

**CAMBRIDGESHIRE SURFACE WATER MANAGEMENT PLAN AND
CAMBRIDGESHIRE PRELIMINARY FLOOD RISK ASSESSMENT (PFRA)**

To: **Cabinet**

Date: **24 May 2011**

From: **Service Director, Environment and Regulation**

Electoral division(s): **All**

Forward Plan ref: **2011/006**

Key decision: **Yes**

Purpose: **To consider two reports that the County Council is required to produce under key legislation:**

- 1. Cambridgeshire Surface Water Management Plan – Strategic Assessment Report.**
- 2. Cambridgeshire Preliminary Flood Risk Assessment (PFRA).**

Recommendation: **That Cabinet approve:**

- a) The Cambridgeshire Surface Water Management Plan Strategic Assessment Report (SWMP) as set out in Appendix 1 (included as part of the separate Cabinet Information pack)**
- b) The Cambridgeshire Preliminary Flood Risk Assessment as set out in Appendix 2. (included as part of the separate Cabinet Information pack)**
- c) Delegate authority to the Cabinet Member for Growth and Planning to make final amendments to the PFRA ahead of submission to the Environment Agency.**

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1. BACKGROUND

- 1.1 The wide scale flooding experienced during 2007 precipitated the publication of the Pitt Review which contained 92 recommendations for Government to consider. The key recommendation in the Pitt Review with respect to surface water management is recommendation 18, which states “the development of local ‘Surface Water Management Plans’, as set out in the Planning Policy Statement 25 (PPS 25) and should be coordinated by local authorities, and should provide the basis for managing all local flood risk”.
- 1.2 Furthermore, the Pitt Review recommendations were transposed into UK law in the form of the ‘Flood and Water Management Act (2010)’. The Act requires Cambridgeshire County Council as a designated ‘Lead Local Flood Authority’ (LLFA) to develop ‘Surface Water Management Plans’ (SWMPs).
- 1.3 It is important to note that as the LLFA, Cambridgeshire County Council is responsible for managing local flood risk from sources, including ordinary watercourses, surface runoff and groundwater. The Environment Agency (EA) is the competent authority for managing risk from main rivers, the sea and large raised reservoirs. Additionally, there are 63 Internal Drainage Boards (IDBs), and five District Councils in the County that play an important role in local flood risk management.
- 1.4 In addition to a duty to develop SWMPs, The LLFA has the responsibility to develop a ‘Local Flood Risk Management Strategy’ under the Flood and Water Management Act (2010). The strategy must be consistent with the ‘National Flood and Coastal Erosion Risk Management Strategy for England’ and the Regional ‘Catchment Flood Management Plans’ and ‘River Basin Plans’, and should be developed and maintained with consultation from key stakeholders, such as the public and other risk management authorities.
- 1.5 The outputs of the SWMP will contribute toward the content of Cambridgeshire’s ‘Local Flood Risk Management Strategy’. The strategy will describe and define how flood risk management activities will be carried out in the County.
- 1.6 Surface Water Management Plans (SWMP)
- 1.7 Surface Water Management Plans are referred to in PPS 25 as a tool to manage surface water flood risk on a local basis by improving and optimising coordination between relevant stakeholders. SWMPs build on ‘Strategic Flood Risk Assessments’ and provide the vehicle for local organisations to develop a shared understanding of local flood risk and establish an action plan, including setting out priorities for action, maintenance needs and links into development framework and emergency plans. They are therefore critical in the development of a ‘Local Flood Risk Management Strategy’.
- 1.8 The primary use of a SWMP is for emergency management activities, and the content of Cambridgeshire SWMP would seek to inform the work of the ‘Peterborough and Cambridgeshire Local Resilience Forum’ and associated emergency management activities in the County.

- 1.9 The Cambridgeshire SWMP does not provide a level of detail that could be used to inform decisions on the allocation of land for different types of development in 'Local Development Frameworks' (LDF) or indeed individual planning applications. However, the Cambridgeshire SWMP could be used to identify broad areas where surface water should be considered in more detail in a site based 'Flood Risk Assessment'. It may also be used as an evidence base in the development of more general planning policies to help minimise the risk of flooding by surface water, such as policies promoting Sustainable Drainage Systems (SuDS).
- 1.10 For example, PPS25 requires that new development should not increase flood risk, and requires developers to design, build and fund the maintenance of SuDS; the Cambridgeshire SWMP could support this by informing the Local Planning Authority (LPA) of areas at risk of surface water flooding and by providing an evidence base to aid the consideration of future development options.
- 1.11 The content of the SWMP would also seek to link to the work of the both the Central and Northern regions' 'Regional Flood and Coastal Committees'.
- 1.12 Department for Environment, Food and Rural Affairs (Defra) guidance on the production of SWMPs was published in March 2010 and the guidance has been used in the development of SWMPs in the County.
- 1.13 The SWMP was produced by the Cambridgeshire 'SWMP Project Board', that reports to the Cambridgeshire Flood Risk Management Partnership (CFRMP). The 'SWMP Project Board' includes representation from the County Council, Internal Drainage Boards, City and District Councils, Environment Agency, and Anglian Water Services Ltd.

