

rev	description	app'd	date
A	INDICATIVE		

**BLACKTOWN CITY COUNCIL
NWGC SW MANAGEMENT REVIEW
INDICATIVE DESIGN
VINE ST CHANNEL POT. RAT.**

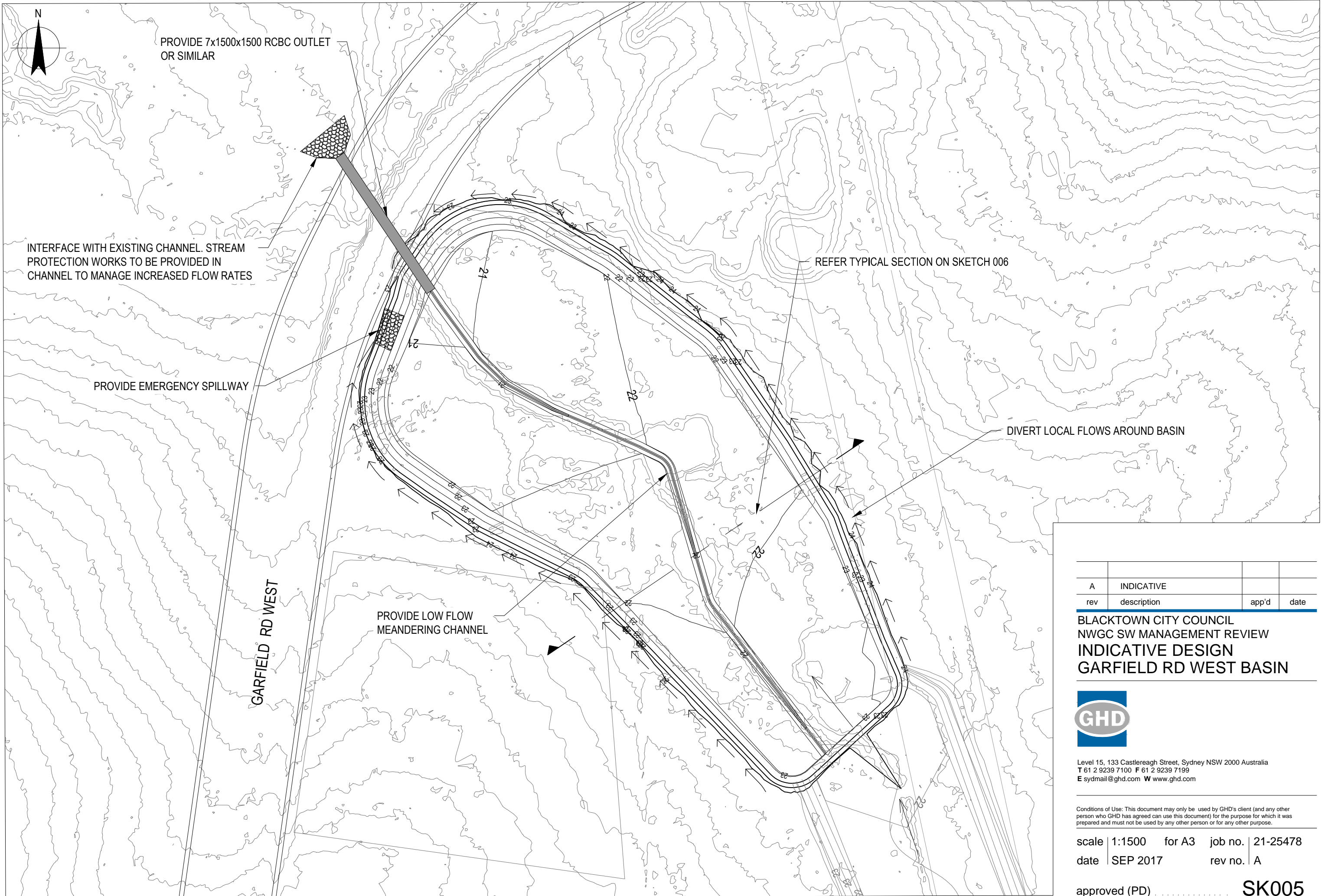


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scale | 1:2000 for A3 job no. | 21-25478
date | SEP 2017 rev no. | A

approved (PD) **SK004**



PROVIDE 7x1500x1500 RCBC OUTLET OR SIMILAR

INTERFACE WITH EXISTING CHANNEL. STREAM PROTECTION WORKS TO BE PROVIDED IN CHANNEL TO MANAGE INCREASED FLOW RATES

REFER TYPICAL SECTION ON SKETCH 006

PROVIDE EMERGENCY SPILLWAY

DIVERT LOCAL FLOWS AROUND BASIN

GARFIELD RD WEST

PROVIDE LOW FLOW MEANDERING CHANNEL

rev	description	app'd	date
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NWGC SW MANAGEMENT REVIEW
INDICATIVE DESIGN
GARFIELD RD WEST BASIN**

