



Upper Broken and Boosey Creek Regional Flood Study



HARC Team

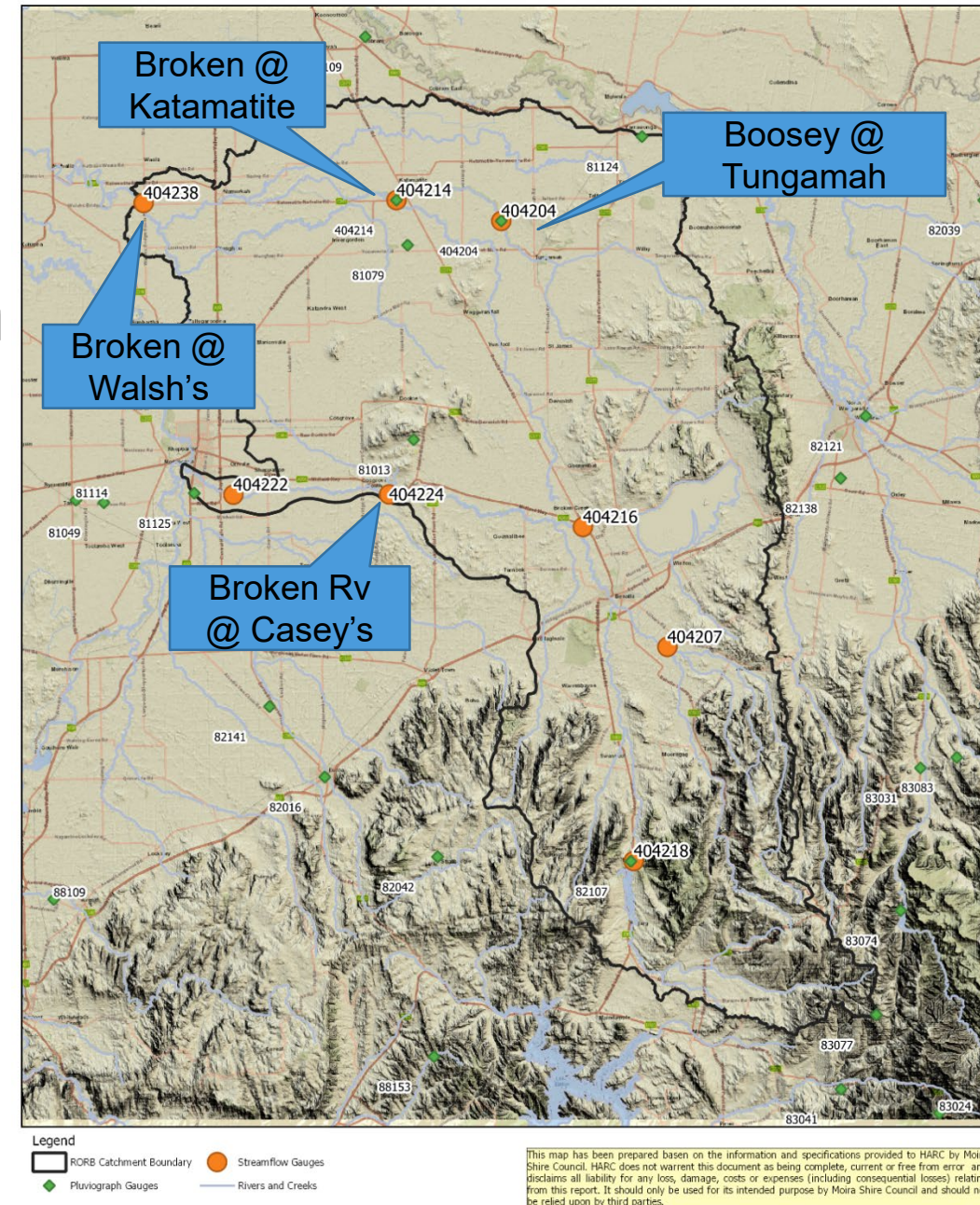
- Project Director – David Stephens
- Project Manager – Andrew Northfield
- Modelling – Tim Craig
- Flood Intelligence – Michael Cawood

Overview of Methodology

- Collation of Available Information
- Hydrological Analysis
- Hydraulic Analysis
- Consultation
- Flood Behaviour and Intelligence Outputs
- Reporting