2. Preliminary Flood Risk Assessment (PFRA)

- 2.1 The Flood Risk Regulations (2009) implement the European Floods Directive (2007/60/EC) that seeks to provide a consistent approach to managing flood risk across Europe, through a six year planning cycle. The approach is in four stages, and the first stage is to undertake a 'Preliminary Flood Risk Assessment (PFRA)'. Further stages include identifying Flood Risk Areas, preparing flood hazard and risk maps and preparing flood risk management plans.
- 2.2 It should be noted that the threshold for identifying 'Flood Risk Areas' was set at a 'high level' by Government to satisfy the European requirements. Where Councils have developed SWMPs, Government has advised them to use the SWMP, rather than the PRFA, to inform future flood risk management activities. This is primarily because SWMP are able to use both nationally, and locally derived data, and information. They also are able to set thresholds for 'areas vulnerable to flooding' at a locally agreed level. Conversely, the data that can be used in the development of PFRAs is limited, and relies heavily on the use of nationally generate data sets. The national data sets do not distinguish between areas that, for example, are under an artificial drainage regime – and as such may not accurately reflect the local circumstances.

- 2.3 An Environment Agency guidance document on the production of PFRAs was published in February 2011, and the guidance has been adhered to in the development of this PFRA.
- 2.4 The PFRA was also produced by the Cambridgeshire 'SWMP Project Board'.
- 2.5 Hyder Consulting (UK) limited was appointed by the County Council to develop the PFRA and SWMP.

3. REPORTS & FINDINGS

3.1 Cambridgeshire Surface Water Management Plan (SWMP)

Hyder Consulting (UK) Limited was appointed by Cambridgeshire County Council to produce a 'strategic' Surface Water Management Plan (SWMP) for Cambridgeshire. This work would enable the Council to comply with key legislation. At the same time Cambridge City Council obtained a grant from Defra to undertake a Surface Water Management Plan for an area defined as 'Cambridge and Milton'.

- 3.2 An innovative partnership approach was considered the most effective way of bringing these potentially disparate studies into a cohesive piece of work. A joint procurement exercise was undertaken to ensure best value for both of the Local Authorities.
- 3.3 This Cambridgeshire SWMP does not, therefore, report on the study area of 'Cambridge and Milton', as this area is the subject of a separate, more detailed report, commissioned by Cambridge City Council.
- 3.4 The 'Cambridge and Milton' report undertook detailed assessments of two areas that were identified as 'wetspots' or areas of significant risk of flooding – 'Cherry Hinton' and 'Kings Hedges and Arbury'. The findings of this report are due to be released shortly. The remaining 'wetspots' identified in the Cambridge and Milton study will be prioritised alongside other 'wetspots' identified in the Cambridgeshire SWMP.
- 3.5 For reference, a copy of the 'Cambridge and Milton Surface Water Management Plan' has been made available in the 2nd Floor Members lounge.
- 3.6 What are Surface Water Management Plans?
- 3.7 The overarching aim of the SWMP study is to produce a long term surface water management action plan for Cambridgeshire, once in place this action plan will be reviewed every 6 years at a minimum.
- 3.8 The objectives of the Cambridgeshire SWMP are to:
- Engage with partners and stakeholders;
 - Map historical flood incident data;
 - Map surface water influenced flooding locations;
 - Identify surface water flooding 'wetspot' areas;
 - Assess, compare and prioritise 'wetspot' areas for detailed assessment;

