West Gippsland
Catchment Management Authority

Amendments to Glengarry Eaglehawk Flood Study (2021)

May 2026

Document Details

Project name	Amendment to Glengarry Eaglehawk Flood Study 2021
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1. Introduction

During the public consultation for planning scheme amendment C131 multiple landowners in Glengarry raised concerns around the extent of flooding estimated by the Glengarry Eaglehawk Flood Study 2021.

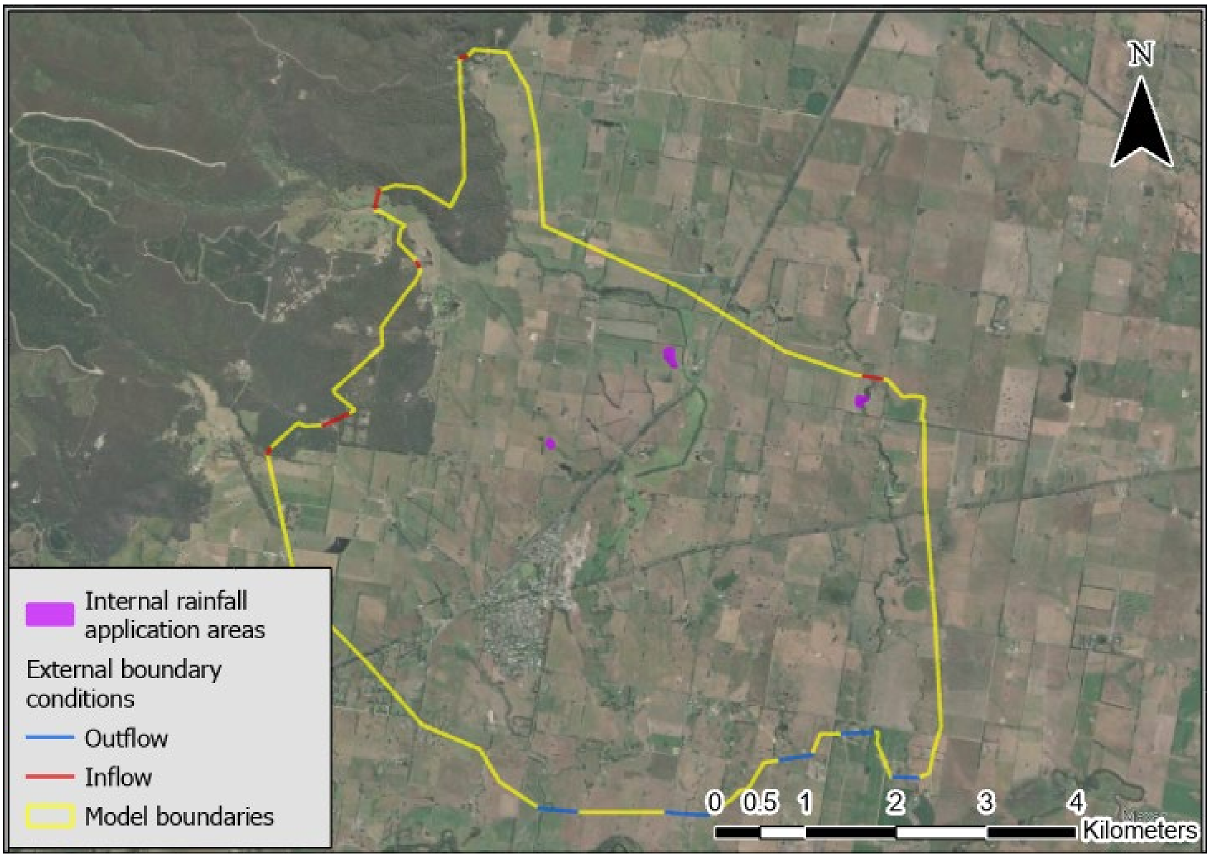
From these concerns, West Gippsland Catchment Management Authority conducted a review of the modelling of Glengarry and found that there was an issue with how the internal rainfall flows had been modelled in the hydraulic model.

