

Figure D22 Measure FM17 Layout



Figure D23 Measure FM18 Layout



Figure D24 Measure FM19 Layout



Figure D25 Measure FM20 Layout

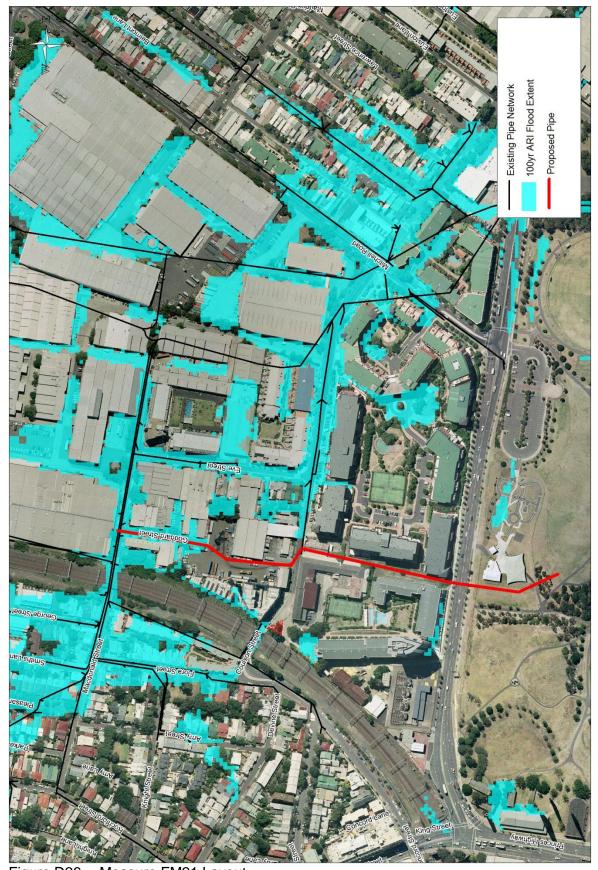


Figure D26 Measure FM21 Layout



Figure D27 Measure FM22 Layout

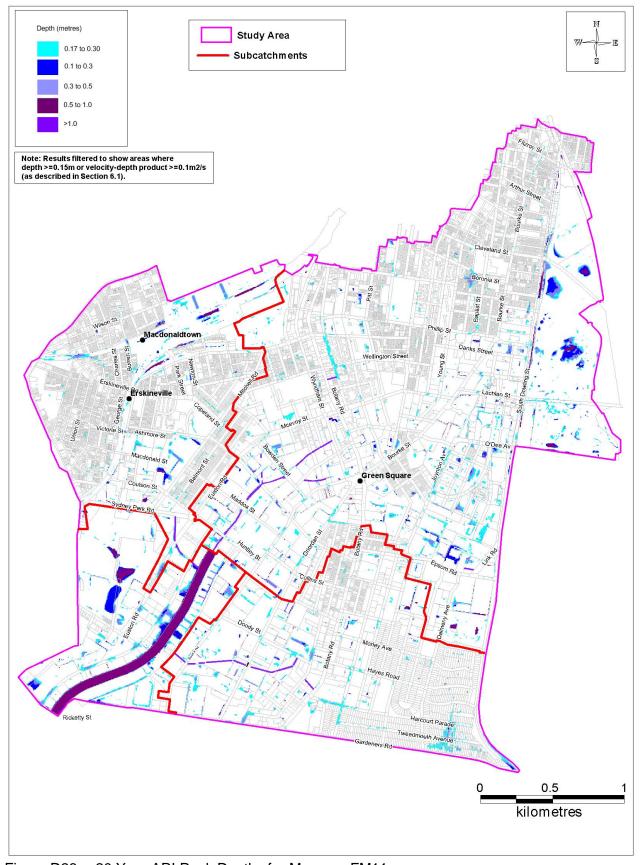