- Identify measures, assess options and confirm preferred options for the prioritised 'wetspots'; and
 - Make recommendations for next steps.
- 3.9 The SWMP process is formed of four principal phases; preparation; risk assessment; options; and implementation and review. This report contains the findings from the preparation stage and the strategic risk assessment phase for the entire county.
- 3.10 In the context of SWMPs, the technical guidance defines surface water flooding as:
- Surface water runoff; runoff as a result of high intensity rainfall when water is ponding or flowing over the ground surface before it enters the underground drainage network or watercourse, or cannot enter it because the network is full to capacity, thus causing flooding (known as pluvial flooding);
 - Flooding from groundwater where groundwater is defined as all water which is below the surface of the ground and in direct contact with the ground or subsoil;
 - Sewer flooding; flooding which occurs when the capacity of underground systems is exceeded due to heavy rainfall, resulting in flooding inside and outside of buildings. Note that the normal discharge of sewers and drains through outfalls may be impeded by high water levels in receiving waters as a result of wet weather or tidal conditions;
 - Flooding from any watercourse not designated as a 'Main River', including culverted watercourses which receive most of their flow from inside an urban area and perform an urban drainage function;
 - Overland flows from the urban/rural fringe entering the built-up area; and
 - Overland flows resulting from groundwater sources.
- 3.11 The SWMP aims to consider surface water flooding issues in Cambridgeshire, as above, but it does not address sewer flooding where it is occurring as a result of operational issues, i.e. blockages and equipment failure.
- 3.12 Successful completion of the Cambridgeshire SWMP will enable the County to:
- Better understand the risks and consequences of surface water flooding in Cambridgeshire so this can be shared and used as part of an evidence base for 'Local Development Frameworks', Emergency Management Planning, and the 'Local Flood Risk Management Strategy';
 - To meet or significantly assist in meeting some of the requirements on the County as LLFA under the Flood Risk Regulations (2009);
 - To meet a number of the requirements of the Flood and Water Management Act (2010) specifically in terms of developing an asset register and producing a 'Local Flood Risk Management Strategy'.
- 3.13 The process of SWMP in Cambridgeshire
- 3.14 The objectives set in 3.8 were met following the progression through a number of project stages. The first stage was data collection, involving contact with the key partner organisations to obtain the relevant information. During this stage the collation of historical and future flooding, along with information on flood receptors, and flood consequences, took place. The SWMP also

sought to identify links to other local and regional delivery plans such as 'Water Cycle Studies', 'Catchment Flood Management Plans' and 'Strategic Flood Risk Assessments', which may influence or be influenced by the SWMP. The SWMP seeks to integrate and align these plans and processes to provide a clear and robust path to delivering flood risk management objectives throughout Cambridgeshire. Information from the SWMP and future 'Local Flood Risk Management Strategy' can be used to inform any updates to these studies.

- 3.15 Once the data collection stage was complete, the surface water flooding information was analysed to identify 'wetspots' that have a history of flooding incidents or potentially could be at risk of future flooding.
- 3.16 Data came from a variety of sources including, but not limited to, historical flooding information provided by stakeholders and members of the public as part of the 'Flooding Memories' project, the Environment Agency's National Receptor Database (NRD) and Flood Maps for Surface Water (FMfSW), Information from City and District Councils, Town and Parish Councils, IDBs, the Council's Highways team, and Emergency Management Team.
- 3.17 A 'Stakeholder Engagement Plan' was developed to ensure that all the key stakeholders were engaged in the development of the SWMP. A detailed list of the organisations involved is contained within the SWMP report.
- 3.18 The prioritisation of the 'wetspots' was calculated after considering what receptors could be affected in the event of a flood. For example housing; critical infrastructure, such as a waste water treatment works; vulnerable sites, such as a residential care home; and traffic infrastructure.
- 3.19 **The outputs of SWMP in Cambridgeshire**
- 3.20 Due to its size, the Surface Water Management Plan Strategic Assessment which is Appendix 1 to this report has been given limited circulation as part of a separate Cabinet Information Pack. Hard copies of the report and its appendices are also available in the Members Lounge and from Strategic Planning, 2nd floor, Castle Court.
- 3.21 Following the strategic assessment, the 'Top Ten' 'wetspots' ranked by agreed local assessment are shown in the Table 1 below. Cambridge and Milton has been excluded from the rankings as this area has already been prioritised by Defra for a detailed assessment:

Rank	Wetspot	Council	MCA Score
1	St Neots	Huntingdonshire	7014
2	Huntingdon	Huntingdonshire	5300.9
3	St Ives	Huntingdonshire	4861
4	Ely	East Cambridgeshire	4410.7
5	Girton	South Cambridgeshire	3522.9
6	Sawtry	Huntingdonshire	3142.4
7	March	Fenland	2796.3
8	Wisbech	Fenland	2547
9	Offord Cluny	Huntingdonshire	2479.9
10	Godmanchester	Huntingdonshire	2458.8

Table 1: Top Ten Wetspots based on the local assessment criteria.