The West Gippsland Catchment Management Authority then changed the technique used to model the rainfall and re-ran the model.

2. Initial model issue

The initial model used two different methods for representing rainfall within the catchment. These where:

- External boundary lines (shown in red).
- Internal rainfall polygons (shown in purple).



The issues with this method are discussed below.

2.1. Distribution of rainfall

The flow generated from rainfall falling within the hydraulic model boundaries were applied using TUFLOW's 2D Source over Area polygons.

The amount of Source of Area polygons used within the initial model were too few for the area they were representing. The rainfall generated within the hydraulic model area was being concentrated to only 4 small areas of the model. This in combination with the poor positioning of the Source of Area polygons (discussed below) resulted in flooding being overestimated in some areas and underestimated in others.

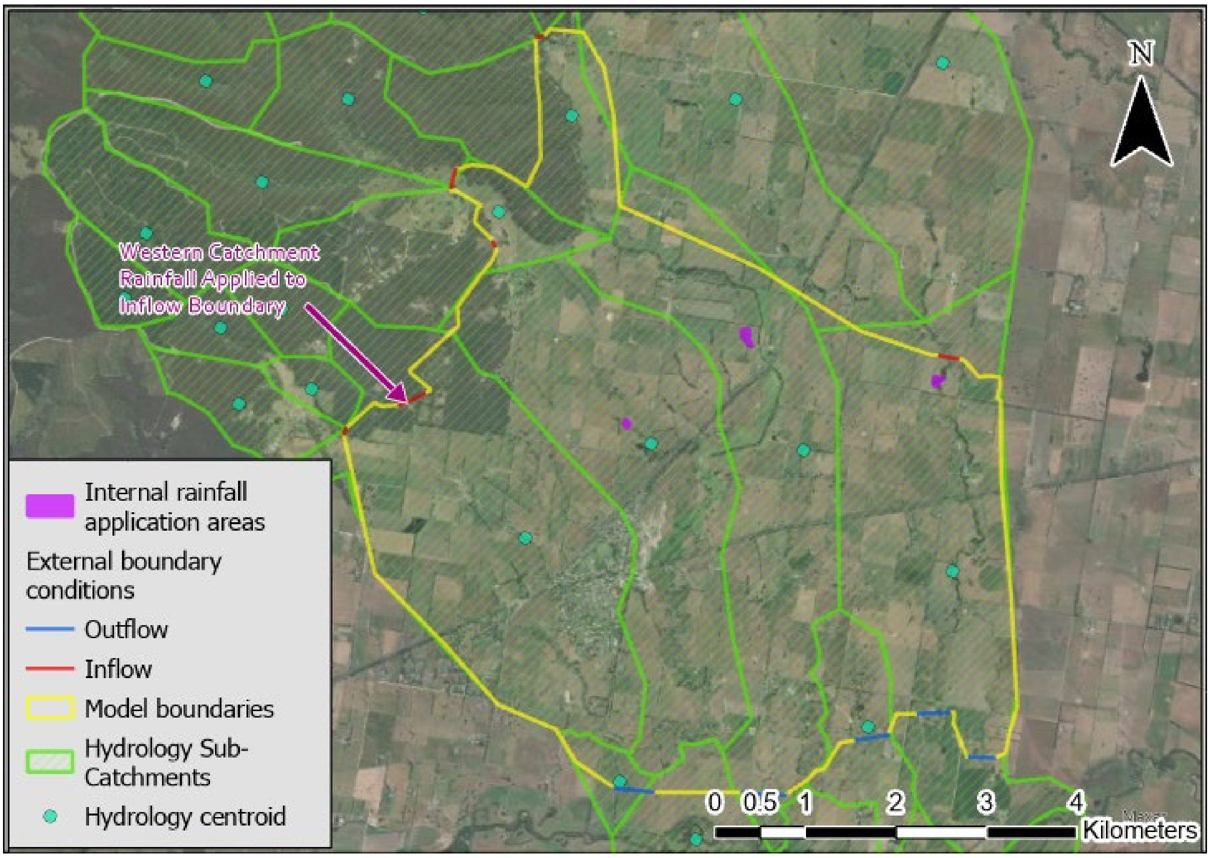
The rainfall needed to be better distributed, either by:

- Dividing the sub-catchment further, each with their own application area.
- Or, using rain on grid to apply the rainfall evenly across the entire model boundary (which is the method this amendment used).

