

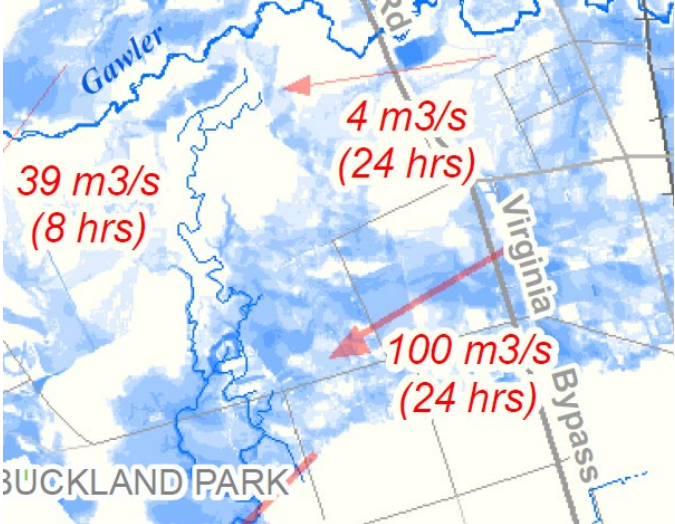


APPENDIX D HISTORY OF FLOOD MODELLING

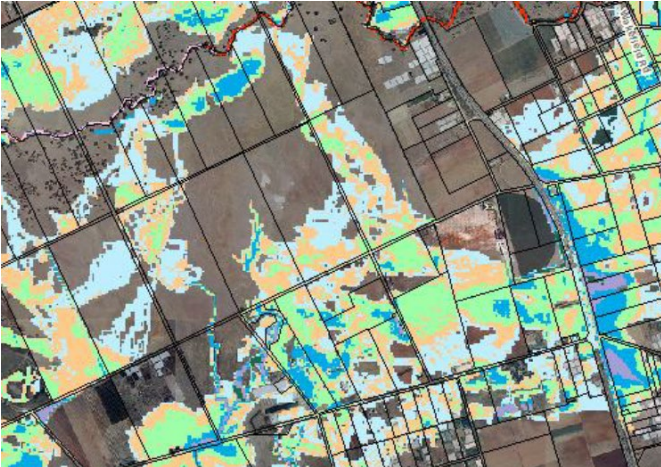




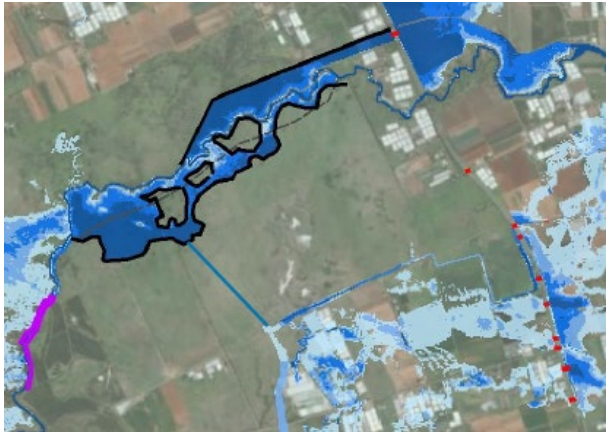
Water Technology's Input to Flood Modelling and Mapping the Gawler River

Project	Intent	Model info
<p>2008 – Gawler River Floodplain Mapping Study for GRFMA (WT Ref 46896)</p> 	<p>Flood modelling and mapping to derive design flood extents. Intent is for use in planning.</p>	<ul style="list-style-type: none">■ MikeFlood■ 1D representation of Gawler River channel, adapted from previous HEC-RAS modelling.■ Topo is based on field survey and Oct 2007 LiDAR (1m resolution); re-sampled to 15 m grid■ Included proposed NEXy alignment & flood mitigation works on South Para Res