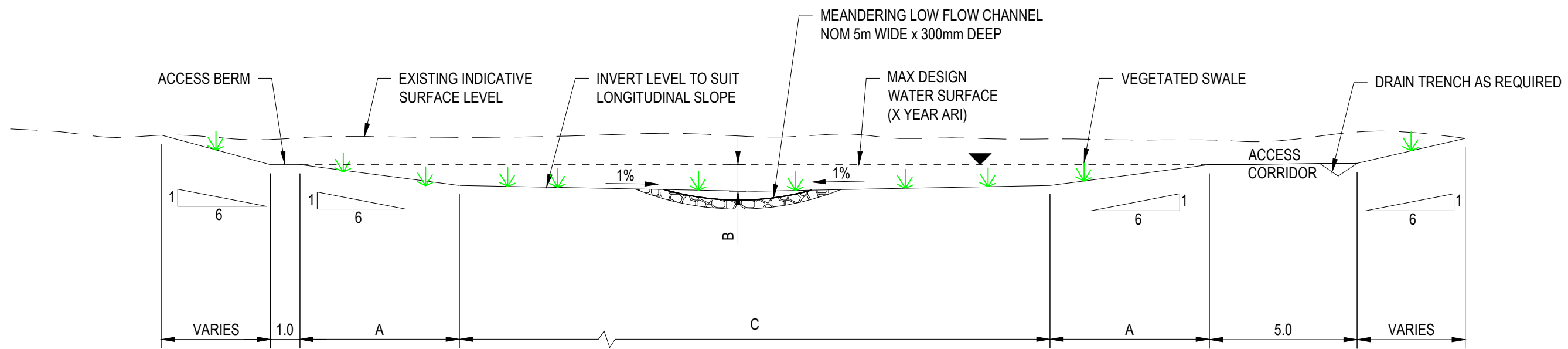


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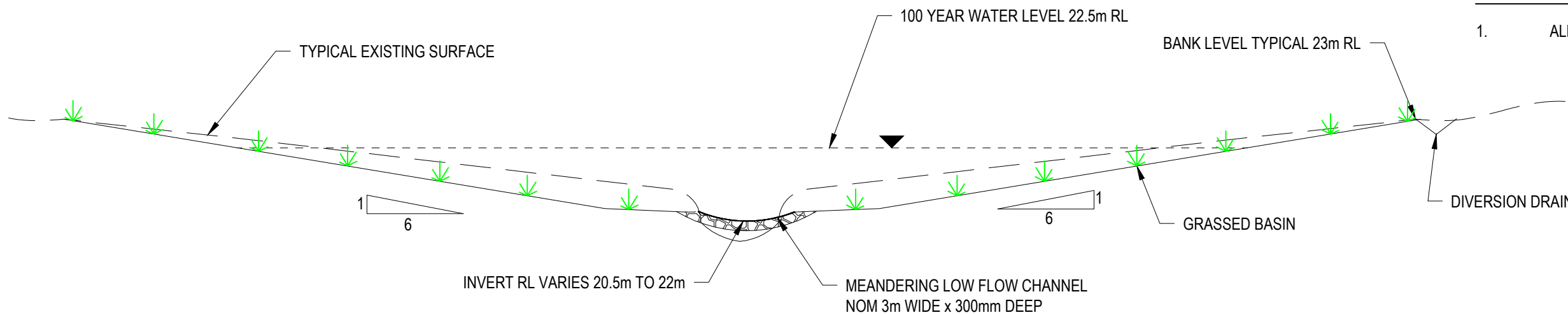
TYPICAL CHANNEL SECTION

NTS

CHANNEL A (m)	A (m)	B (m)	C (m)	X (YEARS)
BASIN SE71	5.4	0.9	40	2
BASIN NS A1 & A3	7.2	1.2	10	2
VINE ST NO RAT	9	1.5	40	100
NINE ST POT RAT	9	1.5	60	100

NOTES:

1. ALL DIMENSION IN METRES UNLESS NOTED.



GARFIELD RD WEST BASIN TYPICAL SECTION

NTS

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BLACKTOWN CITY COUNCIL
NWGC SW MANAGEMENT REVIEW
TYPICAL SECTIONS



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scale | NTS for A3 job no. | 21-25478
date | SEP 2017 rev no. | A