Figure D28 20 Year ARI Peak Depths for Measure FM11

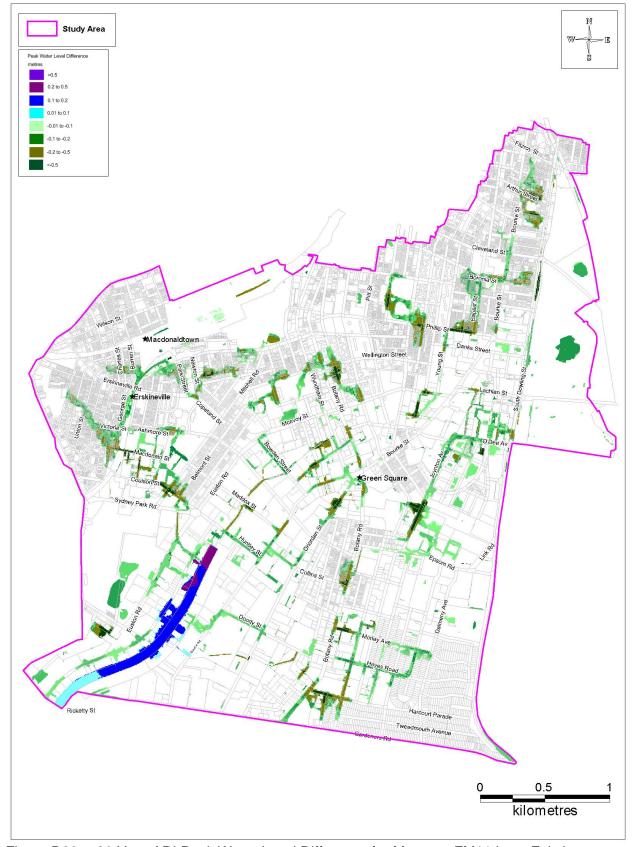


Figure D29 20 Year ARI Peak Water Level Difference for Measure FM11 Less Existing

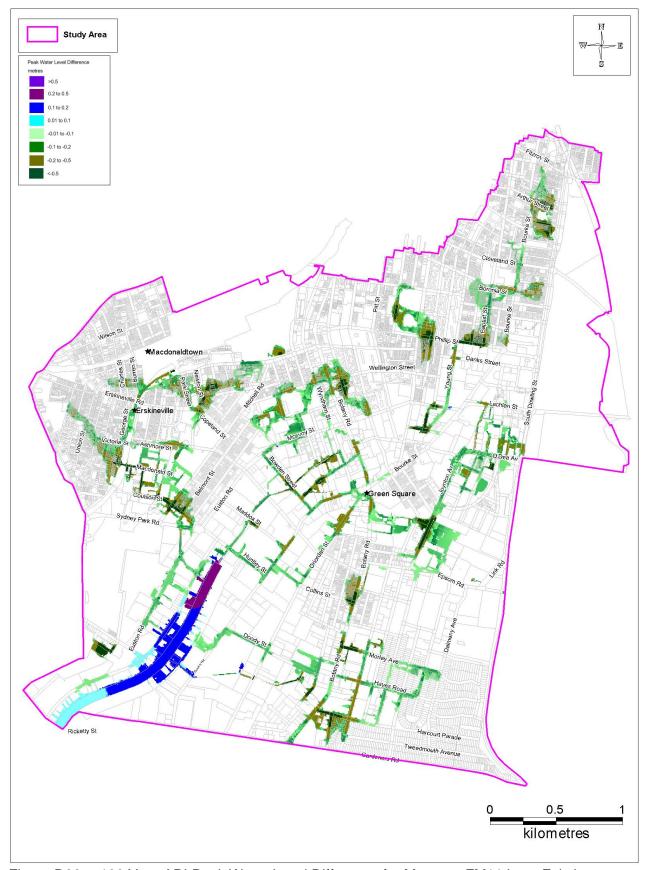


Figure D30 100 Year ARI Peak Water Level Difference for Measure FM11 Less Existing