2.2. Position of rainfall application areas

The internal rainfall Source over Area polygons were positioned too far up the sub-catchments. This overestimated the flood extent in the higher catchment due to a higher volume of water being present at top of the catchment.

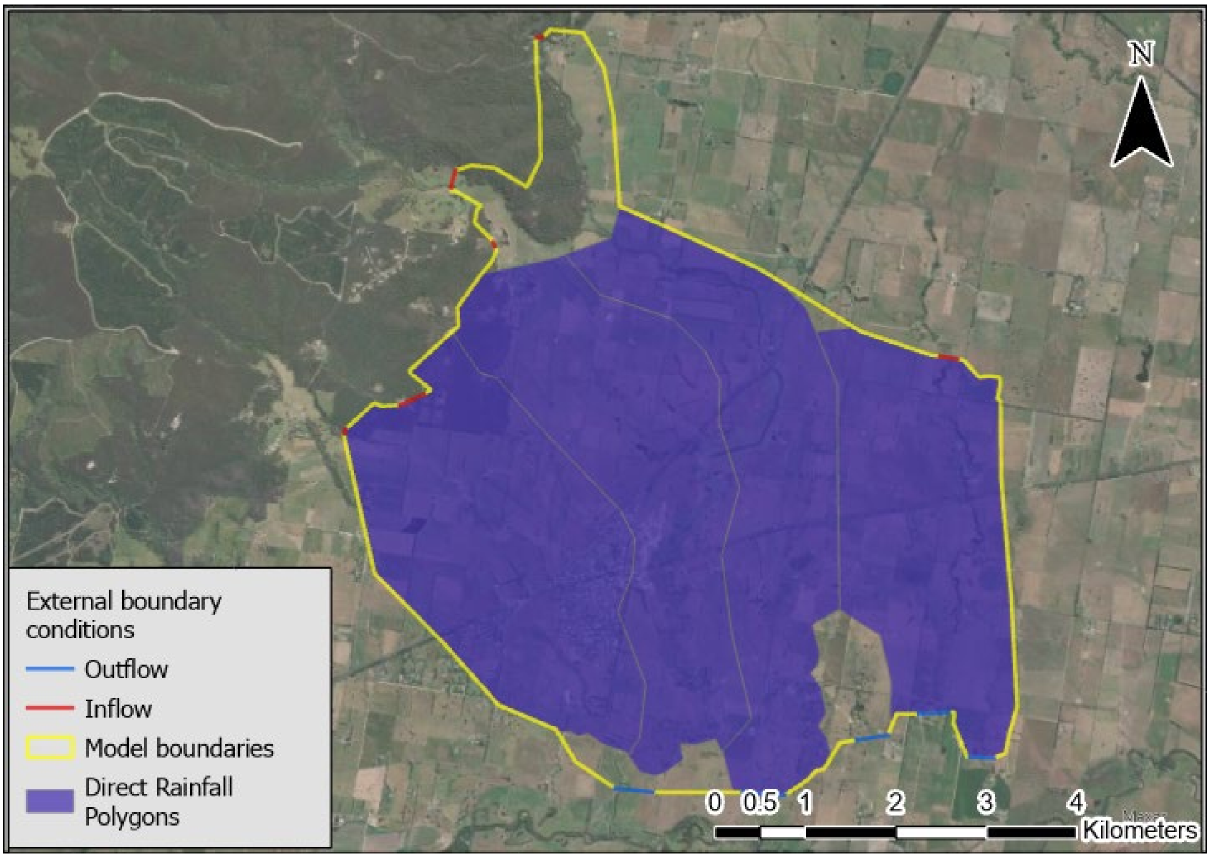
A better practice would have been to position the rainfall application areas closer to the centroid of the sub-catchments, as this is how the hydrology model calculated the flow.



