

Appendix G

Rail Sub-Catchment Design Flow Information



Table G1 Comparison of hydrological model peak flow estimates to RFFE and EIS flow estimates at existing cross drainage locations

Cross Drainage Catchment Chainage	Catchment Area (km ²)	Flow Estimates (m ³ /s)											
		1% AEP			2% AEP			5% AEP			10% AEP		
		RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS
449.765	0.707	8.6	15.3	N/A	6.9	11.4	N/A	5.4	7.4	N/A	4.0	5.0	N/A
449.852	0.146	2.1	6.7	2.1	1.7	5.0	1.5	1.4	3.2	0.8	1.0	2.2	0.5
451.332	5.066	37.9	41.6	29.0	30.6	31.0	20.4	22.7	20.1	10.6	17.0	13.7	6.3
452.721	8.883	56.1	57.0	41.1	47.4	42.5	28.9	33.6	27.5	15.1	25.3	18.7	9.0
453.403	2.470	15.4	25.9	21.8	12.5	19.3	15.4	8.8	12.5	8.0	6.8	8.5	4.7
453.642	0.343	3.1	8.2	4.4	2.6	6.1	3.1	1.8	3.9	1.6	1.4	2.7	1.0
454.353	0.514	2.6	9.2	4.4	2.2	6.8	3.1	1.5	4.4	1.6	1.1	3.0	1.0
454.871	2.508	18.3	27.2	18.7	15.1	20.3	13.1	11.7	13.1	6.8	8.5	8.9	4.1
455.228	20.408	92.4	99.9	79.9	76.3	74.5	56.2	51.9	48.1	29.4	50.4	32.8	17.6
456.184	2.863	17.8	8.7	N/A	14.6	6.5	N/A	10.4	4.2	N/A	7.9	2.9	N/A
458.323	1.695	18.3	18.3	N/A	16.1	13.6	N/A	13.2	8.8	N/A	10.1	6.0	N/A
460.127	1.354	11.3	21.5	13.3	9.4	16.0	9.3	6.7	10.4	4.8	5.0	7.1	2.9
461.157	33.384	118.2	164.0	128.5	96.8	122.0	90.6	70.3	78.9	47.1	58.0	53.8	28.3
464.694	7.850	52.9	79.1	92.1	43.3	59.1	65.0	29.8	38.2	33.8	22.8	26.1	20.2
466.824	1.306	7.5	32.5	10.6	6.1	24.3	7.5	4.2	15.7	3.9	3.3	10.7	2.3
468.366	12.656	46.2	76.2	55.8	36.6	56.9	39.4	28.0	36.9	20.5	21.2	25.2	12.2
469.524	1.534	9.9	32.1	12.1	8.1	24.0	8.5	5.8	15.6	4.4	4.2	10.6	2.6
470.467	0.264	2.1	15.9	3.6	1.6	11.9	2.5	1.1	7.7	1.3	0.9	5.3	0.8
472.03	18.898	68.7	104.0	76.1	55.5	77.7	53.7	41.2	50.4	27.9	31.4	34.5	16.7
478.262	30.028	90.6	132.0	103.0	71.9	99.0	72.4	54.3	64.3	37.7	48.6	44.0	22.6
479.3	245.041	569.6	419.0	465.0	463.4	313.0	330.0	327.6	203.0	173.0	259.8	139.0	104.0
480.35	5.716	20.7	41.5	N/A	16.8	31.1	N/A	12.4	20.2	N/A	9.7	13.8	N/A