approved (PD) SK006

Appendix B – Costing Calculations

Cost Calculations - Compensatory Works Unit Cost Calculations

	Adjustment	Unit	Rate	Garfield Basin	Vine St Channel No Rat	Vine St Channel Prop Rat	Chan A3	Chan SE 71	Channel Protection Only
Total Area (ha)				3.65	3.32	4.48	5.05	2.04	
Water Quality Area (ha)									
% Water Quality Area									
DETENTION BASIN									
Earthworks									
De-water, Desilt and Dispose of Existing Dams (0.5m Deep x "Area") and replace with site material	Reduce by Area	cu.m	\$342.19						
Clearing and Grubbing	Reduce by Area	sq.m	\$1.52	36500	33200	44800	50500	20400	
Remove Existing Trees 600mm+ diameter	Reduce by Area	each	\$490.00						
Remove Existing Trees 300-600mm diameter	Reduce by Area	each	\$180.00						
Demolish Existing Buildings (check Rawlinson's \$59.70/m2)	Reduce by Area	sq.m	\$59.70						
Strip Topsoil and Stockpile (Assume 100mm Over Site)	Reduce by Area	cu.m	\$6.72	3650	3320	4480	5050	2040	
Excavate and dispose of contaminated waste 2% of total cut	Reduce by Area	cu.m	\$468.74						
Excavate and dispose of mixed soil 18% of total cut	Reduce by Area	cu.m	\$328.88						
Drainage excavation (To Design Levels)	Reduce by Area	cu.m	\$0.00						
Excavation in Clay	Reduce by Area	cu.m	\$14.96						
Excavation in Rock allow 10% of cut volumes	Reduce by Area	cu.m	\$97.65						
Bulk excavation to be used as fill on site	Reduce by Area	cu.m	\$6.83	25303	40800	60300	73600	26600	
Combined surplus VENM	Reduce by Area	cu.m							
Disposal of surplus VENM from site	Reduce by Area	cu.m	\$70.00						
Place and compact Select clay core typ. 26% of total fill using on site material	Reduce by Area	cu.m	\$33.39						
Place and compact Select clay core typ. 26% of total fill using imported clay	Reduce by Area	cu.m	\$45.07						
Bulk Fill (To Design Levels) using on site material	Reduce by Area	cu.m	\$6.48						
Bulk Fill (To Design Levels) using imported clay	Reduce by Area	cu.m	\$21.87						
Stabilise Basin with Gypsum (Area of Basin)	Reduce by Area	sq.m	\$3.15						
Trim and Compact Subgrade (Surface Area of Basin)	Reduce by Area	sq.m	\$1.73						
Spread Topsoil (100mm Thick Over Basin Surface Area)	Reduce by Area	sq.m	\$0.77	36500	33200	44800	50500	20400	
Breakup and remove existing hard surfacing	Reduce by Area	sq.m	\$30.15						
Miscellaneous									
Landscaping Remaining Basin Area - 25% of Area in Planting including preparation, etc	Remove	sq.m	\$25.17						
Landscaping Remaining Basin Area - 75% of Area in Turf	Remove	sq.m	\$7.74	36500	33200	44800	50500	20400	20
Maintenance of Planted Area (3 years)	Remove	sq.m	\$19.08						
Maintenance of Turfed Area (3 years)	Remove	sq.m	\$13.80	36500	33200	44800	50500	20400	
150mm Thick DGB20 Maintenance Track 3m Wide (Perimeter)	Remove	lin.m	\$120.38						
Steel Handrail (Allowance Around Inlet/Outlet Structures)	Remove	lin.m	\$173.97						
Supply and install 1.8m heavy duty pool type fence	Remove	lin.m	\$215.38						
Supply and install fence to prevent vehicle access including foundation preparation and footing	Remove	Lin.m	\$100.00						
Flora and Fauna Investigation	Reduce by Area	\$	\$1.00	7541.893939	7541.893939	7541.893939	7541.893939	7541.893939	
Geotechnical and Contamination Investigation	Reduce by Area	\$	\$1.00	43472.877	43472.877	43472.877	43472.877	43472.877	
Aboriginal and European Heritage Investigation and Archaeological Excavation if required.	Reduce by Area	\$	\$1.00	55000	55000	55000	55000	55000	
Detailed Topography Survey	Reduce by Area	\$	\$1.00	6602.158357	6602.158357	6602.158357	6602.158357	6602.158357	
Contingency Admin and Management									
Site Establishment and Management	Reduce by Cost	%	5%	1	1	1	1	1	
Design	Reduce by Cost	%	5%	1	1	1	1	1	
Contingency	Reduce by Cost	%	5%	1	1	1	1	1	
Cost				\$1,330,000	\$1,205,000	\$1,623,000	\$1,853,000	\$794,000	\$155
Length (m)					527	527	1248	326	1
Cost Per Metre					\$2,300	\$3,100	\$1,500	\$2,400	\$155