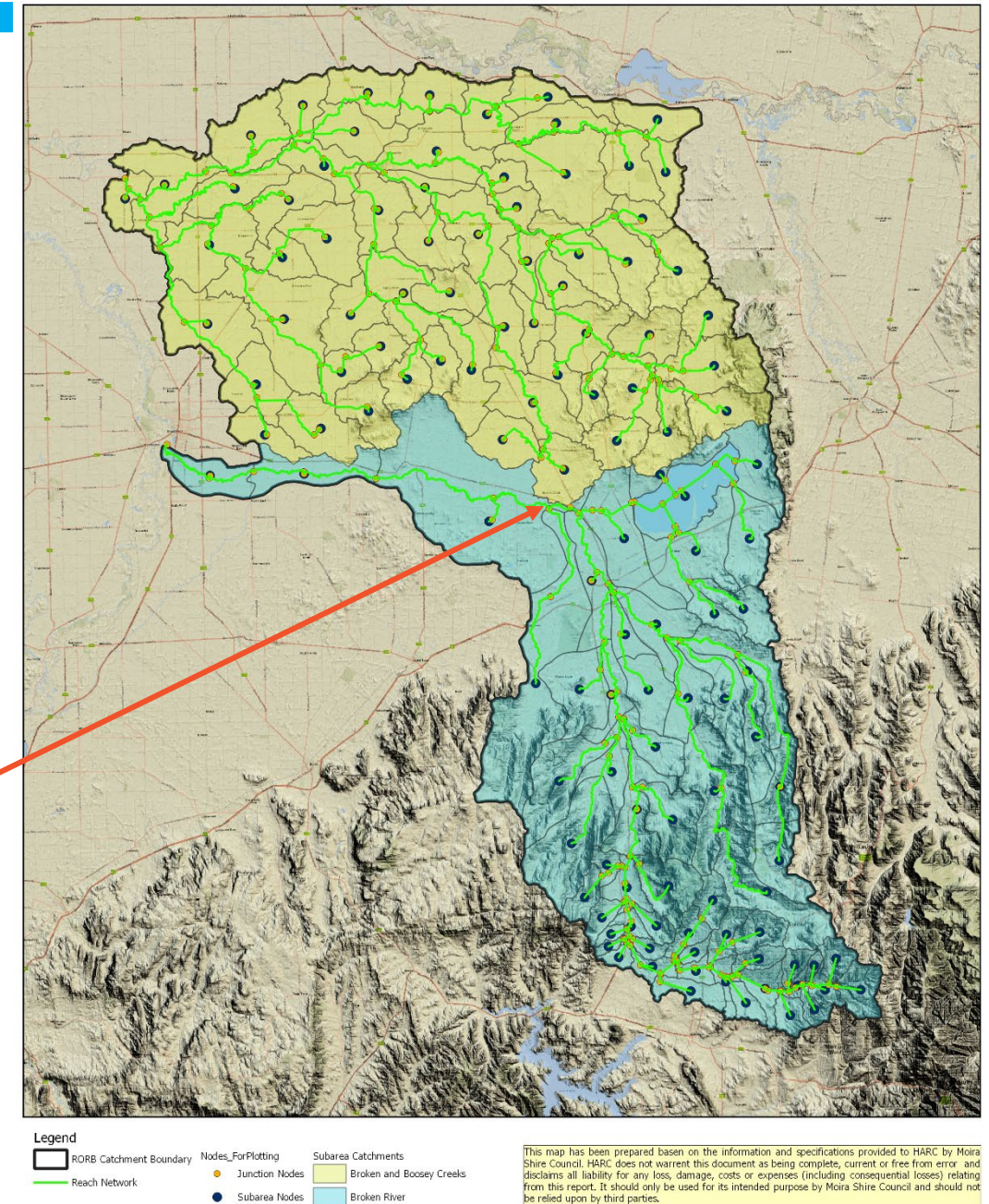
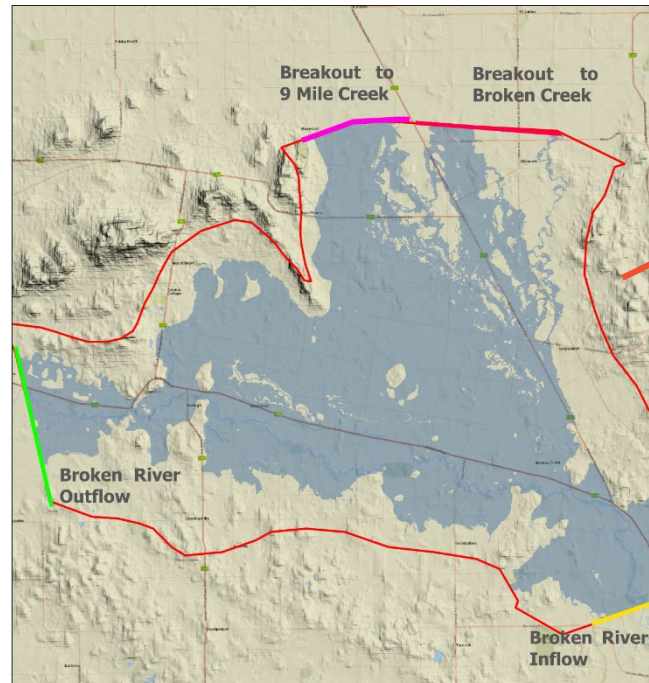
Work Undertaken so Far

- Collation of Available Information
 - Streamflow data
 - Rainfall (pluviographs and daily)
 - Topographical (LIDAR)
 - Previous studies



