

Maldon and Heybridge Surface Water Management Plan

Final Report
October 2013

Prepared for



Executive Summary

This document forms the Surface Water Management Plan (SWMP) for the towns of Maldon and Heybridge, Maldon, Essex. The report outlines the predicted risk and preferred surface water management strategy for Maldon and Heybridge. In this context surface water flooding describes flooding from sewers, drains, groundwater, and runoff from land, small watercourses and ditches that occurs as a result of heavy rainfall.

A four phase approach has been undertaken in line with Defra's SWMP technical guidance documentation (2010). These are:

- Phase 1 – Preparation;
- Phase 2 – Risk Assessment;
- Phase 3 – Options; and
- Phase 4 – Implementation and Review.

Phase 1: Preparation

Phase 1 work involved the collection and review of surface water information from key stakeholders and the building of partnerships between key stakeholders responsible for local flood risk management.

Phase 2: Risk Assessment

As part of the Phase 2 Risk Assessment, direct rainfall modelling has been undertaken across the study area for five rainfall event return periods. The results of this modelling have been used to identify Local Flood Risk Zones (LFRZs) where surface water flooding affects properties, businesses and/or infrastructure. Those areas identified to be at more significant risk have been delineated into Critical Drainage Areas (CDAs) representing one or several LFRZs as well as the contributing catchment area and features that influence the predicted flood extent.

Within the study area, five (5) CDAs have been identified and are presented in the figure below. The dominant mechanisms for flooding can be broadly divided into the following categories:

- Watercourse Valleys (current and historical) - Across the study area, the areas particularly susceptible to overland flow are formed by narrow corridors associated with topographical valleys which represent the routes of 'lost' rivers;
- Topographical Low Lying Areas - are more susceptible to surface water flooding particularly where downstream obstructions impeded flow;
- Road Embankments - discrete surface water flooding locations along the upstream side of the raised road embankments;
- Topographical Low Points – areas which are at topographical low points throughout the district which result in small, discrete areas of deep surface water ponding;
- Sewer Flood Risk – areas where extensive and deep surface water flooding is likely to be the influence of sewer flooding mechanisms alongside pluvial and groundwater sources; and
- Fluvial / Tidal Flood Risk - areas where extensive and deep surface water flooding is likely to be the influence of fluvial and tidal flooding mechanisms (alongside pluvial, groundwater and sewer flooding sources).

