

AGENDA MANAGEMENT SHEET

Name of Committee Communities Overview and Scrutiny Board

Date of Committee 20 July 2010

Report Title Approval of the WCC Preliminary Flood Risk Assessment

Summary A requirement of the legislation that followed the severe floods of Summer 2007, is that the Lead Local Flood Authorities submit a Preliminary Flood Risk Assessment to the Environment Agency no later than June 22nd 2011. Under the terms of the legislation, Lead Local Flood Authorities are all unitary and upper tier authorities, so includes Warwickshire County Council.

This report gives the background of the PFRA and contains a brief summary of its contents.

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Would the recommended decision be contrary to the Budget and Policy Framework? No

Background Papers

CONSULTATION ALREADY UNDERTAKEN:- *Details to be specified*

Other Committees

Local Member(s)
(With brief comments, if appropriate)

Other Elected Members Councillor R Hobbs
Councillor M Gittus

Cabinet Member Councillor J Appleton
(Reports to The Cabinet, to be cleared with appropriate Cabinet Member)



- Chief Executive
- Legal I Marriott -
- Finance
- Other Chief Officers
- District Councils
- Health Authority
- Police
- Other Bodies/Individuals

FINAL DECISION **YES/NO** *(If 'No' complete Suggested Next Steps)*

SUGGESTED NEXT STEPS :

Details to be specified

- Further consideration by this Committee
- To Council
- To Cabinet
- To an O & S Committee
- To an Area Committee
- Further Consultation

**Communities Overview and Scrutiny Board
20 July 2011**

Flood Risk Management

**Report of the Strategic Director for
Environment and Economy**

Recommendation

That the Board consider and comment on the Preliminary Flood Risk Assessment.

1. Background

- 1.1 Following the severe floods of summer 2007 Sir Michael Pitt was commissioned to produce a lessons learned report.

In summary, he concluded the need for the following:-

- (i) Take appropriate steps to reduce the risk of flooding and its impact.
- (ii) Improve the process of being rescued and cared for during an emergency.
- (iii) Ensure that power and water supplies are maintained and essential services protected.
- (iv) Provide advice and help for people to protect their families and homes
- (v) Carry out measures to ensure victims remain as healthy as possible and speeding up recovery of those whose health may have been adversely affected by flooding incidents.
- (vi) Knowing where and when it will flood.

2. New responsibilities for WCC

- 2.1 Subsequent to the Pitt Report we have had the Flood Risk Regulations 2009 (FRR) and the Flood and Water Management Act 2010 (FWMA).
- 2.2 One of the key requirements emerging from this legislation is the duty placed on upper tier and unitary local authorities, including WCC to be the Lead Local Flood Authority (LLFA). With this duty come the following specific responsibilities:-
- (i) To develop, maintain and apply a strategy for local flood risk management in their areas. These local strategies must include the risk

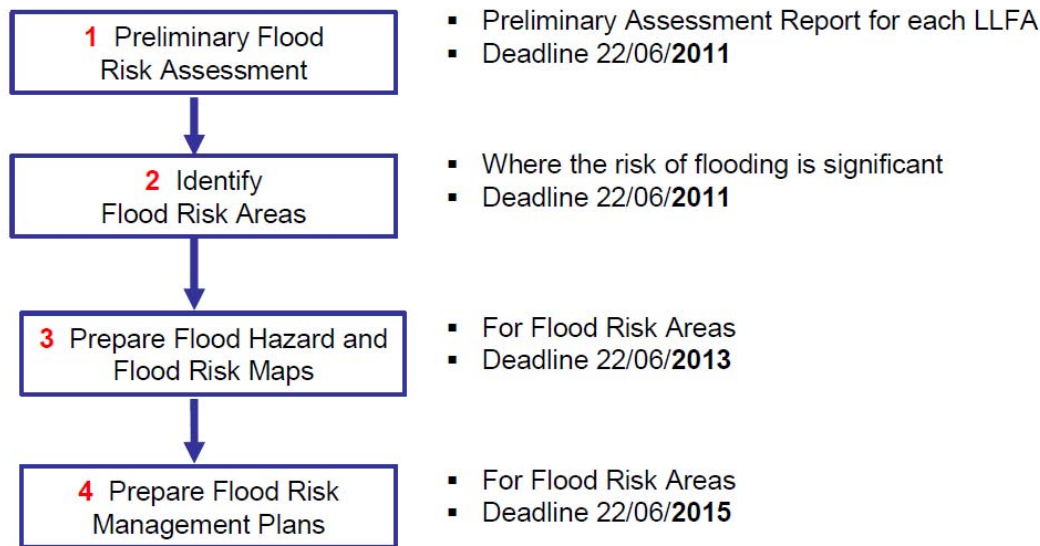
of flooding from surface water, watercourse and groundwater. Sewer flooding not caused by precipitation is excluded.