Cost Calculations - Rationalisation Savings and Compensatory Works

	Adjustment	Unit	Rate	Marden Park										Schofields			MPIP	Total
				Basin A1	Basin A3	Basin 2	Basin 4	Basin 6A	Basin 6B	Basin 7a	Basin 7b	Basin 8	SE 1.4	SE 6.2	SE 7.1	Basin K		
Total Area (ha)				4.8841	3.1603	4.5508	9.54	1.9057	2.3396	2.2911	2.6751	2.0389	0.8579	4.3	4.2197	1.1746		
Water Quality Area (ha)			0.4031	0.1915	0.3162	0.159	0.0687	0.1435	0.2568	0.5883	0.4932	0.1832	0.799	0.8752	0.1552			
% Water Quality Area			8.3%	6.1%	6.9%	1.7%	3.6%	6.1%	11.2%	22.0%	24.2%	21.4%	18.6%	20.7%	13.2%			
DETENTION BASIN																		
Erosion and Sediment Control																		
Stabilised Site (Provide Access for Construction Work)	Reduce by Area	each	\$3,540.73	1	1	1	1	1	1	1	1	1	1	1	1	1		
Sediment Fence (Perimeter of Basin)	Reduce by Area	lin.m	\$15.00	1360	780	950	1360	630	535	730	580	510	274	700	907	470		
Sediment Ponds (10% of Basin Volume)	Reduce by Area	cu.m	\$39.51	2430	1005.8	3503	6010	1127.5	1377.5	1740	2000	1494	435	2805	2900	964		
Clean Water Diversion Channel Lined With JuteMesh (1m W x 1m D x "Length")	Reduce by Area	lin.m	\$31.77	645	370	380	630	115	110	305	145	85	81	260	270	175		
Maintenance and Removal	Reduce by Area	item	\$10,353.00	1	1	1	1	1	1	1	1	1	1	1	1	1		
Earthworks																		
De-water, Desilt and Dispose of Existing Dams (0.5m Deep x "Area") and replace with site material	Reduce by Area	cu.m	\$342.19	0	0	0	0	0	800	0	0	0	0	0	0	1770		
Clearing and Grubbing	Reduce by Area	sq.m	\$1.52	46530	30020	38400	102990	24200	20200	23520	27300	21010	5275	36700	40800	12480		
Remove Existing Trees 600mm+ diameter	Reduce by Area	each	\$490.00	0	0	0	0	0	0	0	0	0	0	0	0	10		
Remove Existing Trees 300-600mm diameter	Reduce by Area	each	\$180.00	0	0	15	0	20	500	300	150	0	0	0	0	6		
Demolish Existing Buildings (check Rawlinson's 559.70/m2)	Reduce by Area	sq.m	\$59.70	0	0	0	0	2900	250	1200	2100	450	0	0	0	0		
Strip Topsoil and Stockpile (Assume 100mm Over Site)	Reduce by Area	cu.m	\$6.72	4653	3002	3840	10299	2420	2020	2352	2730	2101	527.5	3670	4080	1365		
Excavate and dispose of contaminated waste 2% of total cut	Reduce by Area	cu.m	\$468.74	0.2	47.2	355.24	33	560	308.2	330	150.84	285.4	190.56	26.36	561.3	92		
Excavate and dispose of mixed soil 18% of total cut	Reduce by Area	cu.m	\$138.88	1.8	424.8	3197.16	297	5040	2773.8	2970	1350	2568.6	1715.04	237.24	5051.7	828		
Drainage excavation (To Design Levels)	Reduce by Area	cu.m	\$0.00	8	1888	14209.6	1320	22400	12338	13200	6000	11416	1054.8	7622.4	22452	3680		
Excavation in Clay	Reduce by Area	cu.m	\$14.96	0	0	17310	0	8147	5210	0	4139	0	0	0	720	0		
Excavation in Rock allow 10% of cut volumes	Reduce by Area	cu.m	\$97.65	1	236	1776.2	165	2800	1541	1650	750	1427	0	0	460	0		
Bulk excavation to be used as fill on site	Reduce by Area	cu.m	\$6.83	111938	71898	20995.6	289640	2.290	2640	6340	5250	5850	0	0	2500	0		
Combined surplus VENM	Reduce by Area	cu.m	0	0	0	0	0	20570	10048	8660	0	7996	0	0	2440	0		
Disposal of surplus VENM from site	Reduce by Area	cu.m	\$70.00	0	0	0	0	19310	9688	6860	0	5566	8632.4	0	24642	1380		
Place and compact Select clay core typ. 26% of total fill using imported clay	Reduce by Area	cu.m	\$33.39	29104.4	18816.2	6382.48	75392.2	595.4	686.4	1648.4	4264	1521	41.6	6139.4	951.6	650		
Place and compact Select clay core typ. 26% of total fill using imported clay	Reduce by Area	cu.m	\$45.07	0	0	0	0	0	0	0	0	0	1602.36	0	0	0		
Bulk Fill (To Design Levels) using on site material	Reduce by Area	cu.m	\$6.48	82835.6	53553.8	18165.52	214577.8	1694.6	1953.6	4691.6	2636	4329	118.4	0	2708.4	2500		
Bulk Fill (To Design Levels) using imported clay	Reduce by Area	cu.m	\$21.87	0	472	3552.4	330	0	0	9508	0	0	22084.24	0	0	0		
Stabilise Basin with Gypsum (Area of Basin)	Reduce by Area	sq.m	\$3.15	26250	11835	35530	82175	23000	20200	18560	21200	16850	5161	27878	34700	10400		
Trim and Compact Subgrade (Surface Area of Basin)	Reduce by Area	sq.m	\$1.73	46530	30020	38400	102990	24200	20200	23520	27300	21010	5275	36700	40800	13650		
Spread Topsoil (100mm Thick Over Basin Surface Area)	Reduce by Area	sq.m	\$0.77	40000	26770	34750	89540	21650	18490	20440	25000	17200	3651	30160	32793	10800		
Breakup and remove existing hard surfacing	Reduce by Area	sq.m	\$30.15	0	0	0	0	2750	0	2750	1250	420	0	12000	2200	0		
Retaining Walls																		
Segmental Concrete Block Wall including footings (per face sq.m)	Remove	sq.m	\$735.00	0	0	0	0	0	0	0	0	0	236	0	0	0		
Stacked Rock Wall including footings (per face sq.m)	Remove	sq.m	\$315.00	0	0	0	0	0	0	0	0	0	135	0	0	0		
Inlet Structure																		
Supply, Lay, Joint and Backfill Nom 60mm Pipe / Culvert	Remove	lin.m	\$213.25	0	0	0	1080	200	30	200	30	60	60	30	0	0		