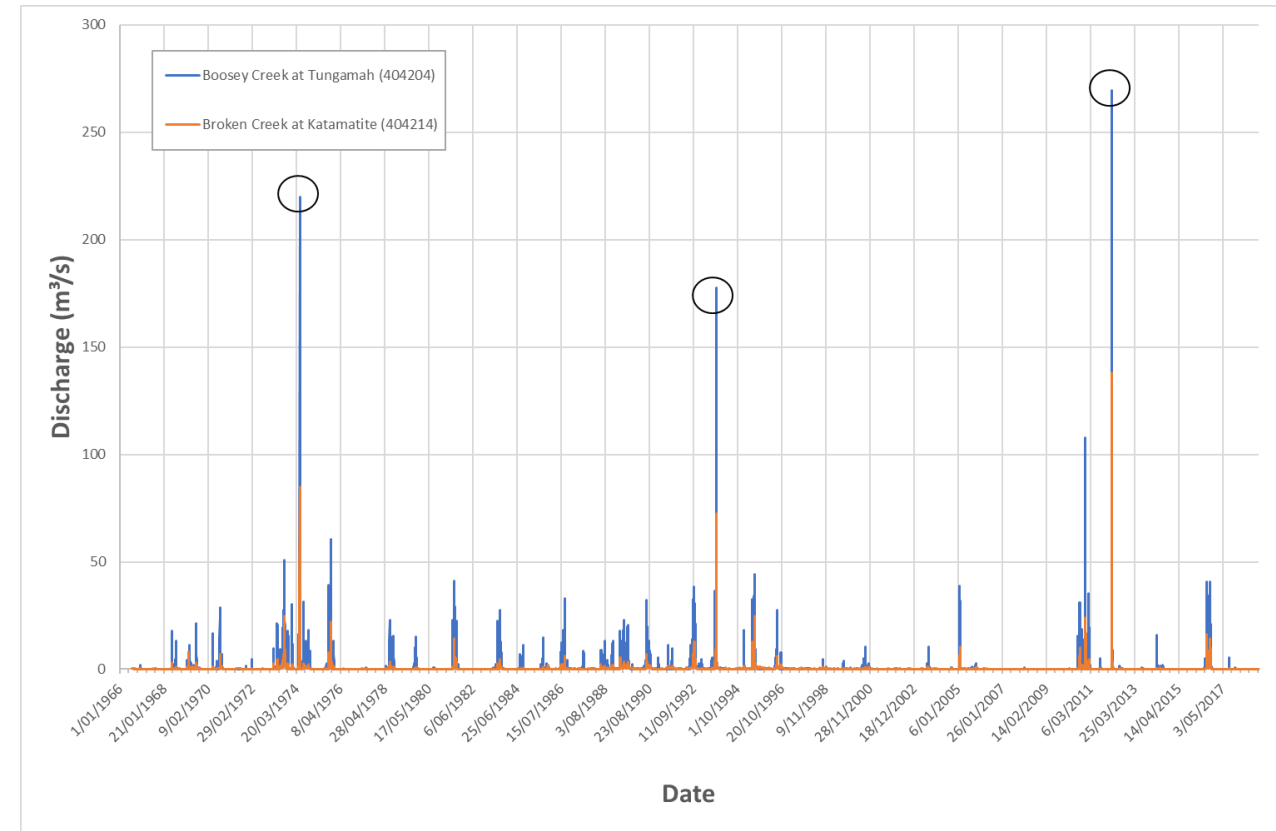
Work Undertaken so Far

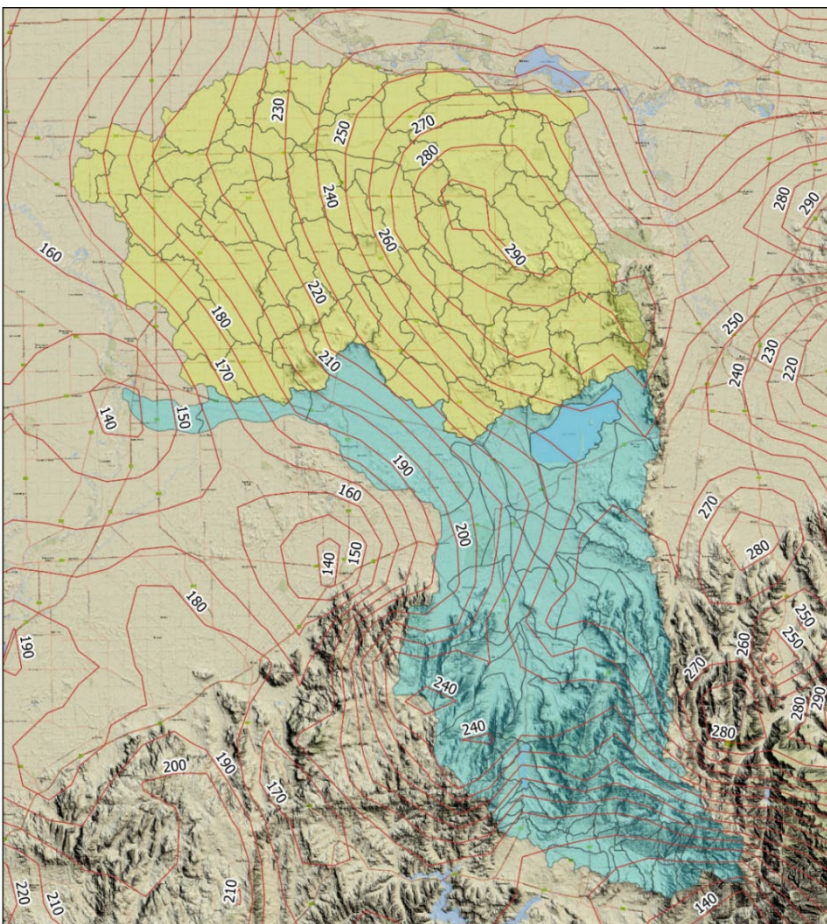
- Hydrologic Modelling
 - Development of RORB model



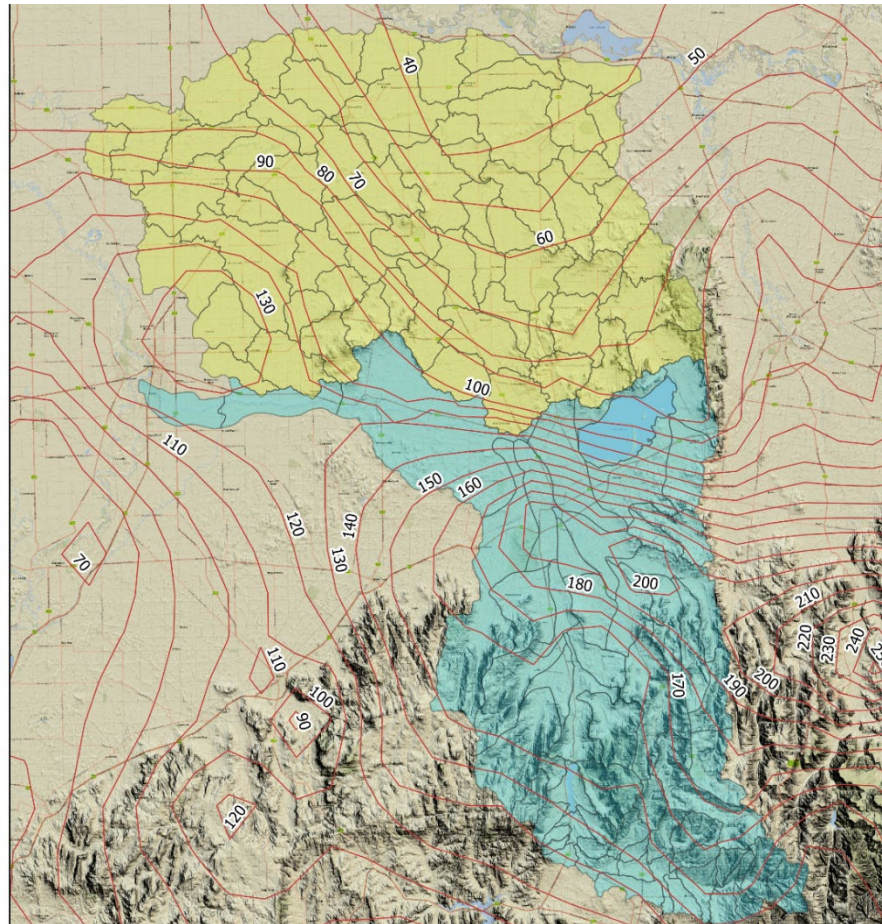
Work Undertaken so Far

- Hydrologic Modelling
 - Calibration of RORB model
 - March 2012
 - October 1993
 - May 1974