- (ii) Establish and maintain a register of structures which have an effect on flood risk management in their areas.
 - (iii) Requirement to approve the design and construction of drainage systems which are to be in accordance with SuDS (Sustainable Drainage Systems).
 - (iv) Preliminary Flood Risk Assessments (PFRAs) to be prepared before 22 December 2011.
 - (v) Identify areas of significant flood risk based on the preliminary risk assessments.
 - (vi) For the identified areas of significant flood risk, flood hazard maps and flood risk maps to be prepared before 22 December 2013.
 - (vii) For identified areas of significant flood risk, flood risk management maps and flood risk maps to be prepared before 22 December 2015.
 - (viii) Requirement to engage with the public and relevant authorities in the production of Directive deliverables.
- 2.3 Lead Local Flood Authorities have to submit their assessments, maps and management plans to the Environment Agency six months before the December deadline to allow for collation and reporting to the European Commission.

3. Preliminary Flood Risk Assessment (PFRA)

- 3.1 The Flood Risk Regulations came into force in December 2010 and implement the European Floods Directive (2007/60/EC). This provides a consistent approach to managing significant flood risk across Europe through a six year recurring planning cycle, based on a four stage process, as shown in Fig 1. This figure also shows the timescales for the Regulations and confirms that the PFRA must be submitted for review by the Environment Agency and the Regional Flood Defence Committee by 22 June 2011.
- 3.2 LLFAs should review and approve their PFRAs in accordance with their own internal processes. This may be through consideration by Cabinet, Council or an overview and scrutiny committee. The purpose of such review is to ensure the LLFA is satisfied that its products are fit for purpose in meeting the requirements of the Regulations. To comply with this requirement, and in view of the tight timescale, the PFRA has been approved by the relevant Portfolio Holder. However, it is considered appropriate to report progress with these new developments to the Overview and Scrutiny Board.

Figure 1 Flood Risk Regulations process (taken from national Environment Agency guidance)



- 3.3 The PFRA focuses on the first two stages of the flood risk management cycle. It is a high level screening exercise, to identify areas of significant flood risk across the country. To ensure a consistent national approach the Department for Environment, Food and Rural Affairs (Defra) has identified significance criteria and thresholds to be used for defining flood risk areas on a national basis. This has been achieved by identifying locations where there are clusters of 30,000 people and/or 150 critical services at risk of surface water flooding.
- 3.4 There were ten indicative 'Flood Risk Areas' identified nationally by the Defra and the Environment Agency, which included London, Manchester, Liverpool and the West Midlands. None were located in Warwickshire. For comparative purposes, three 'Flood Risk Areas' have been identified in the whole of France.
- 3.5 LLFAs are required to review the data supplied by the EA based on an assessment of the consequences of past and future floods incorporating and new information they holds with respect to their local knowledge of flooding within their area.
- 3.6 The requirement to undertake stages 3 and 4 as identified in Fig 1 will only be required for areas which have been identified as being of significant risk, so will not include Warwickshire.
- 3.7 Defra has applied a risk based methodology to the process of distributing funds to LLFAs for carrying out their new responsibilities under the Flood and Water management act. This process has utilised the outputs from various surface water maps as described later in the report and placed Warwickshire 47th out of 149 upper tier authorities in terms of its overall exposure to flood risk from surface water flooding.

4. Overview of PFRA Process Stages 1 & 2

- 4.1 This Preliminary Flood Risk Assessment (PFRA) report has been written to the specification provided within the Environment Agency's final guidance document, and presents the results of a high level screening exercise to identify areas of significant flood risk within Warwickshire County.
- 4.2 The screening exercise has consisted of a desk-based analysis of all existing and readily available flood risk data and information within Warwickshire to provide an assessment of the following four key areas:-
1. Past flood risk and identification of floods with significant harmful consequences;
 2. Future flood risk and the potential consequences of future floods;
 3. Identification of Flood Risk Areas; and
 4. Identification of measures to support the review of the PFRA every six years.
- 4.3 It should be noted that the PFRA only relates to the sources of local flooding that are classified as being the responsibility of the LLFA (Warwickshire County Council) within the legislation. These are summarised in the Fig 2 below.

