Fitzroy Darlot Flood Overlay Methodology

1. Raster Calculation and Polygonization

Raster calculation for Floodway is undertaken by filtering 1% AEP flood depth grid values equal or greater than 0.5m and 1% AEP flood hazard (depth*velocity) equal or greater than $0.4m^2/s$.

The filtered results from 1%AEP flood depth and 1%AEP flood hazard (depth*velocity) are then polygonised individually, and then enveloped together to form initial Floodway Overlay (FO) vector layer.

The LSIO vector layer is derived from 1%AEP flood depth grids by direct polygonization without any clipping or raster calculation.

2. FME Workbench Automatic Manipulation

Input: 1. Polygonised Floodway Overlay (FO); 2. Polygonised LSIO; 3. Parcel Polygons (Cadastre)

Output: 1. Smoothed Floodway Overlay (FO); 2. Smoothed LSIO (Clipped out Floodway Overlay overlap)

In the process of the FME tool, holes under 1000m2 are filled and the jagged edges in both layers are smoothed out using McMaster Smoothing Algorithm. Additionally, flood water overlaps of less than 5 m^2 in any parcel polygons are removed.

3. Additional Inspection of "Holes" and "Islands"

After processing in FME Workbench, the FO and LSIO layers are further processed in QGIS workspace. Due to algorithm iteration in FME Workbench, some small pixel-shaped are retained in processed FO and LSIO layers. Such small "holes" of 1000m2 or less in FO are again inspected and removed in QGIS. Similarly, "islands" of 1000m2 or less in LSIO are inspected and removed.

4. Re-generalisation of Flood Overlay Boundary

To further improve the smoothed boundary by the FME tool, Boyle's Forward-Looking Algorithm with the parameter of "Look Ahead" as value of 5 is used to smooth flood overlay boundary further which is conducted using "Generalizer" plugin in QGIS. Figures 1 and 2 show the FME-processed Polygons (pink lines) and re-smoothed with curly boundaries (blue lines).

Figure 1	Figure 2
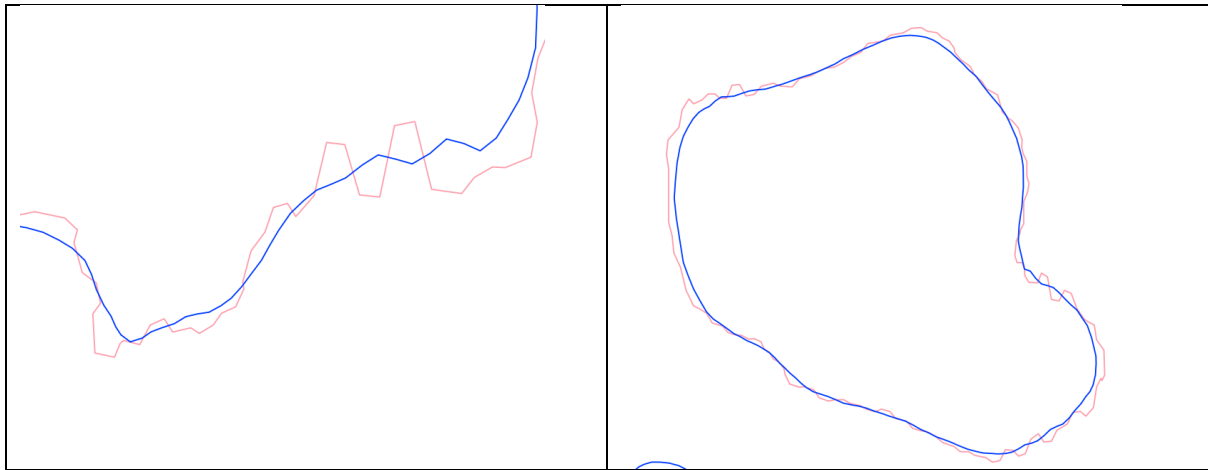
5. Manual Inspection of Slivers of LSIO Overlapping FO Boundaries

The FO boundary is manually adjusted to the LSIO boundary where the distance between the edge of the FO and the edge of the LSIO is 2m or less. This process was undertaken for the Heywood area only.

6. Finalisation of FO and LSIO

FO and LSIO are both disaggregated to individual polygonal features. And the geometry validity is inspected and fixed in each feature. Overlapping FO is clipped out from LSIO to generate refine LSIO layer. Attributes are further refined with only values of "ID", "Type" and "Area".

7. Council and Glenelg Hopkins CMA review and final adjustments to the data

Council and Glenelg Hopkins CMA met via TEAMs to review the mapping post the delineation completed by Catchment Simulation Solutions and an automatic processing tool/script performed using FME (Feature Manipulation Engine). Edits made were to tidy up areas where there were areas of minor overlap of overlays across property boundaries as well as ensuring that the floodplain joined up and appropriately represented floodplain flow connections. Some areas, where the mapping boundaries were arbitrarily applied to constrain mapping costs were rounded off. These areas were edited to create a clean-cut boundary.