinary watercourse due to inadequacy of culvert.
8	Pennant	Flooding of 8 No. properties due to the exceedance of the non-main river and drainage systems.
9	Old Goginan	Flooding of 7 No. properties due to the exceedance of the ordinary watercourse and drainage systems.
10	Betws Bledrws	Flooding of 6 No. residential properties and the A485 County Road due to the exceedance of the ordinary watercourse, drainage system and surface water runoff. Return period estimated at 1 in 2 to 1 in 10 years.
11	Pontsian	Flooding of 6 No. properties due to flooding from non-main river.
12	Cwm Halen, New Quay	Flooding of 6 No. properties due to the exceedance of the non-main river and drainage systems.
13	Coed-y-Bryn	Flooding of 6 No. properties due to exceedance of drainage system.
14	Pontgarreg	Flooding of 6 No. properties due to the exceedance of the ordinary watercourse and surface water runoff.
15	Llechryd	Flooding of 6 No. properties due to the exceedance of the ordinary watercourse due to interaction with main river flooding.
16	Llangybi	Flooding of 5 No. residential properties due to the exceedance of the ordinary watercourse.

The locations are shown in Map 4.1

CARDIGAN BAY /
BAE CEREDIGION

▲ Location of Flooding Incident



Map 4.1 – Historic Surface Water Flooding

Where an incident does not meet the criteria of local significance, that particular incident does not form part of the Authority's Preliminary Flood Risk Assessment report, although details of such incidents will be recorded and may be re-assessed should further incidents of flooding occur at those locations.

5 Future Flood Risk

No local information is currently held by the Authority relating to future surface water flood risk within Ceredigion as a whole, although 'Strategic Flood Consequence Assessments' have been undertaken for the towns of Aberystwyth and Cardigan.

Surface Water and Ordinary Watercourse Flooding

The Environment Agency has produced a national assessment of surface water flood risk in the form of national mapping datasets in the form of:

- Areas Susceptible to Surface Water Flooding (AStSWF)
- Flood Map for Surface Water (FMfSW)

The original Areas Susceptible to Surface Water Flooding (AStSWF) contains three susceptibility bandings for a rainfall event with a 1 in 200 chance of occurring, whilst the revised Flood Map for Surface Water (FMfSW), is a model containing two flood events (1 in 30 annual chance and 1 in 200 annual chance) and two depth bandings (greater than 0.1m and greater than 0.3m).

Groundwater Flooding

Groundwater flooding is not believed to be an issue in the county.

Flooding from Canals

There are no canals located within the county.

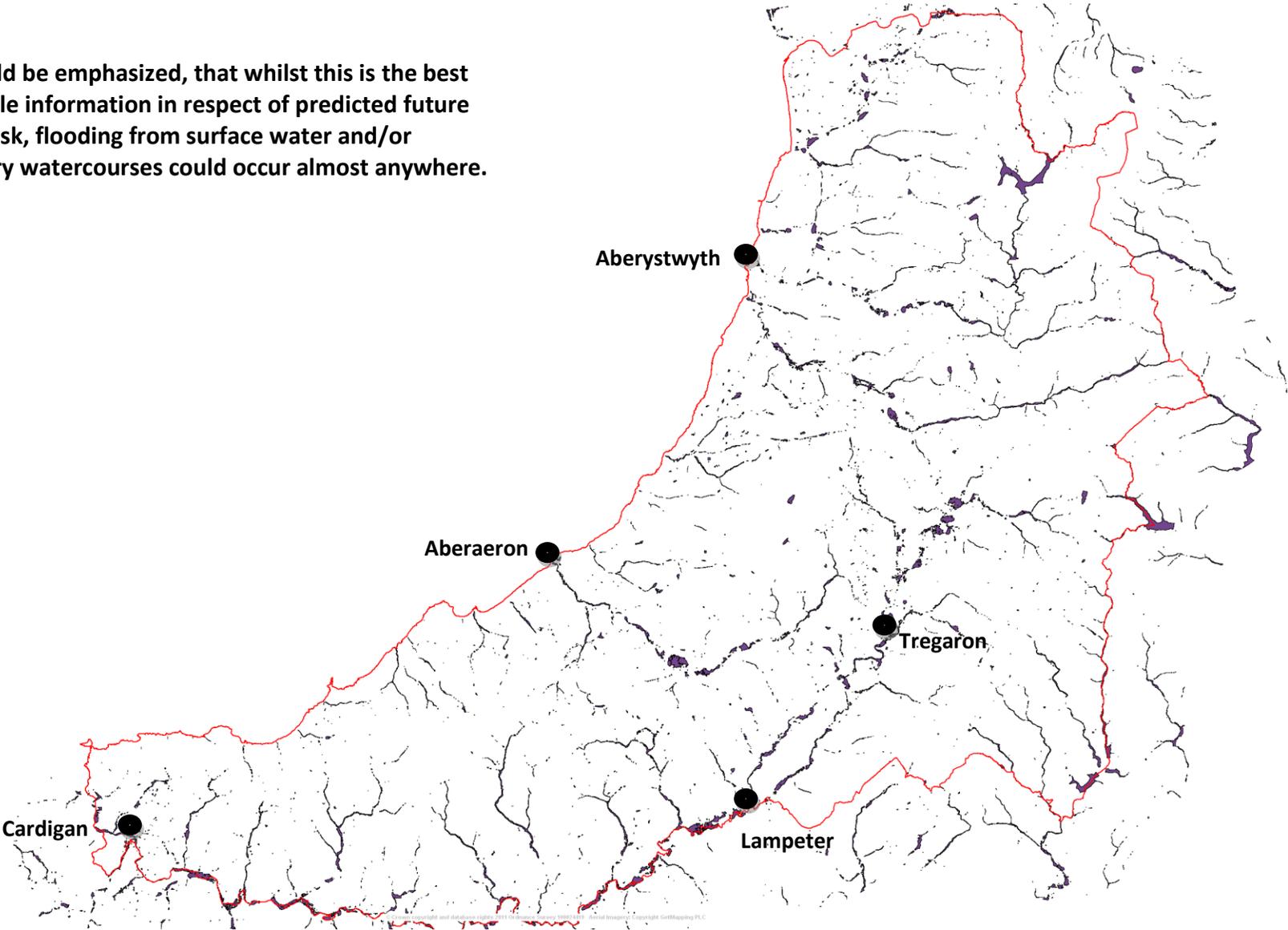
Locally Agreed Surface Water Information