Nom 60mm Headwall	Remove	each	\$1,081.89	1	0	0	1	0	0	0	1	0	1	3	1	1		
Supply, Lay, Joint and Backfill Nom 60mm Diversion Pipe to GPT	Remove	lin.m	\$124.24	0	0	0	80	0	0	0	0	0	20	100	125	0		
Rock Armour & Geotextile Filter on 150mm Crushed Rock (assumed 300 thick RipRap)	Remove	sq.m	\$165.65	0	0	0	0	0	0	0	0	0	20	40	300	0		
Excavation for pipeworks (2m deep)	Remove	sq.m	\$37.64	0	0	0	0	0	0	0	0	0	0	40	80	60		
Nominal 60mm pipeworks (length of pipeworks)	Remove	lin.m	\$290.15	0	0	0	0	0	0	0	0	0	0	0	40	0		
Outlet Structure																		
Pipelet Outlet																		
Excavation for Pipeworks (1.2m wide x 2m deep x length)	Remove	lin.m	\$44.96	0	0	0	0	0	0	0	0	0	0	0	0	45		
Construct Discharge Control Pit	Remove	item	\$5,176.50	1	1	1	1	1	1	1	1	1	1	1	2	0		
Lay Nom 60mm Pipe / Culvert	Remove	lin.m	\$10,353.00	2	2	2	4	0	0	1.5	1.5	0	0	0	0	0		
Outlet Pit or Headwall (rock armour allowed for under spillway)	Remove	each	\$2,588.25	0	1	0	1	1	1	1	1	1	0	0	0	1		
Additional Pits as Required	Remove	each	\$2,660.11	0	0	0	0	0	0	0	0	0	0	0	0	0		
Weir Outlet																		
Concrete blade wall type weir (rock armour allowed for in spillway)	Remove	item	\$10,353.00	0	0	0	0	6	5	0	0	3	0	1	2	0		
Fish Ladder	Remove	item	\$20,706.00	0	0	0	0	0	0	0	0	0	0	0	0	0		
Nominal 60mm pipeworks (length of pipeworks)	Remove	lin.m	\$290.15	0	0	0	0	0	0	0	0	0	0	0	30	0		
Scour protection - rock & geotextile filter	Remove	sq.m	\$165.65	0	0	0	0	0	0	0	0	0	0	0	300	0		
Construction of Spillway																		
Rip Rap Scour Protection (including filter fabric and crushed rock bed)	Remove	sq.m	\$165.65	400	350	1000	850	800	1000	500	500	600	30	150	300	0		
Supply and Lay Turf Reinforcement	Remove	sq.m	\$31.06	2530	1300	50	7500	350	310	580	800	510	1710	2290	4940	500		
Slotted weir	Remove	each	\$40,600.00	0	0	0	0	0	0	0	0	0	0	0	0	0		
Miscellaneous																		
Landscaping Remaining Basin Area - 25% of Area in Planting including preparation, etc	Remove	sq.m	\$25.17	10732.5	7105	8950	24472.5	5700	4950	5380	6575	4577.5	993.75	7762.5	8575	2700		
Landscaping Remaining Basin Area - 75% of Area in Turf	Remove	sq.m	\$7.74	32197.5	21315	26850	73417.5	17100	14850	16140	19725	13732.5	2981.25	23287.5	25725	8100		
Maintenance of Planting Area (3 years)	Remove	sq.m	\$19.08	10732.5	7105	8950	24472.5	5700	4950	5380	6575	4577.5	774	700	907	2700		
Maintenance of Turfed Area (3 years)	Remove	lin.m	\$13.80	32197.5	17100	26850	73417.5	17100	14850	16140	19725	13732.5	10	60	60	8100		
150mm Thick DG820 Maintenance Track 3m Wide (Perimeter)	Remove	lin.m	\$130.38	1360	780	950	1360	630	535	730	580	510	280	0	420	0		
Steel Handrail Allowance Around Inlet/Outlet Structures	Remove	lin.m	\$173.97	50	0	0	50	50	50	50	50	50	0	0	0	0		
Supply and install 1.8m heavy duty pool type fence	Remove	lin.m	\$215.38	0	0	0	1600	0	0	0	0	0	0	0	0	0		
Supply and install fence to prevent vehicle access including foundation preparation and footing	Remove	lin.m	\$100.00	1420	840	1060	1600	640	590	730	710	550	0	0	480	0		
Flora and Fauna Investigation	Reduce by Area	\$	\$1.00	7541.893939	7541.893939	7541.893939	7541.893939	7541.893939	7541.893939	7541.893939	7541.893939	7541.893939	7541.893939	7541.893939	7541.893939	7541.893939		
Geotechnical and Contamination Investigation	Reduce by Area	\$	\$1.00	46476.581	44533.354	45519.68	53121.923	43848.34	43377.54	43768.304	44213.21	43472.877	43472.877	43472.877	42435.94	42435.94		
Aboriginal and European Heritage Investigation and Archaeological Excavation if required.	Reduce by Area	\$	\$1.00	55000	55000	55000	55000	55000	55000	55000	55000	55000	55000	55000	55000	55000		
Detailed Topography Survey	Reduce by Area	\$	\$1.00	17247.46538	12128.01267	14736.59663	34755.48683	10323.27238	9082.901036	10112.48925	11284.56016	9334.076232	9334.076232	9334.076232	9334.076232	6602.158357		
WATER QUALITY																		
Bioretention Area																		
Detached excavation for Bio-Retention Area	Remain	cu.m																
Excavation in Clay 90%	Remain	cu.m	\$20.74	0	0	2106	4131	1134	324	1620	810	2187				1134		
Excavation in Rock 10%	Remain	cu.m	\$97.65	0	0	234	459	126	36	180	90	243				126		
Disposal of surplus VENM from site	Remain	cu.m	\$70.00	0	0	0	0	1260	360	1800	0	2430				1260		
Time base of excavation 150mm (Bio-area)	Remain	sq.m	\$1.00	3600	1600	2600	5100	1400	1000	2000	1000	2700				400		
Trim and compact base (Bio area)	Remain	sq.m	\$1.52	3600	1600	2600	5100	1400	1000	2000	1000	2700				400		
Supply and install 2mm HDPE Liner (Bio Area +1m Overlap)	Remain	sq.m	\$20.71	4110	1873	3037	5930	1647	483	2327	1163	3150	1520	6170	6880	1620		
Supply and install Geotextile (Bio Area)	Remain	sq.m	\$6.56	3600	1600	2600	5100	1400	1000	2000	1000	2700	1520	6170	6880	140		