Fig 2 - Sources of Flooding

Source of Flooding	Responsible Organisation	
	Lead Local Flood Authority <i>(included within PFRA)</i>	Environment Agency <i>(not included in PFRA)</i>
Ordinary Watercourses	✓	
Surface Runoff (from rain or snowmelt)	✓	
Groundwater	✓	
Artificial Water Bearing Infrastructure ¹	✓	
Main Rivers	<i>Interactions with sources above only</i>	✓
The Sea	<i>Not applicable to Warwickshire</i>	✓
Reservoirs	<i>Interactions with sources above only</i>	✓

NOTES

¹ includes canals, highways drains, water supply systems and sewers (where flooding is wholly or partially caused by rainwater or other precipitation entering or affecting the system). The PFRA should not include flooding from blocked sewers or burst water mains.

- 4.4 The PRFA guidance identifies 12 key steps in order to produce the PFRA report and these are listed below

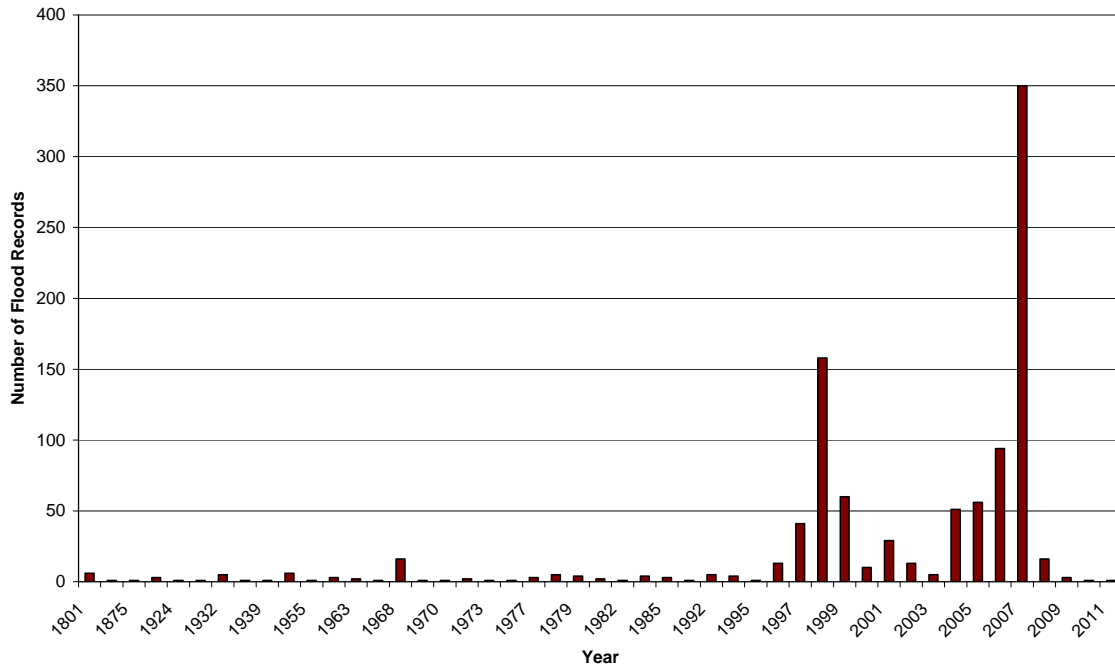
1	Set up governance and develop partnerships
2	Determine appropriate data systems
3	Collate information on past and future floods and their consequences
4	Determine locally agreed surface water information
5	Complete preliminary assessment report document
6	Record information on past and future floods with significant consequences in spreadsheet
7	Illustrate information on past and future floods
8	Review indicative Flood Risk Areas
9	Identify Flood Risk Areas
10	Record information including rationale

- 4.5 The establishment of the Warwickshire Strategic Flood Forum in October 2007 played an important role in facilitating early action with respect to managing the PRFA process, with opportunities taken at the quarterly meetings to update partners on developments and progress. In addition to this separate dialogue has taken place between officers through the improved networking that has now been established.

Assessment of significant harmful consequences of past floods.

- 4.6 Whilst recognising that the PFRA is primarily a high level assessment of flood risk on a National scale, Defra have encouraged LLFAs to consider the full range of local flood risk across their area. In view of this, the review of past flooding has included an assessment of previous storm events that are considered to have a significant effect on communities in Warwickshire.
- 4.7 Existing datasets, reports and anecdotal information has been collected from numerous partners and sources and sources as shown in the PFRA. Whilst the guidance indicated that the PFRA need only consider a review of existing readily available data, the opportunity was taken by the Council to carry out extensive consultations with the parishes within the County. As well as providing a useful source of additional data based on their local knowledge, the consultations also provided an opportunity to make Parish Councils aware of the new responsibilities the council will be undertaking as Lead Local Flood Authority. It is envisaged that further engagement with Parish Councils and communities will be required as the LLFA role develops.