A definition of 'locally agreed surface water information' has been considered in conjunction with the Environment Agency in order to agree what surface water information best represents local conditions across Ceredigion.

As there is no local information on future flooding available, the 'locally agreed surface water information' in respect of future flooding is considered to be the Flood Map for Surface Water, 1 in 200 annual chance of occurring dataset produced by the Environment Agency and reviewed in the preparation of this PFRA, which gives an overview of the future flood risk from surface water. (see **Map 5.1**)

It is agreed that this is best information currently available to the Authority, and details those areas within the Authority which may be at a locally significant level of risk of flooding in the future.

It should be emphasized, that whilst this is the best available information in respect of predicted future flood risk, flooding from surface water and/or ordinary watercourses could occur almost anywhere.



Map 5.1 – Locally Agreed Surface Water Information (Flooding from Surface Water - 1 in 200 Chance - Depth > 0.3m)

The Impacts of Climate Change

The impact of climate change on local flood risk is relatively poorly understood. Several national flood maps have informed the preliminary assessment report – specifically the Flood Map for Surface Water (surface runoff), Areas Susceptible to Surface Water Flooding (surface runoff), Areas Susceptible to Groundwater Flooding (groundwater) and Flood Map (ordinary watercourses). These do not show the impact of climate change on local flood risk.

There was consensus amongst climate model projections presented in the IPCC fourth assessment report for northern Europe suggesting that in winter high extremes of precipitation are very likely to increase in magnitude and frequency. These models project drier summers with increased chance of intense precipitation – intense heavy downpours interspersed with longer, relatively dry periods (Solomon et al., 2007).

United Kingdom Climate Projections 2009 (UKCP09) provides the most up to date projections of future climate for the UK (<http://ukclimateprojections.defra.gov.uk/>). In terms of precipitation, the key findings are:

By the 2080s, under Medium emissions, over most of lowland UK, central estimates are for heavy rain days (rainfall greater than 25mm) to increase by a factor of between 2 and 3.5 in winter, and 1 to 2 in summer.

By the 2080s, under Medium emissions, across regions in England and Wales, the central estimate (50% probability) for winter mean precipitation % change ranges from +14 to +23, and the central estimate for summer mean precipitation % change ranges from -18 to -24.

Certain key processes such as localised convective rainfall are not represented within this modelling so there is still considerable uncertainty about rarer extreme rainfall events for the UK. We can be more certain that heavy rainfall will intensify in winter compared to summer. The proportion of summertime rainfall falling as heavy downpours may increase. The impact of these changes on local flood risk is not yet known.

Appraisal Guidance

Current project appraisal guidance (Defra, 2006) provides indicative sensitivity ranges for peak rainfall intensity, for use on small catchments and urban/local drainage sites. These are due to be updated following the UKCP09 projections above. They describe the following changes in peak rainfall intensity; +5% (1990-2025), +10% (2025-2055), +20% (2055-2085) and +30% (2085-2115).