<u>Savings Including Standard Detention Rationalisations (Refer Section 9.3)</u>		
<u>Extrapolated by Area</u>		
Saving For Gazetted Rationalisation Areas	\$44,940,000	\$
Land Saving For Gazetted Rationalisation Areas	21.2	ha
Gazetted Rationalisation Areas - Total Area	554	ha
Cost Saving Per Hectare for Gazetted Rationalisation Areas	81,119	\$/ha
Land Saving Per Hectare for Gazetted Rationalisation Areas	0.04	ha/ha
Non-Gazetted areas Above 100-yr Flood - Total Area	920	ha
Extrapolated Saving for Non-Gazetted Areas	\$74,600,000	\$
Extrapolated Land Saving for Non-Gazetted Areas	35	ha
Extrapolated Total Cost Saving	<u>\$119,500,000</u>	<u>\$</u>
Extrapolated Total Land Saving	<u>56</u>	<u>ha</u>

<u>Savings Including Standard Detention Rationalisations (Refer Section 9.3)</u>		
<u>Extrapolated by Detention Volume</u>		
Saving For Gazetted Rationalisation Areas	\$44,940,000	\$
Land Saving For Gazetted Rationalisation Areas	21.2	ha
Gazetted Rationalisation Areas - Total Detention Rationalised	250,625	m3
Cost Saving Per Cubic Metre of Detention for Gazetted Rationalisation Areas	179	\$/m3
Land Saving Per Cubic Metre of Detention for Gazetted Rationalisation Areas	0.84	m2/m3
Non-Gazetted areas - Unrationalised Detention Volume	418,600	m3
Extrapolated Saving for Non-Gazetted Areas	\$74,900,000	\$
Extrapolated Land Saving for Non-Gazetted Areas	35	ha
Extrapolated Total Cost Saving	<u>\$119,800,000</u>	<u>\$</u>
Extrapolated Total Land Saving	<u>56</u>	<u>ha</u>

Appendix C – Review of Supplied RAFTS Models

As discussed in Section 6.2 the XP-RAFTS models provided by Council were reviewed with respect to their suitability of for use in this review. Further information with relation to the review undertaken is provided in this Appendix. The following sections detail the review of each of the relevant models referring to the model names applied in Section 6.1.

It should be noted that these reviews were not undertaken with a view to verify all aspects of the supplied models but rather to determine their acceptability with respect to the general purpose of this review.