3. Changes to the model

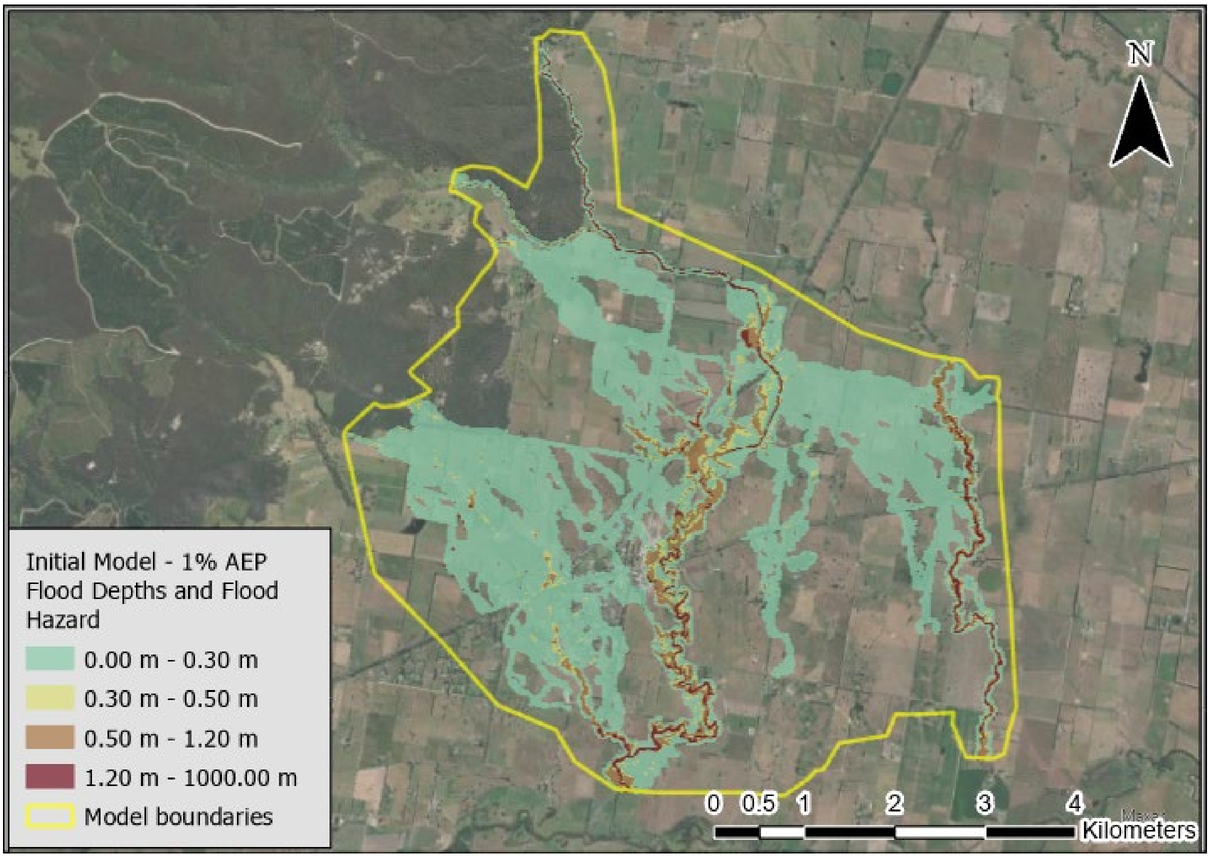
The internal rainfall application areas were replaced by Direct Rainfall polygons. This feature applies rainfall depths directly to each 2 metre by 2 metre cell in the hydraulic model grid. This is closer to how rainfall works in real life.

The external inflows shown in red below were kept as there were issues with these.

