# NOTE TO FILE

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| JBA Project Code | 2013s7018 |
| Contract | St Helens SFRA |
| Client | St Helens Council |
| Day, Date and Time | 22 January 2014 |
| Author | Mike Williamson |
| Subject | Proposed Critical Drainage Areas |

## 1 Introduction

One of the requirements of the SFRA is to identify the possible locations of Critical Drainage Areas (CDAs) to help inform development policies and the potential need for a detailed SWMP in the Borough. For the purpose of this SFRA a CDA is considered to be an area contributing surface water runoff, either as direct overland flow or from the existing sewer network, which causes flooding at locations within that area. The risk of flooding is thereby confirmed, either by historical evidence, through an assessment of the updated Flood Map for Surface Water or through 'on the ground' local evidence provided by the Council.

The Council should discuss the final designation of CDAs with the Environment Agency, based on the outputs from this SFRA and the Council's local knowledge on surface water flood risk. There may be areas identified as having critical drainage issues as a result of this methodology, whereas historic evidence or local knowledge may suggest otherwise.

## 2 Methodology

The criteria for the proposal of CDAs is summarised below:

- Areas at surface water risk, according to the uFMfSW, that are within Flood Zone 1
- Areas with clusters of allocated new development within Flood Zone 1 that are at risk from surface water flooding – within the 1 in 100 year uFMfSW outline
- Areas with clusters of current buildings (using National Receptor Database (NRD) intersected with MasterMap properties) within Flood Zone 1 that are at risk from surface water flooding

### 2.1 GIS Processing

The following steps were carried out to enable the Council to delineate their proposed CDAs:

1. Erasing the 1 in 100 year uFMfSW outline by Flood Zone 2. This produced an outline of the 1 in 100 year uFMfSW event within Flood Zone 1
2. All development sites that were at risk from the 1 in 100 year uFMfSW outline but had no fluvial risk were queried
3. All NRD property points of type 'dwelling' were intersected with the MasterMap building polygons. The intersected buildings were then queried against the outline output from Step 1 to produce a layer of dwellings at risk from the 1 in 100 surface water event, not at fluvial risk. The NRD dwelling points that intersected the buildings at risk were queried in order to carry out the density analysis in the next step
4. The centroids of the allocation polygons that fell within the uFMfSW 100 year outline but were not at fluvial risk were computed to create a point shapefile of the allocated sites at risk
5. Spatial analysis, of the NRD points at surface water risk from Step 3 and the allocation centroids at surface water risk from Step 4 (AllPoints_uFMfSW100yr_NoFluvial.tab), was carried out using a 'point density' calculation tool in ArcGIS. This produced a cluster hotspot grid (Figure 1) from which CDAs could be digitised (Property Point Density1.tif)
6. The outputs are shown on Figure 1 where the red areas show where the highest number of properties and allocations are at risk from the 1 in 100 year surface water flood event in Flood Zone 1. From this the Council can draw up proposed CDAs based on the risk clustering, their local knowledge and historical surface water flooding evidence using the enclosed GIS files

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**Figure 1 – Risk Clustering for Proposed CDAs**