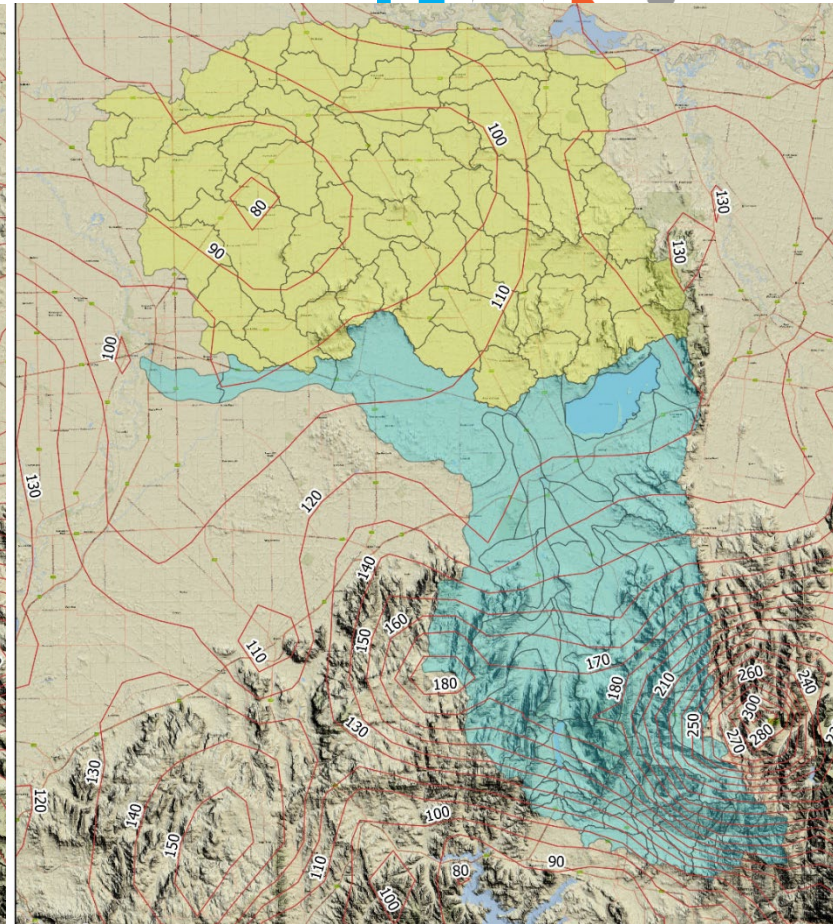




March 2012



October 1993



May 1974

Work Undertaken so Far

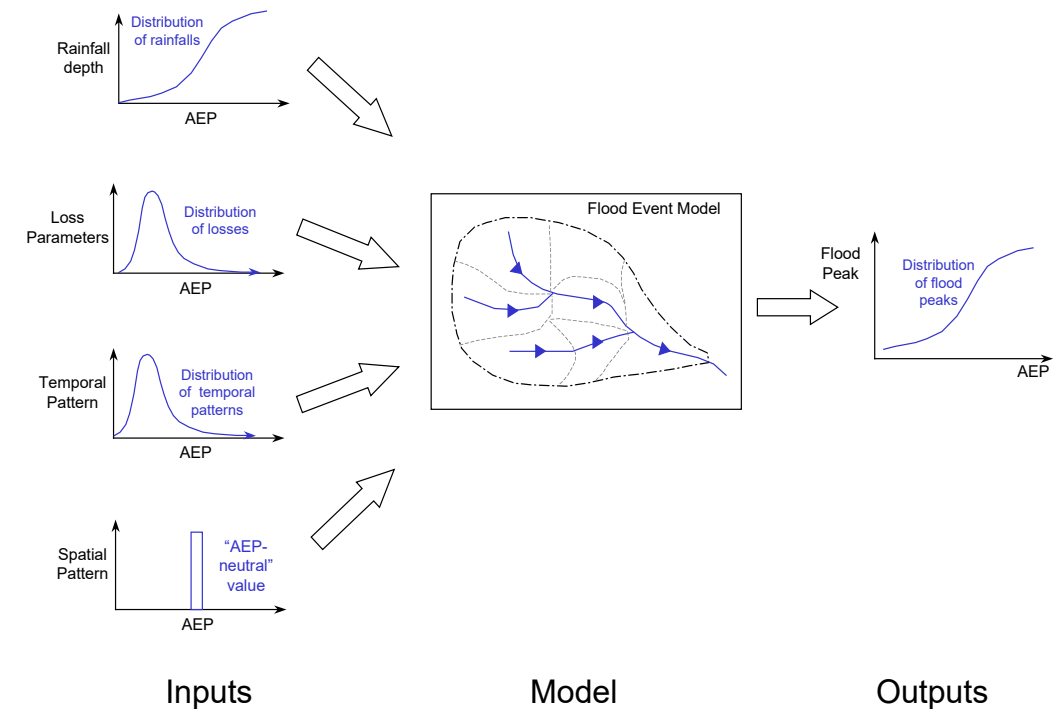
- Hydrologic Modelling
 - Verification
 - Broken Creek at Katamatite (404214)
 - Boosey Creek at Tungamah (404204)
 - Broken Creek at Walsh's Bridge (404238)

Work Undertaken so Far

- Hydrologic Modelling
 - Flood Frequency Analysis - Bayesian approach
 - Use of historical information
 - Use of hydrologic model to inform upper and lower bounds
 - Filtering of low flows

