



J. Appendix J: SES Flood Intelligence Draft Updates

Flood Intelligence Card

Culcairn Railway Bridge Gauge

Notes:

- design flood levels here are sensitive to blockage (25%) and to the precise location due to large afflux associated with bridge – possibly not the best location for a town gauge
- This will require revision if flood mitigation structures are constructed

Key: to be completed/confirmed (TBC)

CULCAIRN (RAILWAY BRIDGE) GAUGE - STATION NUMBER: TBC

Friday, 20 January 2017

Stream:	Billabong Creek	Gauge Zero:	204.38
Location:	Downstream side of Railway Bridge in Culcairn	Datum Type:	AHD
	Easting: 503356.6	Northing: 6052542.7	- GDA94 (MGA zone 55)
Minor:	Moderate:	Major: 10.0	Levee Height: N/a
Design Flood Levels: Culcairn, Henty and Holbrook Flood Studies (WMA Water, Sep 2013)			

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Class	Height (m)	Consequences
	Note:	Culcairn may be affected by overland flows from heavy local rain, typically prior to flooding from Billabong Creek. The consequences of local overland flows may have little bearing to the heights in Billabong Creek.
	Note:	The maximum gauge height is 10.0m. This was exceeded in the October 2010 flood, though there is a good control on the peak height. The record June 1931 flood peak was a little higher in Culcairn and is estimated using a regression with the Walbundrie gauge.
	5.60	8 March 2010. Swimming tower at caravan park under water.
	5.90	8 March 2010. Water starting to cover lower section of caravan park.
	6.10	Likely to cause problems at Walbundrie 14 hours later.
	6.40	9 March 2010. Bottom level of caravan park covered in water. Car park at Jubilee Park beginning to be flooded.
	6.50	9 March 2010: Peak height.
	8.03	5 year ARI design flood level.
	8.10	16 October 2010: Creek backed up stormwater drain to inundate Blair Street.
	8.15	6-7 February 2011: Peak height.

	8.51	10 year ARI design flood level.
	8.80	16 October 2010: Jubilee Park flooded.
	9.10	4 March 2012: Water starting to rise at intersection of Gordon Street and Henty Street East.
	9.15	20 year ARI design flood level.
	9.40	4 March 2012: Water flowing in gutter at intersection of Gordon Street and Henty Street East.
	9.60	4 March 2012: Water from intersection of Gordon Street and Henty Street East creeping west towards Melville Street, above footpath.
	9.65	5 March 2012: Peak height. Anabranche taking flow to eastern end of Balfour Street was not activated (possibly because deliberately blocked at creek offtake). Gordon Street trunk pipe surcharged, causing inundation at intersection of Gordon Street and Henty Street East. No houses or business/public sector buildings inundated above floor. Rear of creek-side Wattle Street properties including some garages likely inundated.
	9.75	50 year ARI design flood level. Creek breaks out into anabranche
	10.0	Base of railway bridge structure. When this level is reached the backing up of floodwater upstream is expected to worsen. This may be the trigger for initiation of flows from the golf course to the corner of Balfour and Federal Streets which then flow westwards down Balfour Street.
	10.13	100 year ARI design flood level. Modelling suggests Olympic Highway to south might not be cut by Billabong Creek flooding (but might well be cut by local flooding), with depths across the road less than 100mm deep for a distance of about 400 metres. Olympic Highway north of corner of Balfour and Melville Streets cut by flooding.
	10.20	16 October 2010: Peak height. Note that the Flood Study model did not replicate this height (peaking about 0.2m lower) but noted that a perfect match could have been achieved by manipulating bridge blockage. Thus the Flood Study estimates this event as 50-100 year ARI. Refer to property register in Bewsher Consulting (2012) report for detailed listing of consequences. Serious flooding in Balfour Street especially near the Federal Street, Munro Street and Melville Street junctions, also Henty Street East and the rear yards of houses on Wattle Street fronting Billabong Creek. 22 houses and 6 business/public sector buildings inundated above floor level (including some from local overland flows, which was about a 50y ARI event). Floodwater almost reached top tier of caravan park. Hospital in Balfour Street almost inundated. All road access to Culcairn cut.
	10.32	200 year ARI design flood level. Much of the area north of Billabong Creek and east of the railway would be flooded (Low Flood Island), with some patches of High Flood Island especially between Wattle and King Streets. The area north of the creek but west of the railway is only modestly affected but modelling shows that the Olympic Highway southbound might just be inundated.
	10.4-10.5	24 June 1931: Estimated peak height. Flood of record. Flow came from Round Hill homestead into Balfour Street from the east, inundating Culcairn public school, the Presbyterian church grounds and business premises and houses. There was between 0.45m and 0.6m water in the street. The south abutment of the railway bridge was washed away. Culcairn isolated by road and rail.
	11.85	PMF design flood level. Inundates entire town. There is high land along Culcairn-Holbrook Road about 2.5km ENE of the railway station, with several homesteads.