Number of Flood Records per Year



The major flood events in Warwickshire were:-

- January 1992
- Easter 1998
- August 1999
- June 2005
- Summer 2007
- December 2008

4.8 It is likely that partner organisations have taken action to reduce the likelihood of flooding within areas at risk. However it is anticipated that as issues arise further work and analysis will be required to understand the causes of flooding in the locations still prone to flooding. This can be a complex process due to the need to understand the interaction of the various natural and artificial drainage systems. The new responsibility for the LLFA to develop an Asset Register to record the ownership and condition of significant drainage assets will assist with this process.

Assessment of future floods and possible harmful consequences

4.9 The process of evaluating the impact of future floods has been undertaken by the use of hydraulic models by the Environment Agency. However the availability of model information for the country is limited and in order to address this problem the EA has produced a number of national datasets to assist with the preparation of the PFRA. These include the following:-

- (i) Areas Susceptible to Surface Water Flooding (AStSWF) in any year.
- (ii) Flood Map for Surface Water (FMfSW)
- (iii) Further modelling results to include more storm events, the influence of buildings and the influence of the sewer system

- (iv) Flood Maps to show flood outlines for all watercourses about a certain defined limit
- (v) Area Susceptible to Groundwater Flooding (AStGWF)

(Flood Maps showing extents in relation to main rivers have not been assessed as this is an EA responsibility)

- 4.10 The Environment Agency guidance on assessing future surface water flood risk information recommends that LLFAs should review the information supplied in the national datasets in conjunction with any other sources of local information. A decision then needs to be taken as to what flood data best represents local conditions and this should then be used in the review of the Indicative Flood Areas. This is known as 'Locally Agreed Surface Water Information'
- 4.11 It is intended that in the medium term, the County Council will engage with the District Councils to develop a Surface Water Management Plan for the main conurbations. This will assess the impact of surface water flood risk associated with potential development sites and assist with the preparation of the respective Local Development Frameworks for each local authority. A hydraulic model will likely be required to attempt to simulate the interaction of all known artificial drainage systems, such as sewers and highway drains, with natural features such as rivers and watercourses. This will use computerised modelling techniques of a technical complexity beyond the technical resources of the County Council. External consultants will be engaged to conduct the study.
- 4.12 A map showing predicted flood extents based upon Locally Agreed Surface Water Information is included in the PFRA (fig 5.2b).
- 4.13 Due to the immense complexity in the real world, all model simulations have inherent assumptions and limitations within them and should not be considered prescriptive forecasts of future scenarios. The assumptions used in this PFRA can be determined from the original source documents (e.g. Environment Agency guidance notes).
- 4.14 To estimate the possible harmful consequences of future flooding the outputs from various hydraulic models have been compared against the location of physical assets such as homes, schools, hospitals and businesses. The term used in the PFRA guidance for these features is receptors and national datasets known as NRDs have been provided by the EA.
- 4.15 A summary of the consequences assessed using the above information is outlined below.

Consequences to Human Health

- (i) Number of dwellings at risk
- (ii) Number of people at risk (number of properties multiplied by 2.34) and
- (iii) Number of critical services at risk (including schools, hospitals, nursing/care/retirement homes, emergency services, prisons, sewage treatment works and electricity installations).

4.16 Economic Consequences

- (i) Number of non residential properties at risk
- (ii) Area of agricultural land (Grades 1,2 and 3 only) at risk
- (iii) Length of road at risk
- (iv) Length of rail at risk

4.17 Environmental Consequences

- (i) Number of Pollution Prevention and Control (PPC) and Control of Major Accident Hazard (COMAH) sites at risk
- (ii) Areas of internationally and nationally designated sites (including Special Areas of Conservation (SACs), Special Protection Areas (Ramsar sites (important wetland areas) and Sites of Special Scientific Areas (SSSIs); and
- (iii) Number/area of internationally and nationally designated heritage sites (including World Heritage Sites, Scheduled Ancient Monuments, Listed Buildings and Registered Parks and Gardens)

4.18 A detailed record of the consequences of future flooding for each of the datasets listed above is included in the Annexes to the PFRA report as well as a summary table relating to the possible consequences to Human Health.