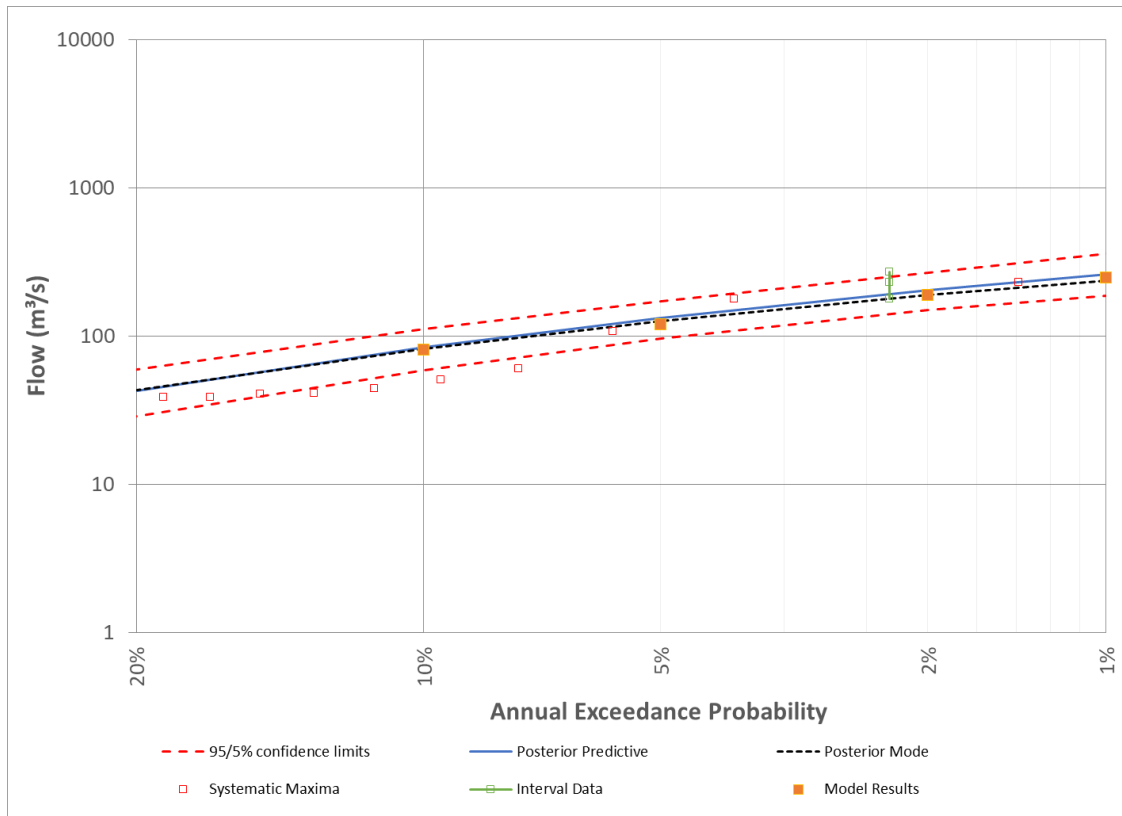
Work Undertaken so Far

- Hydrologic Modelling
 - Design Inputs (ARR2019)
 - Rainfall depths
 - Temporal patterns
 - Spatial patterns
 - Loss distribution