This was reviewed by the Met Office in 2008 using UKCP09 models (Brown et al., 2008). They suggest that, on the basis of our current understanding, these levels represent a pragmatic but not a precautionary response to uncertainty in future climate impacts. In particular for a 1 in 5 year event, increase in precipitation intensity of 40% or more by the 2080s are plausible across the UK at the local scale.

Long Term Developments

It is possible that long term developments might affect the occurrence and significance of flooding. However, current planning policy aims to prevent new development from increasing flood risk.

In Wales, Technical Advice Note 15 (TAN15) on development and flood risk sets out a precautionary framework to guide planning decisions. The overarching aim of the precautionary framework is “to direct new developments away from those areas which are at high risk of flooding.”

Adherence to Government policy ensures that new development does not increase local flood risk. However, in exceptional circumstances the Local Planning Authority may accept that flood risk can be increased contrary to Government policy, usually because of the wider benefits of a new or proposed major development. Any exceptions would not be expected to increase risk to levels which are “significant” (in terms of the Government’s criteria), but should be recorded here so that they can be reviewed in the future.

6 Identification of Flood Risk Areas

WAG in consultation with DEFRA have provided 'significance criteria' and 'thresholds' to be used for defining flood risk areas.

Guidance on the application of these thresholds is contained in the DEFRA document "Selecting and reviewing Flood Risk Areas for local sources of flooding".

The methodology is based on using national flood risk information to identify 1km squares where local flood risk exceeds a defined threshold *based on the new Flood Map for Surface Water (deep - for 1 in 200 annual probability rainfall)*. *The thresholds have been defined as:*

- *Number of People > 200*
- *Critical Services (incl water & elec) > 1*
- *Number of Non-Residential Properties > 20*

Where a cluster of these grid squares occurs and over 5,000 people are predicted to be at risk of flooding within that cluster, the area has been identified as an 'Indicative Flood Risk Area'.

Eight such areas have been identified in Wales, with none identified within Ceredigion.

The information provided in support of this identification process has been reviewed and no changes to the Indicative Flood Risk Areas have been identified.

The eight 'Indicative Flood Risk Areas' identified in Wales are:

- Swansea
- Neath
- Merthyr Tydfil
- Ebbw Vale
- Pontypool-Cwmbran
- Rhondda-Cynon-Taff
- Caerphilly
- Cardiff

7 Next Steps

Ceredigion County Council as a Lead Local Flood Authority is required to investigate and record future flood events.

The agreed method for data collection is a spreadsheet system in which the fields are colour coded to represent the details which are compulsory, and those which would be beneficial in investigating such events.

Review Procedures

The review procedures that must be adopted when producing a PFRA have been set out in the Environment Agency guidance document – ‘Preliminary Flood Risk Assessment (PFRA) – Final Guidance’, and are summarised below:

Local Authority Review

The first part of the review procedure is through an internal Local Authority review of the PFRA, in accordance with appropriate internal review procedures. Internal approval needs to be obtained to ensure the PFRA meets the required quality standards, before it is submitted to the Environment Agency.

Within Ceredigion, the PFRA will be taken to the Council’s Cabinet for approval before being forwarded to the Environment Agency.

Environment Agency Review

Under the Flood Risk Regulations, the Environment Agency has been given a role in reviewing, collating and publishing all PFRAs.

The Environment Agency will undertake a technical review of the PFRA, focusing on instances where Flood Risk Areas have been amended and ensuring that the format of these areas meets the required standard.

Following which, the PFRAs will be submitted to the relevant Regional Flood Defence Committee (RFDC) for approval.

RFDCs will then ensure consistency within the PFRAs at a regional level, and once the PFRA has been approved by the RFDC and signed off by the relevant Environment Agency Regional Director they will be published and submitted to the European Commission.

Future Works

The PFRA will be required on six yearly cycles, with the first review being due by the 22nd June 2017, and the review will be based on the originally approved document, together with any changes relating to the flood risk information as a result of:

- updated Environment Agency Flood Mapping
- flood mitigation/alleviation works undertaken
- a review of recorded flood incidents

in the interim however, LLFAs will be required to undertake further works based on the PFRA.

These further works are:

- the preparation of **Flood Hazard Maps** and **Flood Risk Maps** to identify the level of hazard and risk from flooding within each flood risk area which will then be used to inform the Flood Risk Management Plans. This work is to be completed by 22nd June 2013 (and every 6 years thereafter)
- the preparation of **Flood Risk Management Plans** to set out risk the management objectives and strategies for each flood risk area. This work is to be completed by 22nd June 2015 (and every 6 years thereafter)