Alexandra Canal Floodplain Risk Management Study and Plan

APPENDIX E MEASURE COSTING



Cost Estimate Option: FM 5

Erskinville Oval Detention Basins



TEM NO. D	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2 P	Provision of sediment & erosion control	1	item		
	Construction setout & survey	1	item		
	Nork as executed survey & documentation	1	item		
	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost)	1	пеш		626
	DEMOLITION, CLEARING AND GRUBBING				020
2.4	Clearing & grubbing of park and eval	64 200	T ac m	10	640
	Clearing & grubbing of park and oval Strip topsoil & stockpile for re-use (assuming 150mm depth)	61,200 9180	sq. m	10 25	612 229
	Dispose of excess topsoil (nominal 10% allowance)	918	cu. m	60	55
	Pull up and dispose existing road surface	900	sq.m	35	31
S	SUBTOTAL		'		928
3.0 E	Earthworks				
3.1 E	Excavation of park and oval detention basins	10,000	cu.m	45	450
	Disposal of excess cut (assuming 80% of total excavation)	8,000	item	60	480
S	SUBTOTAL				930
4.0 D	DRAINAGE				
4.1 S	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe	120	lin.m	1200	144
4.2 S	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	225	each	2250	506
	nstall new drainage / junction pit (assumed 1 pit per 50m of pipe)	7	each	4000	28
	nstall new oulet structure, including erosion protection as required	2	each	6000	12
	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	69,025	69 759
5.0 P	PAVEMENTS				
R	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good				
	ointing	900	sq. m	120	108
	SUBTOTAL FRAFFIC CONTROL				108
_	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	352	lin.m	500	176
	SUBTOTAL MINOR LANDSCAPING				176
71 10	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	61 200	80 ~	20	1,224
	Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance)	61,200	sq. m	50000	1,224
	SUBTOTAL	' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	ROIII	55000	1,274
	CONSTRUCTION SUB-TOTAL	-			4,801
8.0 C	CONTINGENCIES				
	50% construction cost				2,400
8.1 5					7.000
8.1 5	CONSTRUCTION TOTAL excluding GST				7.202
8.1 5	CONSTRUCTION TOTAL, excluding GST				
8.1 5	GST				7,202 720 7 922
8.1 5	-	-			

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- 2. Estimate / rates in 2010 dollars and does not allow for inflation

Cost Estimate Option: FM 6

Ashmore Street Flowpath



I EM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost)	-			1,988,80
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of vegatated areas	61,200	sq. m	10	612,00
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	9180	cu. m	25	229,50
2.3	Dispose of excess topsoil (nominal 10% allowance)	918	cu. m	60	55,08
2.4	Pull up and dispose existing road surface	8710	sq.m	35	304,8
	SUBTOTAL				1,201,43
3.0	DRAINAGE				
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe	690	lin.m	3300	2,277,00
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for twin 1.8m dia. Pipe	850	each	6750	5,737,5
3.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	31	each	4000	124,0
3.4	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	813,850	813,8
	SUBTOTAL				8,952,35
4.0	PAVEMENTS				
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	8710	sq. m	120	1,045,20
	SUBTOTAL	07.10	0 q	.20	1,045,20
5.0	TRAFFIC CONTROL				
5.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	1571	lin.m	500	785,50
5.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL	1571	lin.m	500	785,50 785,5 0
5.1 6.0		1571	lin.m	500	
6.0	SUBTOTAL MINOR LANDSCAPING				785,50
	SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	61,200	sq. m	20	785,5 0
6.0 6.1	SUBTOTAL MINOR LANDSCAPING	61,200			785,50 1,224,00 50,00
6.0 6.1	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance)	61,200	sq. m	20	1,224,00 50,00 1,274,00
6.0 6.1	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance) SUBTOTAL	61,200	sq. m	20	1,224,00 50,00 1,274,00
6.0 6.1 6.2	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL	61,200	sq. m	20	1,224,00 50,00 1,274,00 15,247,26
6.0 6.1 6.2 7.0	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost	61,200	sq. m	20	1,224,00 50,00 1,274,00 15,247,28
6.0 6.1 6.2 7.0	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONSTRUCTION COSTRUCTION SUB-TOTAL CONSTRUCTION TOTAL, excluding GST	61,200	sq. m	20	7,623,64 22,870,92
6.0 6.1 6.2 7.0	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost	61,200	sq. m	20	