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<p>2014 to 2016 – Findings for the Gawler River Flood Mitigation Scheme (WT Ref 14147)</p> 	<p>Update modelling & mapping based on improved data</p> <p>Further review and development of flood mitigation options</p>	<p>Changed design flow inputs (updated hydrology)</p> <p>Topo: updated to incorporate changes in landscape (developments); DEM is the original 1m LiDAR used in 2008 but shifted slightly to align with Light River model DEM (15m) and Smith Creek DTM (1m) stamped on top, re-sampled to 15m grid *unfortunately we do not have a map showing the extent of each dataset used.</p> <p>Incorporated culverts in the model</p> <p>Flood map of 1% shows western channels are in. These channels relate to the 'Buckland Park' proposed development. Metro map imagery indicates these channels have not existed (going back as early as 2010) however at the time they were identified as likely to be constructed.</p>
<p>2017 – Gawler River 2016 Flood Review (WT Ref 17069)</p> 	<p>Use data from 2016 flood event to review performance of hydrology and hydraulic model, and review performance of proposed mitigation measures (northern floodway & channel widening works)</p>	<p>Limited info available, but assume to be the 2014-2016 updated model, but with removal of topo datasets that were 'proposed' and reflect only what's on the ground.</p> <p>Note that Bruce Eastick Dam was assumed in</p> <p>Incorporated observed breaks in the levee</p> <p>Does not model the 1% AEP flood extent.</p>



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*2019 – <i>Windamere Park DPA Investigation</i> (WT Ref 19030072)	? All files lost in ransomware attack.	? All files lost in ransomware attack. Only able to comment on information in email trail provided by Shaun Fielding. Based on 2009 modelling (assume this refers to the work identified here as 2008). Based on assumptions that approximate current development and flood protection conditions
*2020 – <i>Smith Creek Catchment Stormwater Management Plan for City of Playford & Town of Gawler</i> (WT Ref P17287)		Breakouts across Windamere are due to discontinuities in the DEM, causing underestimate of levee height along SE bank of Gawler River. Note theses don'
January 2020 – <i>Riverlea Development Flood Assessment</i> (WT Ref 20030058) 	Assess performance of proposed Northern Floodway for 1% AEP Consider flood management options for Riverlea development (extend levees, create western flow path) assuming that northern floodway has been implemented (causing greater flow volumes across the site)	MikeFlood: utilises model from 2014-16 study, which includes channels from Buckland Park proposed development. Note that while these channels don't exist, they represent a potential configuration of channels through the Riverlea development which is pertinent to the investigation. Does not regenerate existing conditions.
*May 2020 – <i>Lot 100 Lewiston</i> (WT Ref P17287)		Base Case scenario excludes Riverlea development, replaced with existing ground elevation. Excludes mitigation.
*2020 – <i>Gawler River Corrective Flood Mapping in Buckland Park</i> for City of Playford (WT Ref 22030110)	Determine current flood hazard for planning and design code; exclude future works associated with Riverlea development.	Update May 2020 model with DEM corrections extended through the Windamere region
*2021 – <i>Gawler Cost Sharing Model</i> for GRFMA (WT Ref 21030180)		Northern floodway levees included



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<p>2021-2022 – Riverlea Development Flood Assessment variations (WT Ref 22030058)</p> 	<p>Assess interim stormwater management at Riverlea site, prior to any Gawler River mitigation implementation.</p>	<p>Site specific TUFLOW model</p> <p>Utilises 2013 LiDAR (1m resolution), re-sampled to various resolution (1m across site, 8m across other areas, with 2m sub-grid-sampling).</p> <p>Inflows to this model have been extracted at the corresponding location from the 2020 Riverlea model above. i.e., at any location where water is shown to enter this area of interest in the broader model, this has been included as an inflow point.</p>
<p>Gawler River SMP</p>	<p>Develop current existing and potential mitigation flood extents.</p>	<p>MikeFlood model, adaptation of 2017 model, but with further updates to available topographic datasets, transition to flexible mesh schematisation.</p>
<p>Enhanced Flood Hazard Mapping</p>	<p>Develop current flood extents for use as planning layers</p>	<p>An adaptation of the Gawler River SMP model, with existing conditions only, and utilising the latest LiDAR (2022, 50cm).</p>