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## 5.0 Conclusions and Recommendations

## 5.1 Conclusions

The following conclusions are drawn from this study:

- A hydraulic model that covers the Captains Creek area was developed based on the previous *Garbutt Drainage Investigation* (Maunsell-AECOM 2008) report, TCC 2009 LiDAR topography, TCC 2011 aerial photography, TCC refined XP-RAFTS hydrologic models and refined estimates of the Lakes overflows.
- The Rain-on-Grid method was used across the majority of the urban areas assessed with the more traditional source point method applied through rural and relatively steep areas across the model.
- The model parameters adopted for roughness as well as initial and continuing losses are in line with those used in other studies undertaken as part of the *City Wide Flood Constraints Project* in the area.
- The critical duration adoptions for all ARI events up to 500 year were 1 hour and 24 hours.
- Localised residential areas are predicted to flood during events up to 50 year ARI. Some major inundation seen throughout residential areas for larger events (100 year ARI and greater).
- Flood levels were found to be higher throughout the main Captains Creek channel than previously modelled results indicate.

## 5.2 Recommendations

The following recommendations are made as part of this study:

- That the model is revisited when revised LiDAR data is available in order to provide a better representation of the topography across the study area.
- That the new stream gauge within Captains Creek is used to facilitate calibration of any future revisions/updates of the model once information becomes available. Flood levels should also be collected.
- Local refinement of the model is undertaken if a site specific assessment of flood risk is needed.
- That opportunities to mitigate flood risk across the affected areas are sought through the implementation of strategic large scale measures such as attenuation basins, levees, etc.
- That a survey of finished flood levels across areas identified as likely to be affected by flooding is carried out/commissioned by Council to facilitate the development of suitable flood risk management strategies.

## 6.0 References

AECOM Australia Pty Ltd (2014) "Louisa Creek Flood Study" AECOM Australia Pty Ltd (2014) "Blakey's Crossing Upgrade Hydraulic Assessment Report" Danish Hydraulic Institute, (2005) *MIKE FLOOD Reference Manual* Institution of Engineers, Australia (1998) "Australian Rainfall and Runoff, Volume 1" Institution of Engineers, Australia (1987) "Australian Rainfall and Runoff, Volume 2" Maunsell Australia Pty Ltd, (2005) "Townsville Flood Hazard Assessment Study – Phase 3, Volume 1" Maunsell Australia Pty Ltd, (2005) "Townsville Flood Hazard Assessment Study – Phase 2, Volumes 1 and 2" Maunsell Australia Pty Ltd, (2008) "Garbutt Drainage Investigation" Townsville City Council, (2011) "North Ward Flood Study, Base-line Flooding Assessment" Townsville City Council, (2013) "Ross Creek Flood Study, Base-line Flooding Assessment" XP Expert Software, (2001) "Reference Manual XP-RAFTS 2000"