DISCLAIMER

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Cost Estimate Option: FM 7

Phillips Street Flowpath



TEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost)				628,0
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of park and vacant lot	63,000	sq. m	10	630,0
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	9450	cu. m	25	236,2
2.3	Dispose of excess topsoil (nominal 10% allowance)	945	cu. m	60	56,7
2.4	Pull up and dispose existing road surface SUBTOTAL	1530	sq.m	35	53,5 976,5
3.0	Earthworks			<u>l</u>	
3.1	Excavation of park and oval detention basins	15,000	cu.m	45	675,0
3.2	Disposal of excess cut (assuming 80% of total excavation)	12,000	item	60	720,0
	SUBTOTAL				1,395,0
4.0	DRAINAGE				
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m dia. Pipe	50	lin.m	975	48,7
4.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	125	each	1075	134,3
4.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	4	each	4000	16,0
4.4	Install new oulet structure, including erosion protection as required	2	each	6000	12,0
4.2	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost) SUBTOTAL	1	item	21,113	21,1 232, 2
5.0	PAVEMENTS				
	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide				
5.1	good jointing	1530	sq. m	120	183,6
	SUBTOTAL				183,6
6.0	TRAFFIC CONTROL				
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL	179	lin.m	500	89,5 89, 5
7.0	MINOR LANDSCAPING				
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	63,000	sq. m	20	1,260,0
7.2	Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance)	1	item	50000	50,0
	SUBTOTAL				1,310,0
	CONSTRUCTION SUB-TOTAL				4,814,8
8.0	CONTINGENCIES				
8.1	50% construction cost				2,407,4
	CONCEDUCTION TOTAL avaluation COS			Ī	7 222 1
	CONSTRUCTION TOTAL, excluding GST GST				7,222,2
	CONSTRUCTION TOTAL, including GST				7,944,4
	CONSTRUCTION TOTAL, including 931				7,944,5
	CONSTRUCTION TOTAL, Tourided	1			.,544,

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Cost Estimate Option: FM 8

Alexandria Park Flowpath



ГЕМ NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost)			•	703,
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of park and oval	50,700	sq. m	10	507,
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	7605	cu. m	25	190,
2.3	Dispose of excess topsoil (nominal 10% allowance)	760.5	cu. m	60	45,
2.4	Pull up and dispose existing road surface SUBTOTAL	2110	sq.m	35	73,
3.0	Earthworks				816,
2.1	Excavation of park and oval detention basins	15.000	011 m	15	675
3.1	Disposal of excess cut (assuming 80% of total excavation)	15,000 12,000	cu.m item	45 60	675, 720,
3.2	SUBTOTAL	12,000	пеш	00	1,395,
4.0	DRAINAGE				
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.45m dia. Pipe	50	lin.m	925	46
4.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	125	each	1075	134
4.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	350	each	1650	577,
	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	11	each	4000	44,
4.4	Install new oulet structure, including erosion protection as required	2	each	6000	12,
4.5	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost) SUBTOTAL	1	item	81,413	81, 895 ,
5.0	PAVEMENTS				
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing SUBTOTAL	2110	sq. m	120	253, 253 ,
6.0	TRAFFIC CONTROL			1	•
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	525	lin.m	500	262,
	SUBTOTAL				262,
7.0	MINOR LANDSCAPING				
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	50,700	sq. m	20	1,014,
7.2	Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance) SUBTOTAL	1	item	50000	50, 1,064 ,
	CONSTRUCTION SUB-TOTAL				5,389,
8.0	CONTINGENCIES				
8.0	50% construction cost			I	2,694,
					., 1
	CONSTRUCTION TOTAL, excluding GST				8,084,
	GST				808,
	CONSTRUCTION TOTAL, including GST				8,893,
	CONSTRUCTION TOTAL, rounded				8,893,