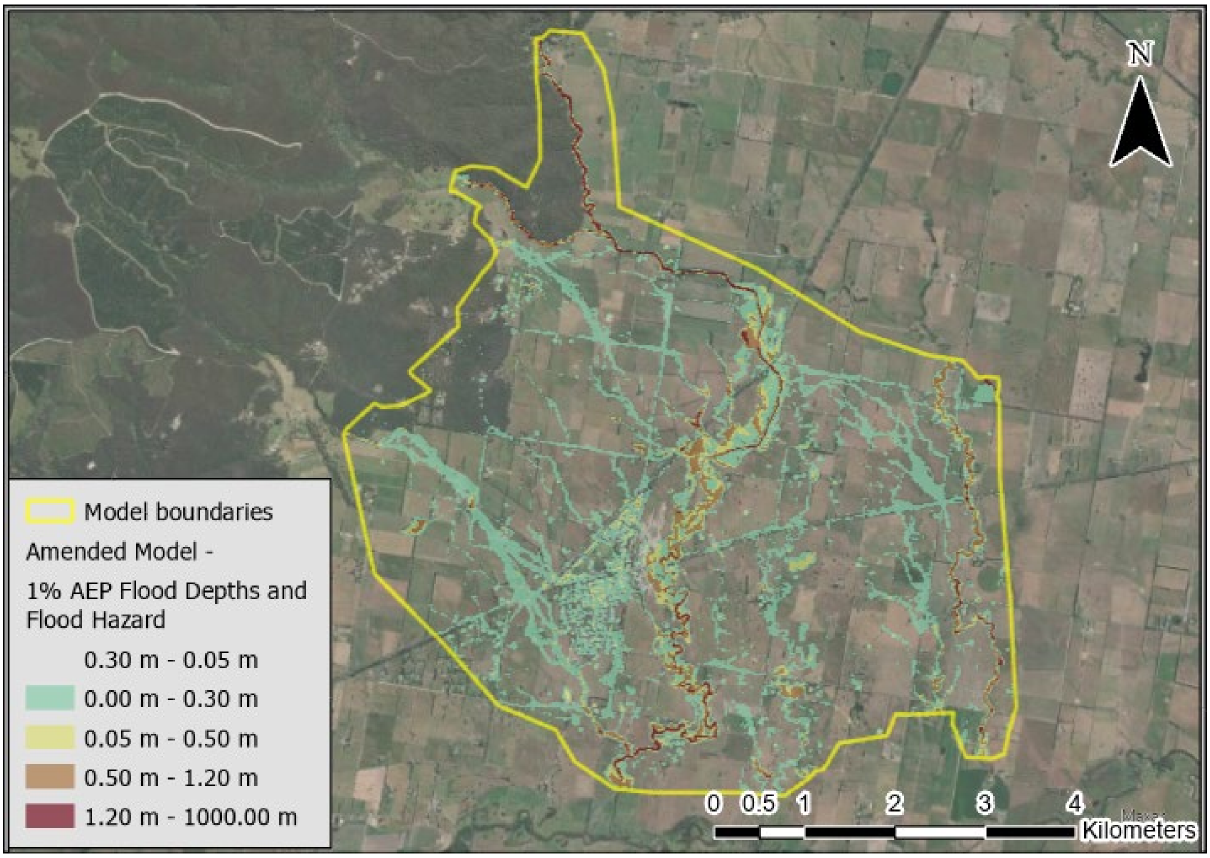


4. Results

The original 1% AEP flood depth results are shown below:



The amended 1% AEP flood depth results are shown below:



The amended results are generally less extensive and more flow paths active.

5. References

Ball, J., Babister, M., Nathan, R., Weeks, W., Weinmann, E., Retallick, M., . . . (Editors). (2016). *Australian Rainfall and Runoff: A Guide to Flood Estimation.* Commonwealth of Australia: Engineers Australia. Retrieved 2018, from http://book.arr.org.au.s3-website-ap-southeast-2.amazonaws.com/

DELWP. (2016). *Victorian Floodplain Management Strategy.* Victoria: The State of Victoria Department of Environment, Land, Water and Planning.

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