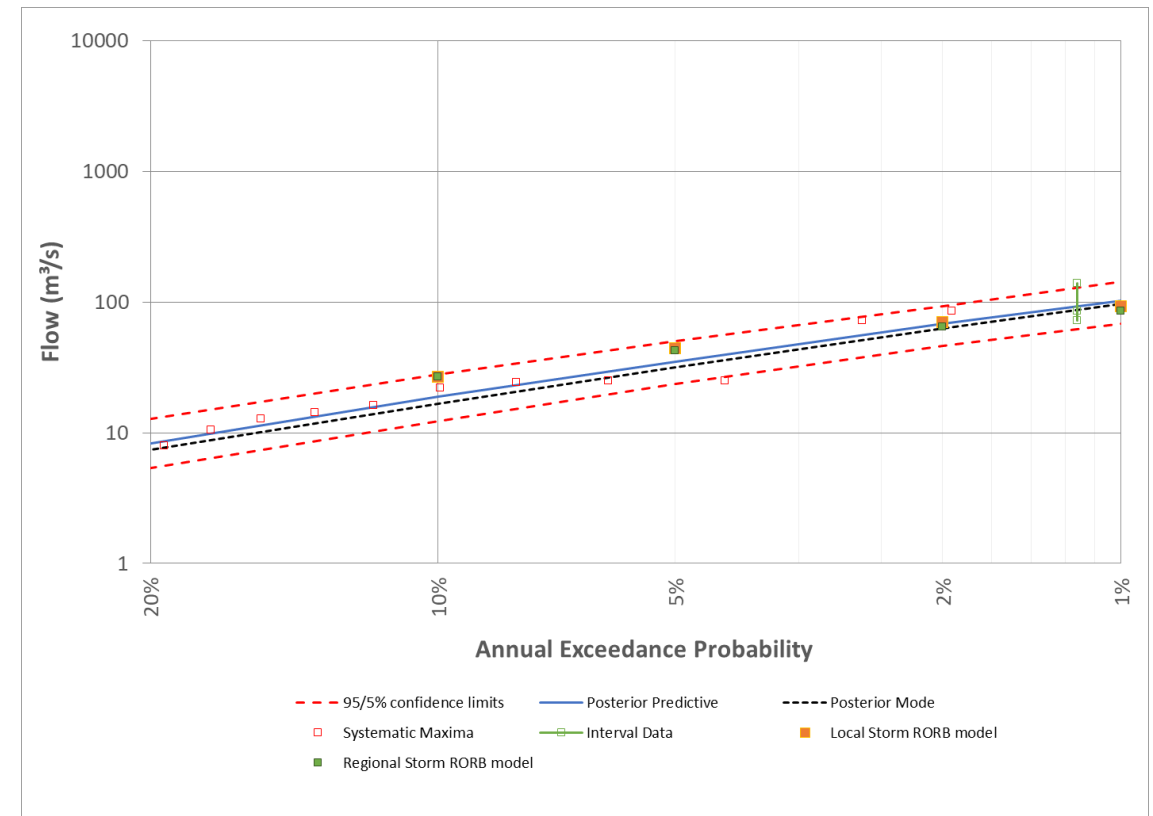


Work Undertaken so Far

- Hydrologic Modelling
 - Verification



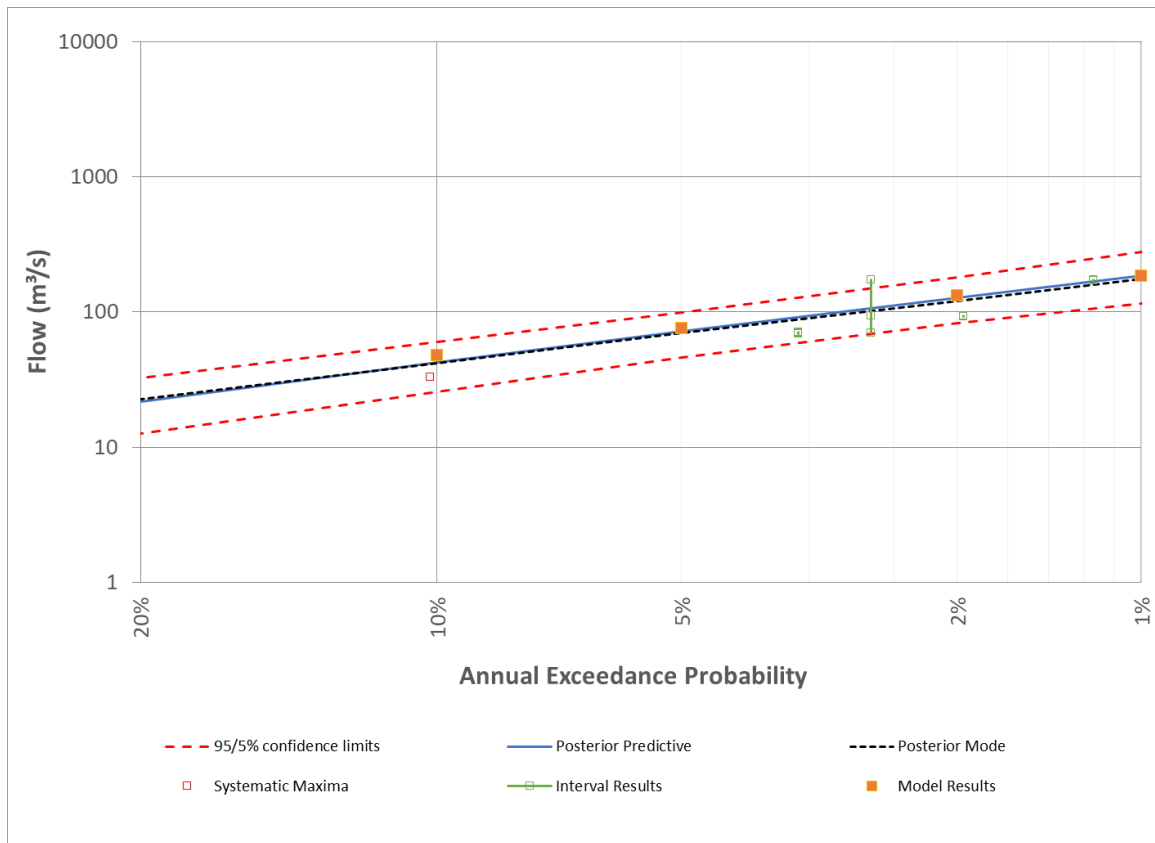
Tungamah



Katamatite

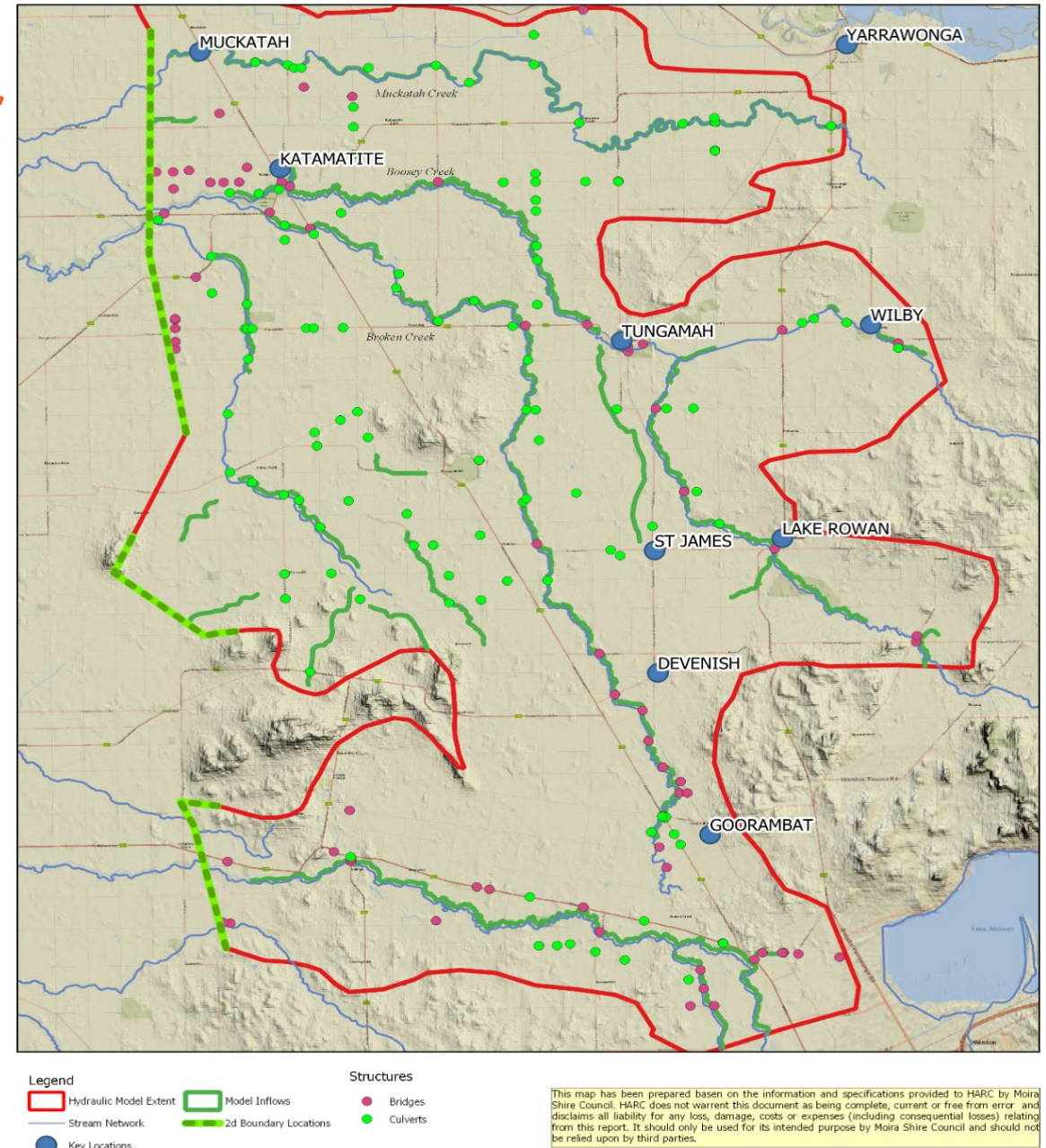
Work Undertaken so Far

- Hydrologic Modelling
