

Preliminary flood risk assessment: Hertfordshire County Council

This addendum by Hertfordshire County Council (2017) updates the council's preliminary flood risk assessment report published in 2011. Read the addendum in conjunction with the [preliminary assessment report](#).

Addendum

The preliminary flood risk assessment (PFRA) and flood risk areas (FRAs) for Hertfordshire County Council were reviewed during 2017, using all relevant current flood risk data and information.

Changes to the assessment of risk since the preliminary assessment report was published in 2011 are described in the statements in this addendum.

Past flood risk

The Hertfordshire lead local flood authority's understanding of significant flood risk in Hertfordshire has changed as a result of the consequences of the floods that have occurred since 2011. Four major flood events have occurred in Hertfordshire since 2011; these being

- 1) Winter 2013-2014, encompassing February 2014,
- 2) July 2015,
- 3) June 2016 and
- 4) September 2016.

Flooding in the three most recent events can be attributed to high intensity summer storms, considered to be exceptional. Whilst flooding in February 2014 was the result of a long period of wet weather, creating antecedent conditions which meant that an unexceptional storm caused flooding.

The lead local flood authority (LLFA) has learnt that overall, the risk of flooding from surface water (RoFfSW) map predicts flooding well. This has been confirmed where known flood incidents correspond with the RoFfSW map. However, there are some areas of the RoFfSW map which either under or over predict flooding, or incorrectly predict flooding. With both of these points in mind, flooding that has occurred in Hertfordshire, has meant that the Hertfordshire LLFA's understanding of the RoFfSW map has increased significantly, for example:

1. Data: For more rural areas of Hertfordshire, the digital terrain model (DTM) used in the updated flood map for surface water (uFMfSW) and subsequent RoFfSW use NEXTMap data. Whilst the use of NEXTMap data is not an issue in unpopulated areas, it can be an issue where a rural flowpath is flowing into an urban one, or where part of an urban area is covered by NEXTMap data. One example of this is Robbery Bottom Lane, Welwyn, where the discrepancy between the NEXTMap data and topographical surveyed points was +- 1-2m.
2. The storm duration over which the JFlow+ model and the subsequent RoFfSW map results have been obtained. As the maximum extent over three different storm durations was used, we can't be sure where areas shown as at flood risk on the RoFfSW are under or over predicting. A few areas have shown discrepancies with the RoFfSW map. This also means that the worst case scenario is not necessarily the conditions under which the worst case scenario occurs, e.g. one 6 hr storm and one 3 hr storm could create different extents.

The RoFfSW maps were compared to the flood maps produced for the Surface Water Management Plans (SWMPs). This showed that overall the SWMP maps are similar to the

RoFfSW maps, with some differences. These being where the SWMP maps have improved understanding, such as when the uFMfSW DTM did not represent a substantial road cutting and embankment from a recent bypass road, which when included in the model, changed the surface water floodmap. Overall, however, the RoFfSW map and the SWMP hotspot floodmaps are broadly similar.

All of the above has increased the Hertfordshire LLFA's understanding of flood risk in the county.

Future flood risk

The Hertfordshire LLFA's understanding of flood risk in Hertfordshire has changed since 2011. Much knowledge has been gained on the potential consequences of future floods, in addition to the impact of climate change and long term developments.

With the overall aim of increasing the LLFA's understanding of future flood risk in Hertfordshire, the LLFA undertakes four main types of studies:

- 1) Section 19¹ Flood Investigations,
- 2) Initial Assessments,
- 3) Options and Feasibility Studies/Hydraulic Modelling Studies,
- 4) Surface Water Management Plans.

The LLFA also undertakes partnership working with other LLFAs, other RMAs and other parts of the County Council organisation; these studies can encompass any aspect of flood risk.

Completed studies or near completed studies that the LLFA has undertaken include:

- 12 Section 19 Flood Investigations. 10 published and 6 unpublished.
- Travellers Lane, Hatfield, Hydraulic Modelling Study.
- Harefield Road, Rickmansworth Asset and Hydraulic Modelling Study.
- Kimpton Hydraulic Modelling Study.
- Little Wymondley Hydraulic Modelling Study.
- Robbery Bottom Lane, Welwyn Options and Feasibility Study.
- Redbourn Options and Feasibility Study.
- Long Marston Hydraulic Modelling Study.
- Dacorum Borough Surface Water Management Plan; including hydraulic modelling of four hotspots.
- North Hertfordshire District Surface Water Management Plan; including hydraulic modelling of six hotspots.
- East Hertfordshire District Surface Water Management Plan; including hydraulic modelling on five hotspots.
- Broxbourne Borough Surface Water Management Plan; including hydraulic modelling on five hotspots.
- Marshmoor Lane / Foxes Lane, Welham Green, Watercourse Improvement and Partnership Study.

Current and future programmed studies for this year (2017) include:

- 18 Detailed Section 19 Flood Investigations from June 2016 and September 2016 flooding across the county.
- Darkes Lane, Potters Bar, Hydraulic Modelling Study.

¹ An investigation into a flooding event that a lead local flood authority (LLFA) is required to carry out under Section 19 of the [Flood and Water Management Act 2010](#), and according to [the LLFA's local flood risk management strategy](#)

- Datchworth, Hydraulic Modelling Study.
- Knebworth Options and Feasibility Study.
- Pix Brook, Letchworth Garden City, Hydraulic Modelling Study.

The first three types of studies undertaken by the Hertfordshire LLFA involve the LLFA looking at previous historical floods and being guided by them on where we prioritise our work. This ensures we understand the future flood risk at those already at risk sites. The final type of study, SWMPs, build on looking at those already at risk sites; but also seek to review future potential at risk sites, which may or may not have flooded previously. The SWMPs provide a first stage look at identifying flood risk areas (called hotspots) in each district of Hertfordshire. A SWMP outlines the preferred surface water management strategy within a district/borough, and as such is required to look at future flood risk for that district/borough. SWMPs also identify any at risk sites which may have been allocated for future development, by reviewing the Local Planning Authorities (LPAs) Local Plan.

