

## 9 Conclusions

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The objective of the study was to undertake a detailed flood study of the Mirrool Creek catchment, with particular focus on Barellan, and establish models as necessary for design flood prediction. In completing the flood study, the following activities were undertaken:

- Collation of historical flood information for the study area;
- Consultation with the community to acquire additional historical flood information;
- Development of multiple TUFLOW GPU 2D catchment models for Mirrool Creek (upper catchment to Ardlethan, catchment from Ardlethan to Barellan and entire catchment to Barren Box swamp) to derive catchment flood hydrology;
- Development of a traditional XP-RAFTS hydrological model to simulate catchment rainfall-runoff and to compare against the TUFLOW GPU outputs;
- Development of a TUFLOW 2D/1D hydrodynamic model to simulate flood behaviour at Barellan township;
- Calibration of the developed models using the available flood data, including the January 1874, October 1974, January 1984, March 1989, February 2003 and March 2012 events;
- Determination of design flood conditions for a range of design event including the 20% AEP, 10% AEP, 5% AEP, 2% AEP, 1% AEP, 0.5% AEP, 0.2% AEP and extreme flood event;
- Hydraulic categorisation and provisional hazard categorisation of the floodplain to guide future floodplain management;
- Prediction of design flood conditions in the catchment and production of design flood mapping series; and
- Estimation of flood damages under baseline catchment conditions.

The principal outcome of the flood study is the understanding of flood behaviour in the catchment and in particular design flood information. This information will underpin future floodplain risk management activities in the study area. The Floodplain Risk Management Study and Plan will be completed concurrently with this study, with findings included in the Draft Floodplain Risk Management Study Report.

## 10 References

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