Cross Drainage Catchment Chainage	Catchment Area (km ²)	Flow Estimates (m ³ /s)											
		1% AEP			2% AEP			5% AEP			10% AEP		
		RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS
481.92	1.284	6.8	21.8	11.2	5.5	16.4	7.8	3.9	10.6	4.1	3.1	7.3	2.4
482.824	1.228	7.9	20.1	11.3	6.4	15.1	7.9	4.6	9.8	4.1	3.6	6.7	2.4
483.549	0.397	3.6	13.9	N/A	2.9	10.4	N/A	2.4	6.8	N/A	1.4	4.6	N/A
483.94	0.306	3.1	11.7	3.7	2.1	8.7	2.6	1.7	5.7	1.3	1.1	3.9	0.8
489.844	25.336	110.9	98.2	95.8	91.0	73.5	67.7	71.3	47.9	35.3	54.9	32.9	21.1
490.189	55.508	166.2	138.0	159.0	139.4	104.0	112.0	101.3	67.4	58.7	79.9	46.2	35.1
491.834	10.546	48.3	56.9	N/A	39.2	42.6	N/A	30.9	27.8	N/A	23.4	19.1	N/A
492.947	1.441	10.0	18.1	11.1	8.1	13.6	7.8	5.1	8.8	4.1	4.4	6.1	2.4
494.815	4.060	22.6	39.8	N/A	17.7	29.9	N/A	13.1	19.5	N/A	10.6	13.4	N/A
496.885	4.067	20.0	30.6	25.5	16.7	23.0	17.9	13.3	15.0	9.3	9.8	10.3	5.5
501.167	2.014	9.2	19.0	11.9	8.1	14.3	8.4	6.7	9.3	4.3	4.6	6.4	2.6
502.456	1.252	5.9	15.5	9.8	5.1	11.7	6.9	3.5	7.6	3.6	4.0	5.2	2.1
502.974	1.453	6.4	14.2	13.3	5.4	10.7	9.3	3.8	7.0	4.8	3.2	4.8	2.9
504.707	1.648	6.7	16.9	8.4	5.7	12.7	5.9	4.1	8.3	3.1	3.3	5.7	1.8
503.599	168.101	437.6	294.0	329.0	364.6	221.0	83.8	13.5	144.0	122.0	208.6	99.1	73.6
508.164	1.316	8.9	18.4	11.2	7.1	13.8	7.9	4.8	9.0	4.1	4.1	6.2	2.4
509.64	81.376	195.9	184.0	199.0	159.3	138.0	141.0	127.0	89.8	73.5	100.2	61.7	44.1
512.108	134.508	251.5	236.0	298.0	203.6	177.0	211.0	152.0	115.0	110.0	115.1	79.1	66.5
515.011	6.264	21.4	45.7	31.9	17.7	34.2	22.5	13.2	22.3	11.7	10.4	15.3	7.0
515.601	2.006	8.5	30.1	14.3	7.3	22.5	10.0	5.4	14.6	5.2	4.3	10.0	3.1
516.313	2.637	10.5	32.0	16.9	9.0	24.0	11.9	6.5	15.6	6.2	5.2	10.7	3.7
516.98	3.607	13.1	34.7	N/A	11.0	26.0	N/A	8.2	16.9	N/A	6.9	11.6	N/A
517.428	9.170	30.3	61.2	N/A	25.0	45.8	N/A	18.7	29.8	N/A	14.7	20.4	N/A