Review of Indicative Flood Risk Areas

4.19 As mentioned previously in this report whilst the extreme north western edge of Warwickshire is very close to the West Midlands Indicative Flood Risk Area, no part of the County lies within one of these areas.

4.20 The locations in Warwickshire where the flood risk, based on the Flood Map for Surface Water, are considered to be the most severe have been assessed against data relating to both past and future risks obtained from other sources. It has been found that the required criteria set by Defra for determining an Indicative Flood Risk Area has not been met by any of these locations. **As such, the Council requires no adjustment to the Indicative Flood Risk Area boundaries.**

4.21 The table below summarises the potential harmful consequences upon the clusters within Warwickshire.

Flood Risk Indicator	Name of Cluster		
	Leamington Spa	Nuneaton	Rugby
Rank (out of 219)	74	122	165
National Grid Reference	SP300006600	SP3610091900	SP5039575921
Area	3200ha	1500ha	1900ha
Number of Residential Properties at Risk	3467 ¹	<i>Not provided</i>	<i>Not provided</i>
Number of People at Risk	8113 ¹	<i>Not provided</i>	<i>Not provided</i>
Number of Critical Services at Risk	22 ¹	<i>Not provided</i>	<i>Not provided</i>
Number of Non Residential Properties at Risk	557 ¹	<i>Not provided</i>	<i>Not provided</i>
Length of Road or Rail at Risk from Surface Runoff	11.8km	7.6km	4.4km
Area of Agricultural Land at Risk from Surface Runoff	50.3ha	15.5ha	19.3ha
Number of PPC sites potentially at risk from surface runoff.	0	1	1
Number of Listed Buildings (all grades) at risk from Surface Runoff	10	0	0
Number of Listed Buildings (Grades I and II*) at risk from Surface Runoff	1	0	0
Number of Scheduled Ancient Monuments at risk from Surface Runoff	3	3	0
Mean Potential for Groundwater Flooding over Cluster	47%	32.5%	27.8%
Area of Cluster with > 75% Ground-water Flooding Potential	700ha	0ha	0ha
Area of Cluster with > 50% Ground-water Flooding Potential	1300ha	400ha	300ha
Area of Cluster with > 25% Ground-water Flooding Potential	2300ha	800ha	800ha

NOTE ¹ Data based on ASStGWF

4.22 To support the review of the PFRA every six years and the development of the Local Flood Risk Strategy, the following actions have been identified as important measures to be undertaken to ensure that the County Council fulfils its new LLFA obligations under the Flood and Water Management Act.

- (i) The spreadsheet developed as part of the PFRA will be utilised for the collation of flood records following future events, possibly in the form of a database;
- (ii) Past flood event data missing from this PFRA (for example the Highways Authority records) will be sought and assimilated into the spreadsheet;
- (iii) New relationships will be formed with additional partners identified in the PFRA.

- (iv) Increased data sharing will be encouraged between all the partners shown in the PFRA;
- (v) The Warwickshire Flood Forum will continue to meet quarterly;
- (vi) The relationships developed with the Parish Councils and Local Flood Forums will be maintained through quarterly meetings;
- (vii) Data and information will be explained at a community level to promote resident engagement with the County Council;
- (viii) Continued provision of advice to areas affected by flooding, to assist in the planning for future flood emergencies. A number of high risk areas, including villages with a potential to become marooned during a flood event have been identified as part of this PFRA process and will continue to be modified and updated. Dialogue will be held with the Emergency Services to distribute this information and knowledge;
- (ix) All information collected as part of this PFRA will be utilised by the LLFA within their upcoming SuDS Approval Board (SAB) role;
- (x) The Planning Authority will be approached with the suggestion that Warwickshire County Council become a consultee;
- (xi) Flood audits will be required for all in-house highways and transport schemes;
- (xii) All information collated within this PFRA will be used to inform the Local Flood Risk Strategy.

5. Environment Agency Review of PFRA and Publication

- 5.1 The Environment Agency has a duty under the regulations to review, collate and publish all of the PFRA's once submitted
- 5.2 Initially local Environmental Agency staff will review the Preliminary Assessment Reports to ensure they meet the minimum standards required by the European Commission. Following this a national review will be carried out after which the EA will publish all Preliminary Flood Risk Assessment Reports and Flood Risk Areas by 22 December 2011, before making them available to the European Commission.
- 5.3 To demonstrate ownership, the EA has suggested that LLFAs should make their own PFRA reports available through their own websites by December 22 2011.

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