- 3.22 The 'wetspots' identified as being at higher risk or priority through the agreed local assessment criteria will then progress forward to the next stages - detailed assessment and optioneering (where options to remediate the problem are considered using a cost benefit ratio). The exact number, and time scale, for further assessments is yet to be decided and depends on local priorities and available funding.
- 3.23 Following the 'optioneering' stage, recommendations for flood alleviation or mitigation would be proposed.
- 3.33 The Environment and Sustainability Scrutiny Committee will consider the SWMP on 23 May and their comments will be reported verbally to Cabinet.

4. NEXT STEPS FOR SURFACE WATER MANAGEMENT PLAN

- 4.1 The next steps for the Cambridgeshire SWMP
- 4.2 The next steps for the SWMP include:
- Undertaking a detailed modelling and options appraisals for St Neots, and other identified priority 'wetspot' areas;
 - Identification of quick wins - identify where smaller 'wetspots' could be progressed to the intermediate stage, in order to assess the viability of inexpensive solutions to remediate flood risk;
 - assist in the preparation of a 'Local Flood Risk Management Strategy'; Please refer to Section 8 of the Surface Water Management Plan Strategic Assessment Report for the comprehensive list of next steps.

5. CAMBRIDGESHIRE PRELIMINARY FLOOD RISK ASSESSMENT

- 5.1 The Preliminary Flood Risk Assessment (PFRA) is a high level screening exercise that brings together the easily available information from a number of sources to assess local flood risk. The key stages of PFRA involve:
- Collecting information on past (historic) and future (potential) floods and flood risk;
 - Assembling the information into a Preliminary Assessment Report;
 - Identification of Flood Risk Areas by reviewing the national indicative areas produced by the Environment Agency alongside local information from the Preliminary Assessment Report.
- 5.2 The Preliminary Flood Risk Assessment (PFRA) undertaken for Cambridgeshire fulfils the Council's new obligations, as the Lead Local Flood Authority, under the requirements of the Flood Risk Regulations (2009), and provides the evidence for the second stage of identifying 'Flood Risk Areas' within Cambridgeshire.
- 5.3 The Cambridgeshire PFRA seeks to provide detail on the information used, methodology adopted and level of local flood risk in Cambridgeshire that is principally associated with surface runoff, groundwater and ordinary watercourses.

5. Threshold for Flood Risk for the PFRA

- 5.1 The Indicative Flood Risk Areas for the PFRA were defined at a national level to reflect European requirements, and is therefore different for the threshold set for the SWMP. To qualify as having a 'Flood Risk Area', for the purposes of the PFRA, a County must have an identified 'Cluster'. A cluster is five 1km grid squares that are touching, in a 3km by 3km grid. Each 1km² grid square (informally referred to as 'blue squares') has to contain:
- More than 200 people at risk or;
 - More than 1 critical service (i.e. 2 or more) or;
 - More than 20 non-residential properties at risk.
- 5.2 The clusters were ranked on the basis of the total number of people at risk, the number of critical services and the number of non-residential properties. In addition to the PFRA 'Flood Risk Areas' Government identified 'indicative Flood Risk Areas', using a threshold of 30,000 people in England.
- 5.3 At the threshold set, Cambridgeshire did not have any 'Flood Risk Areas' identified. Defra has however advised local authorities who have undertaken SWMP to use this information, rather than the outputs of a PFRA, to inform the development of its 'Local Flood Risk Management Strategy'.
- 5.4 Due to its size the Cambridgeshire Preliminary Flood Risk Assessment referred to as Appendix 2 to this report has been given limited hard copy circulation as part of the Cabinet Information Pack. Hard copies of the reports and its appendices are available in the Members Lounge and from Strategic Planning, 2nd floor, Castle Court.
- 5.5 The Environment and Sustainability Scrutiny Committee will consider the PFRA on 23 May and their comments will be reported verbally to Cabinet

6. NEXT STEPS FOR THE PRELIMINARY FLOOD RISK ASSESSMENT

- 6.1 The deadline for submission of the PFRA by the Council, to the Environment Agency, is June 2011.

7. ALIGNMENT WITH PRIORITIES AND WAYS OF WORKING

In addition to aligning with the Corporate Priorities, it should be noted that this work enables the Council to comply with new statutory duties under the Flood and Water Management Act (2010) and the Flood Risk Regulations (2009).