Cross Drainage Catchment Chainage	Catchment Area (km ²)	Flow Estimates (m ³ /s)											
		1% AEP			2% AEP			5% AEP			10% AEP		
		RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS
518.556	2.104	8.7	35.0	17.6	7.4	26.2	12.4	5.4	17.0	6.4	4.4	11.7	3.8
519.224	94.141	148.0	183.0	257.0	121.4	137.0	181.0	84.5	89.1	94.9	63.7	61.1	56.8
520.339	9.740	32.6	71.7	43.4	27.1	53.7	30.5	20.2	34.9	15.9	16.1	23.9	9.5
521.918	1.339	6.1	36.9	10.7	5.0	27.6	7.5	3.8	17.9	3.9	2.9	12.3	2.3
523.223	1.630	6.7	44.0	12.6	5.7	32.9	8.9	4.2	21.4	4.6	3.4	14.6	2.7
524.18	3.576	14.3	50.5	26.3	12.1	37.8	18.5	8.9	24.6	9.6	7.1	16.8	5.7
524.906	1.596	6.9	41.4	12.6	6.0	31.0	8.9	4.3	20.1	4.6	3.6	13.8	2.7
525.984	1.166	5.1	39.8	9.6	4.6	29.8	6.7	2.5	19.3	3.5	2.6	13.2	2.1
528.371	80.912	147.3	221.0	194.0	119.4	166.0	137.0	92.0	108.0	71.8	73.0	73.7	42.9
529.274	3.072	10.7	43.4	N/A	9.0	32.5	N/A	6.5	21.1	N/A	5.2	14.4	N/A
529.768	60.184	138.6	183.0	223.0	112.7	137.0	158.0	83.1	88.9	82.3	64.5	60.9	49.4
530.705	4.777	17.5	67.8	N/A	14.8	50.8	N/A	10.8	33.0	N/A	8.6	22.6	N/A
531.132	3.651	14.0	63.1	N/A	11.7	47.2	N/A	8.5	30.6	N/A	6.8	21.0	N/A
531.906	25.906	56.9	125.0	N/A	49.6	93.8	N/A	37.6	60.9	N/A	29.6	41.7	N/A
533.611	34.544	80.5	158.0	123.0	66.3	119.0	86.7	52.5	77.0	45.3	42.1	52.7	27.1
534.776	6.462	22.5	82.6	30.7	18.7	61.8	21.6	13.8	40.1	11.2	11.0	27.4	6.7
536.243	6.761	26.0	89.3	45.5	22.2	66.8	32.0	15.7	43.4	16.6	12.9	29.7	9.9
536.539	3.169	15.3	78.0	24.7	12.5	58.4	17.4	9.5	37.9	9.0	7.5	25.9	5.4
537.571	5.560	23.6	91.8	27.6	20.3	68.6	19.4	15.2	44.5	10.1	12.1	30.5	6.0
539.013	1.172	8.4	62.0	N/A	7.2	46.4	N/A	5.4	30.1	N/A	3.9	20.6	N/A
543.766	2.847	11.8	78.2	18.0	10.0	58.5	12.6	7.7	37.9	6.6	5.8	25.9	3.9
545.968	4.401	17.6	97.7	26.5	15.0	73.1	18.6	10.8	47.4	9.7	8.6	32.4	5.8
546.812	50.125	117.0	260.0	154.0	95.5	195.0	109.0	71.9	126.0	57.0	53.7	86.2	34.2

Cross Drainage Catchment Chainage	Catchment Area (km ²)	Flow Estimates (m ³ /s)											
		1% AEP			2% AEP			5% AEP			10% AEP		
		RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS
547.559	2.613	10.2	83.7	N/A	8.5	62.6	N/A	6.2	40.6	N/A	4.9	27.8	N/A
548.064	3.906	14.9	98.5	N/A	12.3	73.7	N/A	8.9	47.8	N/A	7.0	32.6	N/A
549.09	6.237	17.6	115.0	32.2	14.0	85.9	22.7	10.7	55.7	11.8	7.9	38.1	7.0
551.146	4.118	10.6	105.0	27.0	8.7	78.7	19.0	6.0	51.1	9.8	4.4	34.9	5.9
552.631*	279.174	494.4	647.0	331.0	407.4	484.0	234.0	291.4	313.0	123.0	216.7	214.0	74.0
554.243	9.777	29.3	160.0	N/A	22.5	119.0	N/A	16.8	77.3	N/A	14.0	52.8	N/A

* Catchment Delineation/Area between EIS and detailed design model varies by 86%

Table G2 Summary of average peak flows determined from model, RFFE and EIS for different catchment sizes

Catchment Area Range (km ²)	Average Flow Estimates (m ³ /s)											
	1% AEP			2% AEP			5% AEP			10% AEP		
	RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS	RAFTS design model	RFFE Expected Value	EIS
>100* (3 catchments)	419.6	316.3	364.0	343.9	237.0	208.3	164.4	154.0	135.0	194.5	105.7	81.4
50 to 100 (6 catchments)	152.2	194.8	197.7	124.6	146.2	139.7	93.3	94.9	73.0	72.5	65.0	43.8
10 to 50 (9 catchments)	79.2	112.7	94.6	64.8	84.3	66.7	48.7	54.7	34.7	40.0	37.4	20.8
1 to 10 (48 catchments)	16.3	50.8	22.3	13.6	38.0	15.7	9.9	24.7	8.2	7.8	16.9	4.9
<1 (7 catchments)	3.6	11.6	3.6	2.9	8.6	2.6	2.2	5.6	1.3	1.6	3.8	0.8

*Excludes catchment 552.631 due to discrepancy in catchment size estimates