Upper Murray R Calibration Summary

For a fuller explanation of the calibration of the Upper Murray River URBS models, refer to *Upper Murray River URBS Model Enhancement*, August 2016.

Calibration Performance Upper Murray River Model at Jingellic

Event	Flow			Volume			Peak Height			Nash Sutcliffe
	Cal	Rated	PR	Cal	Rated	VR	Cal	Rec	δH	
	m^3/s	m^3/s		ML	ML		m AHD	m AHD	m	
197401	717	523	1.37	429,890	368,935	1.17	5.24	4.46	-0.78	0.50
197410	1,155	1,440	0.80	1,131,796	1,306,677	0.87	6.73	7.51	0.78	0.82
197510	1,338	1,352	0.99	982,161	984,031	1.00	7.29	7.32	0.03	0.89
198107	1,025	853	1.20	624,108	619,218	1.01	6.33	5.75	-0.58	0.68
198308	1,050	814	1.29	298,893	269,823	1.11	6.41	5.61	-0.80	0.51
199210	902	1,149	0.79	377,780	444,406	0.85	5.92	6.71	0.79	0.73
199310	732	1,060	0.69	367,201	489,400	0.75	5.30	6.44	1.14	0.68
199607	605	673	0.90	1,076,965	1,058,817	1.02	4.81	5.07	0.26	0.94
199610	656	763	0.86	1,196,363	1,302,431	0.92	5.01	5.42	0.41	0.76
199809	942	869	1.08	341,024	296,449	1.15	6.06	5.81	-0.25	0.87
201009	1,416	1,273	1.11	947,160	797,694	1.19	7.46	7.10	-0.36	0.86
201010	1,549	1,495	1.04	627,284	685,908	0.91	7.75	7.63	-0.12	0.90
201012	626	847	0.74	347,005	386,685	0.90	4.89	5.73	0.84	0.81
201102	489	479	1.02	526,574	646,066	0.82	4.31	4.27	-0.04	0.49
201109	529	554	0.96	178,115	208,271	0.86	4.49	4.59	0.10	0.77
201203	1,006	1,624	0.62	440,848	554,022	0.80	6.27	7.91	1.64	0.74

Calibration Performance Upper Murray River Model at Hume Dam Inflow

Event	Flow			Volume			Nash Sutcliffe
	Cal	Rated	PR	Cal	Rated	VR	
	m^3/s	m^3/s		ML	ML		
197401	1,113	1,060	1.05	851,320	774,736	1.10	0.35
197410	2,205	1,866	1.18	2,139,248	2,216,463	0.97	0.84
197510	2,030	1,994	1.02	1,775,667	1,735,933	1.02	0.91
198107	1,354	1,111	1.22	895,149	884,110	1.01	0.80
198308	1,331	1,121	1.19	447,664	465,349	0.96	0.38
199210	1,335	1,199	1.11	723,775	679,524	1.07	0.86
199310	1,158	1,091	1.06	788,152	799,314	0.99	0.82
199607	879	760	1.16	1,426,793	1,389,772	1.03	0.72
199610	936	964	0.97	2,029,825	1,912,541	1.06	0.76
199809	1,261	806	1.56	393,484	392,787	1.00	0.59
201009	1,458	1,149	1.27	977,370	928,445	1.05	0.80
201010	1,770	1,259	1.41	793,876	778,398	1.02	0.87
201012	713	664	1.07	424,344	411,928	1.03	0.86
201102	735	561	1.31	814,809	798,085	1.02	0.67
201109	561	492	1.14	202,403	223,524	0.91	0.79
201203	1,392	1,489	0.93	653,872	726,026	0.90	0.74

Recommended Model Parameters Upper Murray River

Percentile	IL (mm)	CL (mm/hr)	Alpha	Beta	m
5th	0	1.3	0.25	3.0	0.8
95th	41	8.1	0.35	5.0	0.8
Recommended	**To suit antecedent conditions**	**3.8**	**0.30**	**4.0**	**0.8**

Antecedent Conditions

Catchment state in the lead up to the onset of flood producing rainfall can give an indication of the initial that might be adopted.

Rainfall deciles for South East Australia in the month preceding each flood event investigated was determined from the Bureau of Meteorology Climate website with results shown in the table below.

Antecedent Rainfall

Event	Initial Loss (mm)		Rainfall in Preceding Month
	Mitta Mitta	Upper Murray	
197401		35	Above Average to Very Much Above Average
197410		10	Above Average
197510		15	Above Average to Very Much Above Average
198107	15	10	Above Average to Highest on Record
198308	10	10	Average to Above Average
199210	0	5	Very Much Above Average to Highest on Record
199310	35	0	Above Average to Very Much Above Average
199607	0	10	Average
199610	0	10	Above Average to Very Much Above Average
199809	10	0	Average
201009	25	10	Above Average to Very Much Above Average
201010	40	20	Average to Above Average
201012	35	30	Above Average to Very Much Above Average
201102	90	60	Average to Above Average
201109	5	15	Below Average to Average
201203	10	25	Above Average to Very Much Above Average

Initial Baseflow

In the Upper Murray River model, the initial baseflow into Hume Dam can be assumed to be 120% of the flow at Jingellic (Murray R) at the event start/date time to the nearest 50 m^3/s.