Rainfall on Grid Output Filtering

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This fact sheet describes the steps that should be taken to convert the output from "rainfall on grid" modelling to a more suitable format. This method has been adopted by Sunshine Coast Council to map overland flow paths throughout the region.

Rainfall on grid modelling has many advantages, including the ability to automatically determine local overland flow paths. However, due to the nature of the model input, the entire study area can be shown to be inundated, and ponding of isolated pockets can occur. This reduces the practical value of the model output. Filtering is therefore required in order to make the data more usable.

Filter Process

Sunshine Coast Council has trialled various filters over a number of study areas, with and without underground drainage. The aim of the output filtering was to:

- produce output that could identify the main overland flow paths;
- remove areas of shallow sheet flow;
- remove small, isolated ponded areas; and
- ensure that storage areas with reasonable depths were retained.

Simple filter methods, such as removing areas with depths below a certain value, are not appropriate. They often produce output that consists of disconnected ponding and/or missed critical flow paths.

The following filter is the result of Council's investigations. It consists of the following steps:

Step 1.   Remove areas where the depth is less than 0.01m AND the depth-velocity (dV) product is less than $0.125 \text{ m}^2/\text{s}$.

Step 2.   Remove areas where the dV product is less than $0.02 \text{ m}^2/\text{s}$.

Step 3.   Retain areas where depth is greater than 0.3 metres, even if the dV product is low.

Step 4.   Remove islands less than 500m^2.

No pre-filtering of results should be conducted before the filtering tool is applied, i.e. the base output data used in filtering should cover the entire study area.

Results Example

An example of the resultant inundation extent after filtering has been applied is provided below in Figure 1.
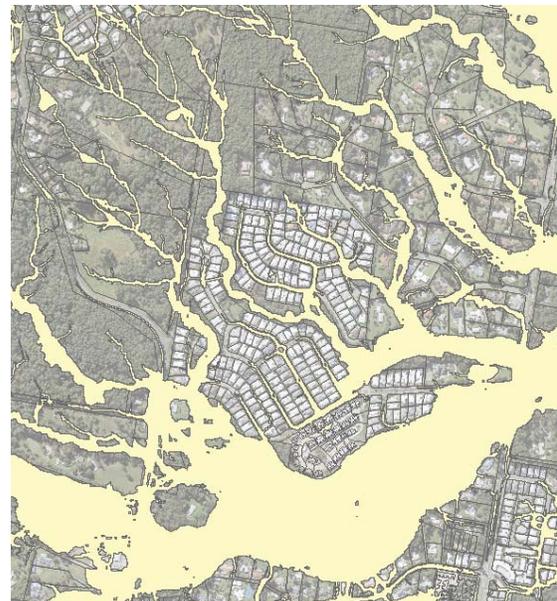

Figure 1 Example of Filter Output

This filtering method will be adopted as the Council default for processing rainfall on grid output data. However, it should be noted that individual studies, due to specific catchment characteristics, may require the default filtering method to be further refined in order to adequately identify flow paths.