 - Verification



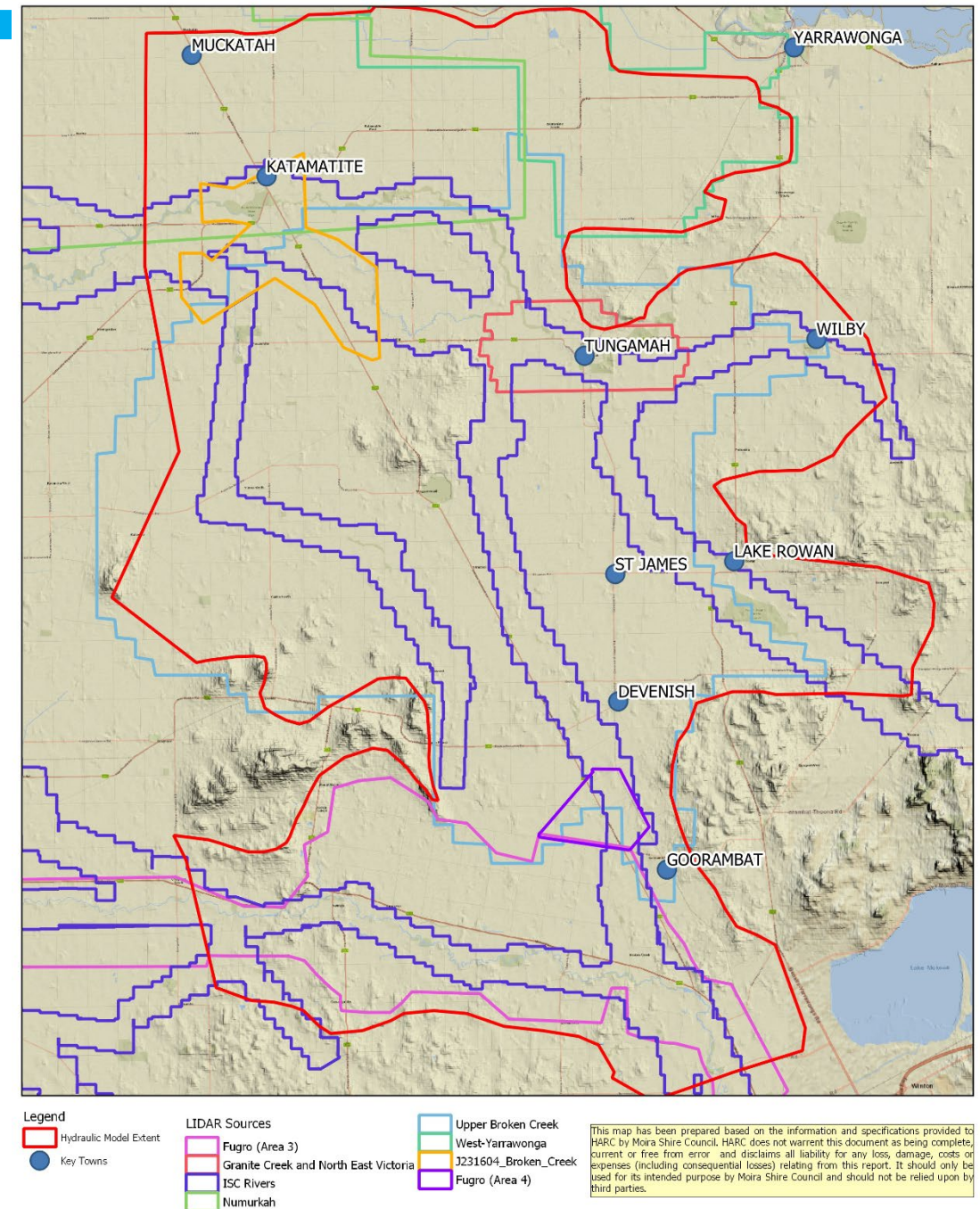
Work Undertaken so Far

- Hydraulic modelling
 - Developed a large, regional hydraulic model (TUFLOW) that covers the interactions between Broken River and Broken Creek
 - Using TUFLOW HPC