All these studies increase the LLFA's understanding of flood risk by:

- Confirming the flood mechanism for an at risk site, by analysing Hertfordshire residents flooding questionnaires and on site surveys.
- Confirming the flood mechanism for an at risk site by undertaking hydraulic modelling. Including more detail in the modelling than that in the RoFfSW modelling. Such as topographical survey of kerb heights, spot heights, fences, properties boundaries and property threshold levels. As well as the inclusion of surface water sewer networks (including surveying and tracing where needed), ordinary watercourses and Main Rivers, where appropriate.
- Running different scenarios through the hydraulic model including for example, the do minimum and do nothing situation, as well as climate change analysis, to better understand how flood risk could change at an at risk site.
- Displaying spatially areas at risk of surface water flooding; including modelled/mapped and point data (e.g. the flood incident record).
- Understanding of any options to mitigate flood risk and how they could be implemented in an at risk area. Including analysis of cost-benefit and if that option would attract central government funding.
- Understanding if property resilience measures are the most appropriate option for a flood risk site.

In terms of long term development, the sustainable urban drainage systems (SuDS) team of the Hertfordshire LLFA follow national guidance, and also have their own guidance (based on published information e.g. Ciria manuals) on how developers should implement SuDS in Hertfordshire. The team provide recommendations to the LPA on reviewing major planning applications and for those applications on flood risk sites. Whilst the final decision rests with the LPA, the SuDS team follow this strict guidance to help ensure new development does not increase flood risk in Hertfordshire.

Future floods, the impact of climate change and long term development all have the potential to increase flood risk in Hertfordshire. Our understanding, brought about through undertaking multiple studies has increased significantly since 2011. These studies, together with future ones, will ensure that the Hertfordshire LLFA will be able to do as much as possible, within the bounds of available resources, to help mitigate this impact.

Improved surface water modelling has provided a more accurate estimate of risk. In particular, a detailed surface water model for Upper Weston has estimated a reduction in the number of properties at risk.

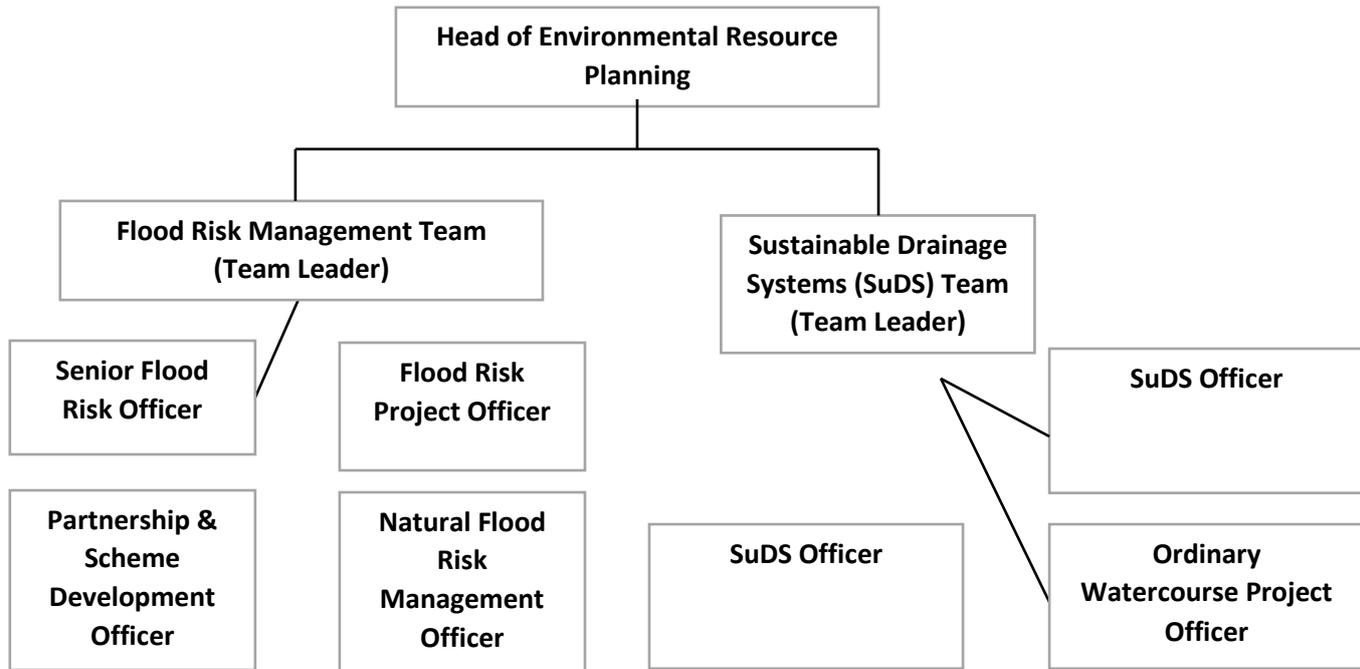
The consequence of climate change factors has been assessed and climate change factors are included as part of the assessment of major development proposals.

Flood risk areas (FRAs)

No FRAs have been identified within Hertfordshire, for the purposes of the Flood Risk Regulations (2009) 2nd planning cycle.

Other changes

The structure of the Hertfordshire LLFA's flood risk management team has changed greatly since 2011. In 2011, there was only one member of the team; the team has now expanded to eight, covering the roles shown in the organogram below.



Hertfordshire County Council
December 2017