7.1 Supporting and protecting vulnerable people when they need it most

The report above sets out the implications for this priority in the following ways:

Cambridgeshire SWMP

- The SWMP would seek to identify areas and communities at significant risk of flooding, and suggest measures to be put in place to reduce the risk.

- The SWMP would inform emergency management plans to ensure communities are afforded the best protection practicable in the event of a flood.

Cambridgeshire PFRA

- The PFRA would seek to identify areas and communities at significant risk of flooding, although the threshold for PFRA is currently set at a level that is not applicable to Cambridgeshire.

7.2 Helping people live healthy and independent lives in their communities

The report above sets out the implications for this priority in the following ways:

Cambridgeshire SWMP

- The SWMP would seek to contribute to the communities of Cambridgeshire living a healthy life, by ensuring that flood risk in the County is identified and mitigated where possible.
- By addressing the root cause of flooding in the County, there would be an opportunity to not only reduce the physical risk to life, but also reduce emotional strain that being flooded can cause.
- The SWMP process allows the opportunity to enhance the condition of urbanised catchments helping to improve the water quality.

Cambridgeshire PFRA

- None.

7.3 Developing the local economy for the benefit of all

The report above sets out the implications for this priority in the following ways:

Cambridgeshire SWMP

- The implementation of the SWMP can help to provide significant economic benefits to the community through better preparation against potential extreme rainfall events, through targeting resources, influencing local development and emergency management and protection to people, properties and businesses in Cambridgeshire.
- By reducing the risk of flooding to critical infrastructure and transport routes in and around the County the SWMP is able to positively contribute to the local economy.

Cambridgeshire PFRA

- None.

7.4 Ways of Working

The report above sets out the implications for the following ways of working:

Cambridgeshire SWMP

- Being a genuinely local Council by ensuring that key stakeholders in flood risk management, including local communities were able to contribute

- toward the content of the SWMP.
- Making sure the right services are provided in the right way by identifying the areas at the most significant risk of flooding and targeting resources in those areas.
- Investing in prevention by identifying areas in Cambridgeshire that are at significant risk of flooding, and identify possible mitigation measures to reduce the risk of flooding in the future.
- Working together by using the skills and resources that exist in the County to collectively reduce flood risk for all. As demonstrated through the work of the Cambridgeshire Flood Risk management Partnership (CFRMP).

Cambridgeshire PFRA

- Being a genuinely local Council by ensuring that key stakeholders in flood risk management, including local communities were able to contribute toward the content of the PFRA.
- Working together by using the skills and resources that exist in the County to collectively reduce flood risk for all. As demonstrated through the work of the Cambridgeshire Flood Risk management Partnership (CFRMP).

8. SIGNIFICANT IMPLICATIONS

8.1 Resource and Performance Implications

The following bullet points set out details of significant implications identified by officers:

Cambridgeshire SWMP

Capital investment would need to be identified in order to carry out some of the remediation proposals as suggested in the detailed SWMP assessments.

Cambridgeshire PFRA

None.

8.2 Statutory, Risk and Legal Implications

Cambridgeshire SWMP

Paragraph 1.2 - details the significant implications identified by officers and detail the statutory duties placed on the Council to undertake SWMPs
Failure to do so could place the Council at significant reputational and finance risk.

Cambridgeshire PFRA

Paragraph 6.2 - details the significant implications identified by officers and detail the statutory duties placed on the Council to undertake a PFRA
Failure to do so could place the Council at significant reputational and finance risk.

8.3 Equality and Diversity Implications

None.

8.4 Engagement and Consultation

The following bullet points set out details of significant implications identified by officers:

Cambridgeshire SWMP

- In undertaking the work for the SWMP a stakeholder engagement plan was developed. The plan ensured that all of the key stakeholders engaged in flood risk management were kept informed on the project's progress.
- The Council recently completed the 'Flood Memories Project', which invited members of the public to share their flooding experiences, either via a paper or online questionnaire, and via five road shows across the county. Over 250 responses were received and these have been included within this SWMPs Flood Incident Register.

Cambridgeshire PFRA

- In undertaking the work for the PFRA a stakeholder engagement plan was developed. The plan ensured that all of the key stakeholders engaged in flood risk management were kept informed on the project's progress.

Source Documents	Location
STRATEGIC SURFACE WATER MANAGEMENT PLAN FOR CAMBRIDGESHIRE PRELIMINARY FLOOD RISK ASSESSMENT FOR CAMBRIDGESHIRE	Both documents are available from Strategic Planning, Castle Court, A Wing, and in the 2 nd Floor Members' Lounge