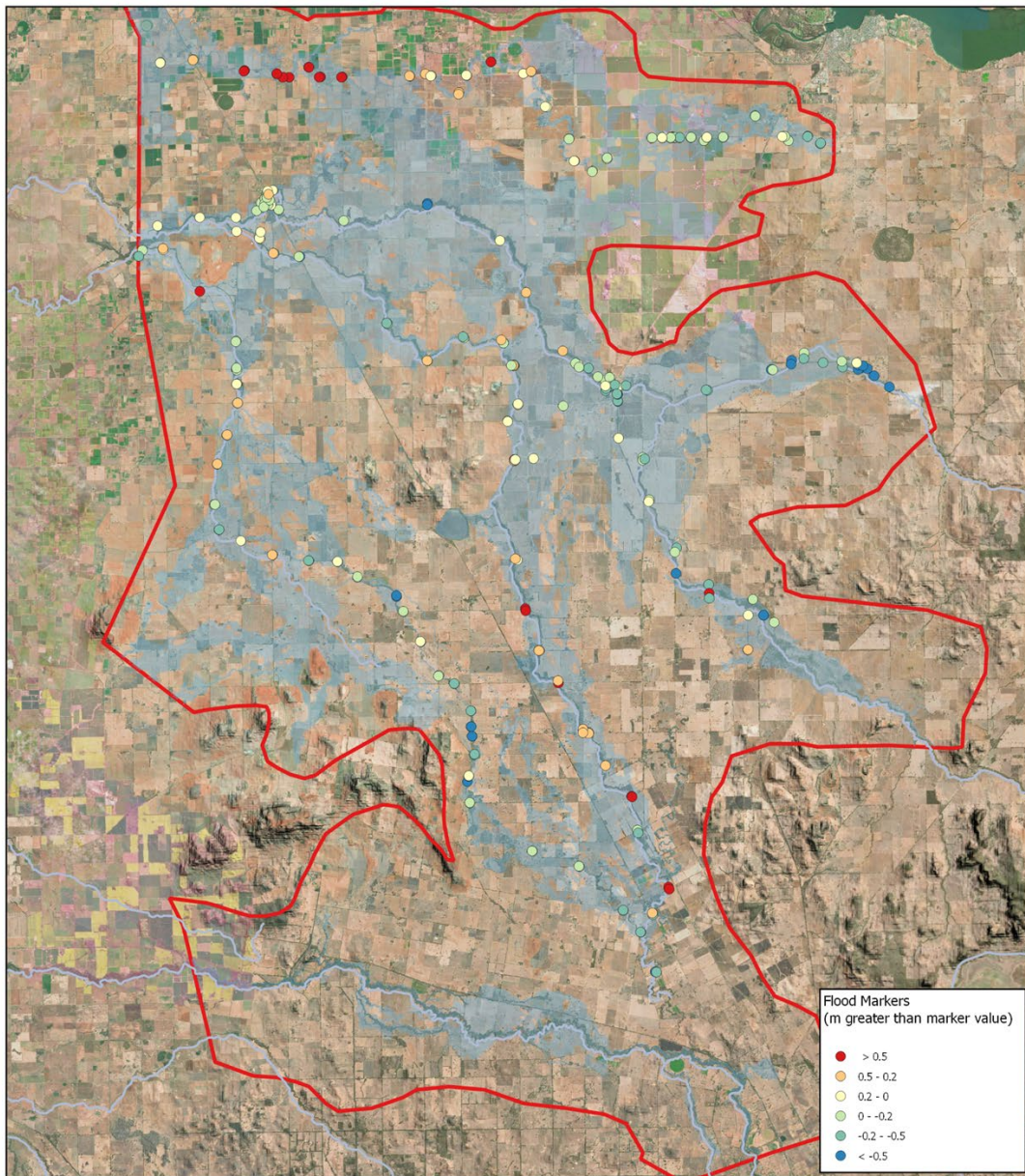
Work Undertaken so Far

- Hydraulic modelling
 - LIDAR
 - West Yarrawonga
 - North East Flood Study (Upper Broken)
 - Numurkah
 - Fugro (J231604 Broken Creek)
 - Fugro (Area 4)
 - 2010 ISC Rivers
 - SRTM-H
 - Hydraulic structures
 - Roughness values
 - Boundary conditions



Work Undertaken so Far

- Hydraulic modelling
 - Calibration
 - Flood Marks
 - Flood Extents
 - Gauged flow/levels
 - Event 2012 and 1993
 - Initial calibration
 - Optimise the TUFLOW model parameters for the calibration event within typical bounds



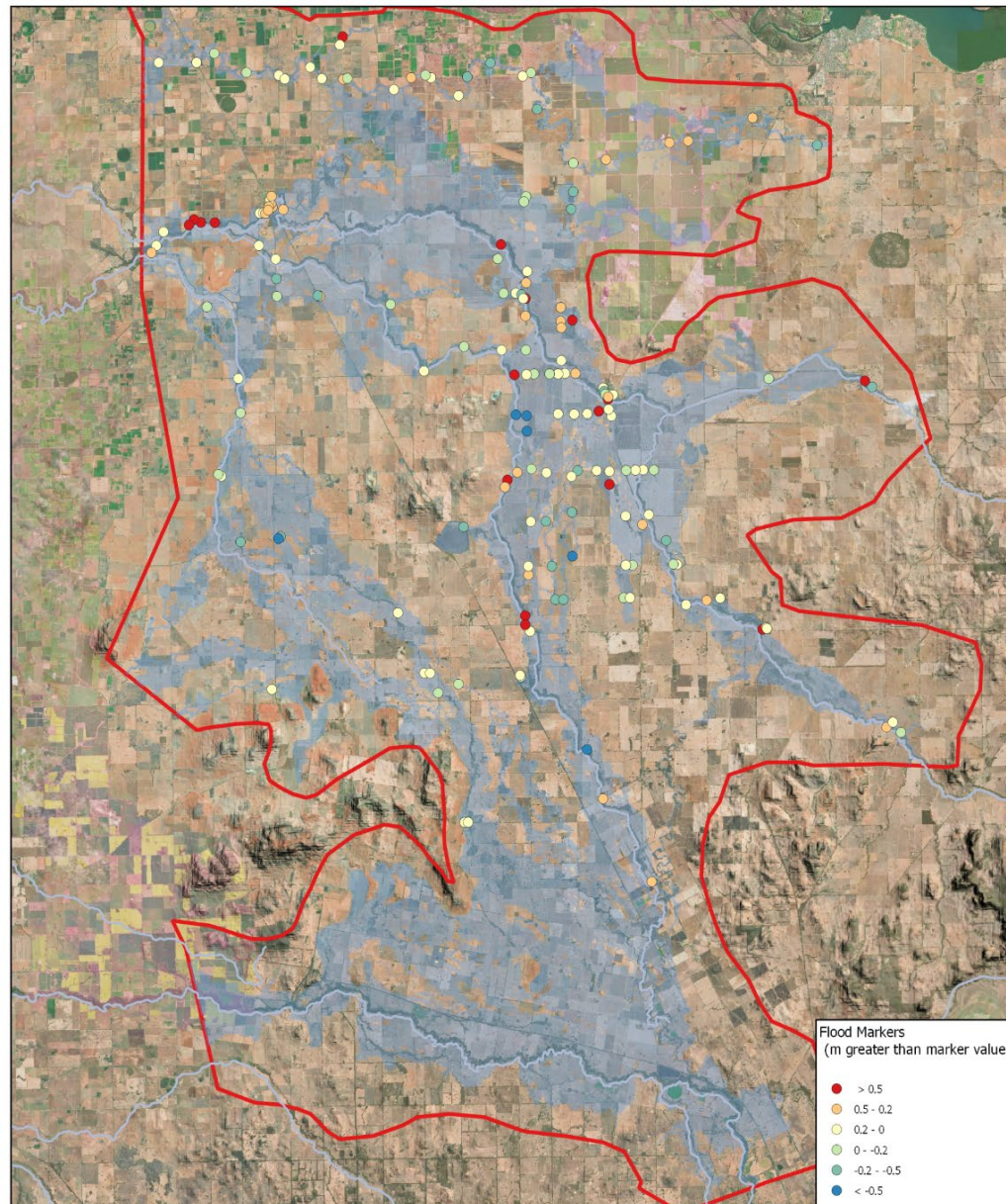
Legend

Hydraulic Model Extent Flood Extent

Stream Network

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2012



Legend

Hydraulic Model Extent Flood Extent

Stream Network

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1993

Work Undertaken so Far

- Hydraulic modelling
 - GBCMA reviewed flood marks – particularly 1993
 - GBCMA provided comments on original extent particular 2012

Work Undertaken so Far

- Presented revised 2012 and 1993 model extents to committee
- Revised calibration 2012 based on committee suggestions

Next Step

- Undertake community consultation
- Finalise hydraulic calibration with community feedback
- Run design events
- Flood Intelligence outputs (maps, etc.)
- Reporting / Consultation