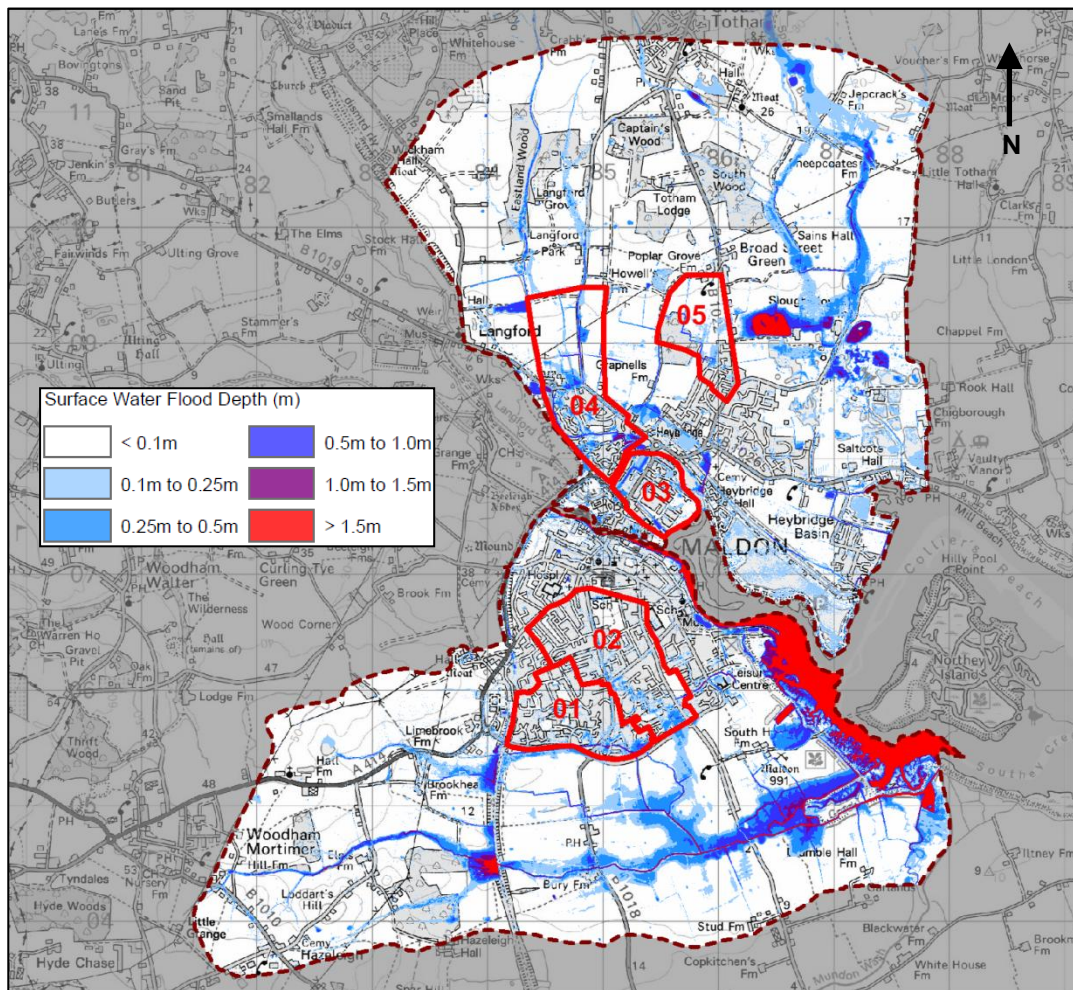


Figure i: Critical Drainage Areas with Predicted 1 in 100 year Surface Water Flood Event Depths

Analysis of the number of properties at risk of flooding has been undertaken for the rainfall event with a 1 in 100 probability of occurrence in any given year. A review of the results predicts that 772 properties in the study area could be at risk of surface water flooding of a depth greater than 0.1m during a 100 year rainfall event (above an assumed 0.1m building threshold), refer to Table i below.

Table i. Predicted Flooded Properties Summary – 1 in 100 Year Flood Event. Depths > 0.1m

Administration Boundary	Infrastructure	Households		Commercial / Industrial	Other (Unclassified Landuse)	Total
		Non-Deprived	Deprived			
Maldon and Heybridge	2	537	0	37	270	846

Phase 3: Options Assessment

There are a number of opportunities for measures to be implemented across the catchment to reduce the impact of surface water flooding. Ongoing maintenance of the drainage network and small scale improvements are already undertaken as part of normal operation within the study area.

It is important to recognise that flooding within the catchment is not confined to just the CDAs, and therefore, there are opportunities for generic measures to be implemented through the establishment of a policy position on issues including the widespread use of water conservation measures such as water butts and rainwater harvesting technology, use of swales, permeable paving, bioretention car park pods and green roofs. In addition, there are study area wide opportunities to raise community awareness.

For each of the CDAs identified within the study area, site-specific measures have been identified that could be considered to help reduce the risk of surface water flooding. These measures were subsequently short listed to identify a potential preferred option for each CDA.

Pluvial modelling undertaken as part of the SWMP has identified that flooding is heavily influenced by existing and historic watercourse valleys, and impacts a number of regionally important infrastructure assets. It is recommended that in the short-to-medium term Maldon District and Essex County Councils:

- Engage with residents regarding the flood risk in their areas, to make them aware of their responsibilities for property drainage (especially in the CDAs) and steps that can be taken to improve flood resilience;
- Provide information to residents, to inform them of measures that can be taken to mitigate surface water flooding to/around their property;
- Prepare and implement a communication strategy to effectively communicate and raise awareness of surface water flood risk to different audiences using a clearly defined process for internal and external communication with stakeholders and the public; and
- Improve maintenance regimes, and target those areas identified to regularly flood or known to have blocked gullies / culverts / watercourses.

Phase 4 Implementation & Review

Phase 4 establishes a long-term Action Plan for ECC and other Risk Management Authorities to assist in their roles under the FWMA 2010 to lead in the management of surface water flood risk across the catchment. The purpose of the Action Plan is to:

- Outline the actions required to implement the preferred options identified in Phase 3;
- Identify the partners or stakeholders responsible for implementing the action;
- Provide an indication of the priority of the actions and a timescale for delivery; and
- Outline actions required to meet the requirements of ECC and other Risk Management Authorities as delegated by Essex County Council (LLFA) under the FWMA 2010.

The SWMP Action Plan is a 'living' document, and as such, should be reviewed and updated regularly, particularly following the occurrence of a surface water flood event, when additional data or modelling becomes available, following the outcome of investment decisions by partners and following any additional major development or changes in the catchment which may influence the surface water flood risk within the District.