App C 1 Supplied Model 1

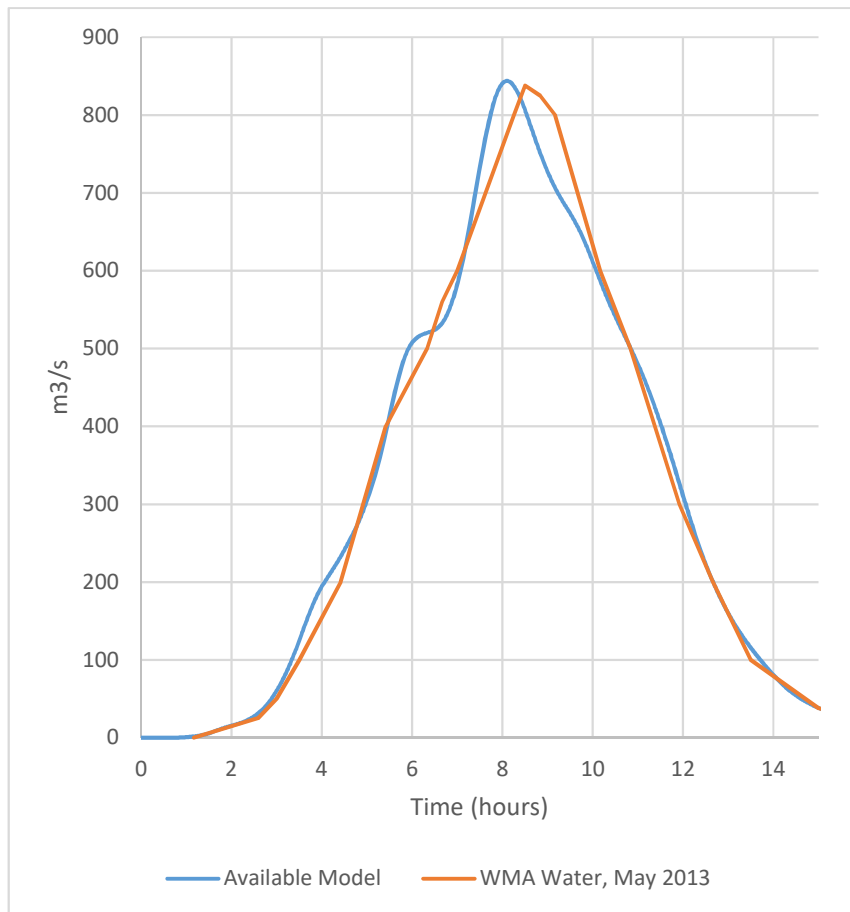
The Eastern Creek Catchment Hydrological Assessment (WMA water, May 2013) XP-RAFTS models were simulated and results were compared against the results documented in *Eastern Creek Hydrological Assessment, Final Report, WMA Water, May 2013*.

Table 10-1 shows that the peak flows in the RAFTS model differ to the peak flows presented in the report, particularly further upstream in the catchment. It was noted that the RAFTS model provided included additional routing and other considerations likely accounting for the differences. Figure 10-1 compares a hydrograph at the downstream outlet of the Eastern Creek catchment area.

Table 10-1 Peak Flow Rates (100-year ARI Existing Conditions)

	Peak flow from available model (m ³ /s)	Peak flow from WMA Water, May 2013 – Section 5 (m ³ /s)	Critical Duration
Lower Eastern Creek (outlet node)	844	838	9 hours
Quakers Hill (QUA0002270)	37	53	1.5 hours
Greater Western Railway (EAS0020980)	330	350	6 hours

Figure 10-1 100-year ARI Hydrographs at Eastern Creek discharge to South Creek for Available model and *WMA Water, May 2013*



Review of the hydrographs shows that the shape and peak of the hydrographs are similar. The differences that can be observed are likely due to modifications to the model as discussed above. Furthermore, *WMA Water, May 2013* does not clearly identify the duration storm for which the hydrograph applies. The modelled hydrograph is for the 9-hour storm.

In summary, whilst the flow results from the available model do differ to those documented in the report *WMA Water, May 2013*, it is understood that this is likely due to subsequent modifications to the model, with the range of difference between the report and model similar to what would be expected from these modifications. Therefore, the available model was considered appropriate to adopt for the assessment.

Comparing Detention Basins in Supplied Model 1 with Precinct Planning Models

Analysis was undertaken comparing the detention basins proposed in the Marsden Park, Schofields and Riverstone precinct studies with the corresponding basins in Supplied Model 1. The following tables present the results of this comparison.

Table 10-2, Table 10-3 and Table 10-4 show some differences between the basin volume and spillway levels. It should be noted that the precinct maps data provided shows basin locations and sizes, which are in some location not in agreement with the local precinct reports. This suggests that the basins configured in Supplied Model 1 are based on more recent updates of the basin configurations, compared with the precinct reports. This is in accordance with advice received from BCC and it is therefore considered that Supplied model 1 is appropriate for adoption for this study.

