

Executive Summary

Introduction

A Surface Water Management Plan (SWMP) is a plan that enables local communities and different organisations to gain a better understanding of flood risk and outlines the preferred surface water management strategy at a given location. Following guidance from Defra, the SWMP was conducted as a four stage process:

Preparation > Risk Assessment > Options > Implementation

The Level 1 Strategic Flood Risk Assessment (SFRA) for Brentwood Borough Council (2011) summarised that settlements such as Brentwood and Ingatestone may contain areas which are potentially vulnerable to surface water flooding. This SFRA mapped areas where surface water was a historical issue. The purpose of a SWMP is to provide a more detailed assessment of the risk from surface water flooding.

Preparation

In accordance with Defra guidance (2010), the Brentwood Borough has been prioritised as an area considered to be at significant risk of surface water flooding and an area where partnership working is considered essential to both understand and address surface water flooding concerns. The preparation stage consists of identifying key partners within the study area as well as providing an overview of flood history.

The key partners within the SWMP were:

- Essex County Council;
- Essex Highways
- Brentwood Borough Council;
- Anglian Water; and
- The Environment Agency.

Data provided by Essex County Council has been used with historical flood data from the SFRA to determine the historical flood events that have been recorded within the Borough.

Risk Assessment

The risk assessment has been broken into two parts. The first was an intermediate assessment across the whole of Brentwood Borough to determine the overall flood risk and to identify flooding hotspots which may require further analysis. When surface water flooding hotspots were identified, further modelling was carried out to understand the flooding mechanisms and risks in more detail.

The intermediate risk assessment was based around assessing the number of people and properties at risk using JBA Consulting's Flood Risk Metrics tool (Frism). Using this information and other sources of flood data, such as historic records from the Environment Agency and Anglian Water, a number of flooding hotspots were determined. These hotspots were based around three main areas; West Horndon, Ingatestone and Brentwood Town Centre.

Following identification of flooding hotspots, detailed models were created using InfoWorks ICM. The models were run with 30, 100 and 200-year rainfall events of various rainfall durations. In addition, the effects of climate change were investigated using the 100-year event. Outputs showing maximum flood depth and hazard have been produced as well as further analysis using Frism. A number of key areas were defined which were highlighted as having significant flood risk which might benefit from mitigation options.

Options

Based on the key areas a number options / measures were determined which could be implemented to reduce flood risk. Some of these options / measures were specific to a site, with some to be considered on a Borough-scale. Unfortunately it has not been possible for recommended options to be modelled. The lack of sufficient quality data and discrepancies in the data meant that it would not be possible to accurately model the impact of proposed options.

However, for each highlighted area an indication of possible mitigation measures have been detailed with an indicative costing. This should be refined based on improvements to the model as well more detailed site specific modelling.

Implementation & Review

The document establishes a long term action plan to manage surface water and will influence future capital investment, maintenance, land-use planning, emergency planning and future developments. A number of recommendations have been highlighted that include refining the modelling approach with the inclusion of more data or where data is currently missing. In particular some areas in the vicinity of watercourses have been highlighted as warranting further hydraulic modelling. This would help to further refine the recommended mitigations measures for an area. Currently indicative costs for measures have been provided where possible to assist in prioritisation of concept solutions but it is recommended that the proposed mitigation measures are pursued with a full outline and detailed design process. This should include a cost benefit assessment and use of threshold surveys for determining avoided damages.