Table 10-2 Comparison between equivalent basins in Supplied Model 1 with Marsden Park Industrial Precinct Model (Supplied Model 4)

Supplied Model 1		Supplied Model 4		Contribution Plan Basin Label
Corresponding location in model	Storage at basin spillway (spillway level)	Corresponding location in model	Storage at basin spillway (spillway level in m AHD)	
BEL 8	15450 m ³ - extrapolated to max spillway level (25.5 m AHD)	Basin M	11831 m ³ (25.4 m AHD)	B 1.2
BEL 9	28000 m ³ (30.2 m AHD)	Basin I	34003 m ³ (30.2 m AHD)	B 2.2
BEL 10	33000 m ³ (33.2 m AHD)	Basin G	31755 m ³ (32.9 m AHD)	B 3.2

Table 10-3 Comparison between equivalent basins in Supplied Model 1 with Schofields Precinct Planning Model

Supplied Model 1		Schofields Precinct Planning model		Contribution Plan Basin Label
Corresponding location in model	Storage at basin spillway (spillway level)	Corresponding location in model	Storage at basin spillway (spillway level in m AHD)	
LEC22	19820 m ³ (19 m AHD)	EAS0971E	18650 m ³ (19 m AHD)	SE 5.2
QUA3	33615 m ³ (20 m AHD)	BUR0A00261	33615 m ³ (20.5 m AHD)	SE 7.3
BUR7	21780 m ³ (19 m AHD)	BUR0100409	14800 m ³ (20 m AHD)	SE 6.2

Table 10-4 Comparison between equivalent basins in Supplied Model 1 and Alex Avenue & Riverstone Precinct Planning Model

Supplied model 1		Alex Avenue and Riverstone Precinct model		Contribution Plan Basin Label
Corresponding location in model	Storage at basin spillway (spillway level)	Corresponding location in model	Storage at basin spillway (spillway level in m AHD)	
LEC23	14644 m ³ (31.0 m AHD)	Basin E20	14644 m ³ (31.0 m AHD)	E 9.2
LEC12	8786 m ³ (23.5 m AHD)	Basin E16	8786 m ³ (23.5 m AHD)	E 8.1

LEC11	6623 m ³ (35.5 m AHD)	Basin E13	6623 m ³ (35.5 m AHD)	E 7.2
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App C 2 Supplied Model 2

BCC advised that Supplied Model 2 was previously updated/prepared for *Updated South Creek Flood Study, Worley Parsons, 30th January 2015 (Worley Parsons, 2015.)* It is noted that two model versions were provided by BCC, and the model with the suffix “_36hr” was adopted as the results from this model were shown to be consistent with those in the updated flood study reporting, as shown in the below table.

Table 10-5 Peak Flow Rates (100-year ARI 36-hour duration)

Location (node number)	Peak flow from available model (m ³ /s)	Peak flow from the report (Worley Parsons, 2015, Table 13) (m ³ /s)
Upstream of Bringelly Road (1.08)	312	312
Upstream of Railway Lane (1.27D)	1,193	1,193
Upstream of Richmond Road (1.39D)	1,433	1,433

App C 3 Supplied Model 3

The Marsden Park Residential Precinct Post Exhibition Water Cycle and Flood Management Strategy Report (Winten Property Group, July 2013) is understood to be the corresponding report to Supplied Model 3. Supplied Model 3 was simulated, showing agreement of model results with those documented in the report.

However, inspection of the model showed that the developed case for the upstream Marsden Park Industrial Precinct (MPIP) has been included in both the existing and developed scenarios of the Marsden Park Residential Precinct Model. This was on the basis that the proposed detention strategy for MPIP would be such that developed flows are equivalent to existing flows. However, this assumption is not valid for this review which has the aim to determine the overall impact of the detention strategy of a number of precincts. Therefore, whilst the developed case scenario adopted for this review includes the developed case for both these precincts represented in the Marsden Park precinct model, the baseline condition for this assessment does not include the developed MPIP site, but rather includes the undeveloped MPIP site as represented Supplied Model 4 (discussed below).

Table 10-6 Peak Design Marsden Park Precinct Flows (100-year ARI)

Location	Peak Flow Supplied Model 3 (m ³ /s)	Peak flow from <i>Winten Property Group, July 2013</i> (m ³ /s)
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West_D	16.89	16.89
North_D	20.03	20.03
SC_138	1351.32	1351.32

App C 4 Supplied Model 4

Supplied Model 4 was simulated, showing agreement of model results with those documented in the *Water Cycle Management Assessment, GHD 2009*. Table 10-7 below compares peak flows from MPIP

Table 10-7 Peak Developed MPIP Flows – Bells Ck Tributary (100-year ARI)

Location	Supplied Model 4 Peak Flow Rate (m ³ /s)	Peak flow from report (m ³ /s)
D/S of Basin M	6.2	6.2
D/S of Basin I	7.9	7.9
D/S of Basin G	7.6	7.6

The below table shows a comparison of results between conditions modelled in Bells Creek and those outlined in Table 9 of the report (GHD, 2009).

Table 10-8 Peak Existing MPIP Flows – Bells Creek Tributary

Location	Supplied model 4 Peak Flow Rate (m ³ /s)	Peak flow from report (m ³ /s)
D/S of Basin M	7.5	7.5
D/S of Basin I	8.1	8.1
D/S of Basin G	8.1	8.1

Table 10-7 and Table 10-8 both show that simulated peak flows are in agreement at Bells Creek. Therefore, Supplied Model 4 was considered appropriate for adoption in this study.

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