DISCLAIMER

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Cost Estimate Option: FM 9 Sydney Water HAF



	Sydney Water IIA				
ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost)				7,002,900
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of park and oval	11,000	sq. m	10	110,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	1650	cu. m	25	41,250
2.3	Dispose of excess topsoil (nominal 10% allowance) Pull up and dispose existing road surface	165 1160	cu. m sq.m	60 35	9,900
2.7	SUBTOTAL	1100	oq.m		201,750
4.0	DRAINAGE				
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	35	lin.m	1075	37,625
	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe	25	lin.m	1200	30,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe	55	lin.m	1425	78,375
	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m v 0.6m culvert	20	lin.m	1650 2200	33,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m x 0.6m culvert Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m x 1.2m culvert	105	lin.m lin.m	2400	231,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m x 0.9m culvert	20	lin.m	2600	52,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 1.5m culvert	30	lin.m	3000	90,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 0.6m culvert	105	lin.m	3200	336,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 0.9m culvert	260	lin.m	4800	1,248,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 1.5m culvert	135	lin.m	5100	688,500
	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert	120	lin.m	6300	756,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.9m x 1.5m culvert Supply, excavate, bed, lay, joint, backfill and provide connections for 4.5m x 1.5m culvert	140 45	lin.m lin.m	8200 13100	1,148,000 589,500
	Supply, excavate, bed, lay, joint, backfill and provide connections for 5.0m x 1.5m culvert	105	lin.m	13400	1,407,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 5.5m x 1.5m culvert	410	lin.m	13500	5,535,000
4.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 5.5m x 1.8m culvert	755	lin.m	13750	10,381,250
4.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 6.0m x 1.8m culvert Supply, excavate, bed, lay, joint, backfill and provide connections for 2.6m x 2.4m culvert	1,025 15	lin.m lin.m	16500 4400	16,912,500 66,000
4.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	69	each	4000	276,000
4.4	Install new oulet structure, including erosion protection as required	2	each	6000	12,000
4.5	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost) SUBTOTAL	1	item	3,993,175	3,993,175 43,924,925
6.0	STORAGE TANK				43,324,323
6.1	Construction of storage tank (nominal allowance) SUBTOTAL	1	item	500000	500,000 500,00 0
5.0	PAVEMENTS			•	,
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	1160	sq. m	120	139,200
	SUBTOTAL				139,200
6.0	TRAFFIC CONTROL				
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL	3,400	lin.m	500	1,700,000 1,700,00 0
7.0	MINOR LANDSCAPING				
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	11,000	sq. m	20	220,000
	SUBTOTAL				220,000
	CONSTRUCTION SUB-TOTAL				53,688,775
8.0	CONTINGENCIES				
8.1	50% construction cost				26,844,388
	CONSTRUCTION TOTAL, excluding GST				80,533,163
	GST				8,053,316
	CONSTRUCTION TOTAL, including GST				88,586,479
	CONSTRUCTION TOTAL, rounded				88,586,500
DISCLAIMER				L	,,

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Cardno
Shaping the Future

Cost Estimate
Option: FM 12

Detention Basin in Moore Park (off set storage)

TEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost)				1,169,7
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of park and oval	11,000	sq. m	10	110,0
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	1650	cu. m	25	41,2
2.3	Dispose of excess topsoil (nominal 10% allowance)	165	cu. m	60	9,9
2.4	Pull up and dispose existing road surface SUBTOTAL	1160	sq.m	35	40,6 201,7
3.0	EARTHWORKS				
3.1	Excavation of storage	2,320	cu.m	45	104,4
3.2	Disposal of excess cut (assuming 80% of total excavation) SUBTOTAL	1,856	item	60	111,3
4.0	DRAINAGE	<u> </u>		· · · · · ·	215,7
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 0.6m culvert	95	lin.m	3200	304,0
4.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.6m culvert	170	lin.m	5100	867,0
4.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.9m x 0.6m culvert	130	lin.m	7200	936,0
4.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.9m x 0.6m culvert	50	lin.m	72000	3,600,0
4.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	9	each	4000	36,0
4.4	Install new oulet structure, including erosion protection as required Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation	1	each	6000	6,0
4.5	cost)	1	item	574,900	574,9
6.0	SUBTOTAL STORAGE TANK				6,323,9
6.1	Construction of storage tank (nominal allowance)	1	itom	500000	F00.0
6.1	SUBTOTAL		item	300000	500,0 500, 0
5.0	PAVEMENTS	•			
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing SUBTOTAL	1160	sq. m	120	139,2 139, 2
6.0	TRAFFIC CONTROL	<u> </u>			139,2
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	395	lin.m	500	197,5
7.0	SUBTOTAL MINOR LANDSCAPING				197,5
	Repair disturbed areas in accordance with landscape architects requirements (nominal				
7.1	allowance) SUBTOTAL	11,000	sq. m	20	220,0 220, 0
					8,967,8
	CONSTRUCTION SUB-TOTAL				0,907,8
8.0 8.1	CONTINGENCIES 50% construction cost			1	4,483,9
0.1					
	CONSTRUCTION TOTAL, excluding GST				13,451,7
	GST				1,345,1
	CONSTRUCTION TOTAL, including GST				14,796,8
	CONSTRUCTION TOTAL, rounded			ı	14,796,

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Carcino
Shaping the Future

Cost Estimate
Option: FM 13

Detention Basin in Newtown Public School

TEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost)				239,70
2.0	DEMOLITION, CLEARING AND GRUBBING			•	
2.1	Clearing & grubbing of park and oval	& erosion control 1 item survey 1 item rey & documentation 1 item ion, testing & certification 1 item I as 15% of works cost) Image: survey Image: survey	10	110,00	
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	ing of park and oval ckpile for re-use (assuming 150mm depth) st topsoil (nominal 10% allowance) se existing road surface 11,000 sq. m 1650 cu. m 2110 sq.m	25	41,25	
2.3				60	9,90
2.4	Pull up and dispose existing road surface SUBTOTAL	2110	sq.m	35	73,85 235,00
	OOD OTTE				233,00
3.0	Earthworks				
3.1	Excavation of park and oval detention basins	11,000	cu.m	45	495,00
3.2	Disposal of excess cut (assuming 80% of total excavation)	8,800	item	60	528,00
	SUBTOTAL				1,023,00
4.0	DRAINAGE				
	Nominal allowance for redirection of existing pipes, and construction of inlet and outlet			400000	100.00
4.1	structures SUBTOTAL	1	item	120000	120,00 120,00
7.0					120,00
7.0	MINOR LANDSCAPING				
	Repair disturbed areas in accordance with landscape architects requirements (nominal				
7.1	allowance)	11,000	sq. m	20	220,00
	SUBTOTAL				220,00
	CONSTRUCTION SUB-TOTAL	-			1,837,70
8.0	CONTINGENCIES				
				T	
8.1	50% construction cost				918,85
	CONSTRUCTION TOTAL, excluding GST	<u> </u>			2,756,55
	GST	г			275,65
	CONSTRUCTION TOTAL, including GST	Г			3,032,20
		i			3,032,30

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Cardno
Shaping the Future

Cost Estimate
Option: FM 14

Detention Basin near Burren Street

EM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost)				272
2.0	DEMOLITION, CLEARING AND GRUBBING			•	
2.1	Clearing & grubbing of park and oval	1	sq. m	10	42
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)		•	25	15
2.3	Dispose of excess topsoil (nominal 10% allowance)	n depth) 637.5 cu. 63.75 cu.	cu. m	60	3
2.4	Pull up and dispose existing road surface	nal 10% allowance) 63.75 cu. m	sq.m	35	73
	SUBTOTAL				136
3.0	Earthworks				
3.1	Excavation of park and oval detention basins	4,250	cu.m	45	191
3.2	Disposal of excess cut (assuming 80% of total excavation)	3,400	item	60	204
	SUBTOTAL				395
4.0	DRAINAGE				
4.1	Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures	1	item	1200000	1,200
	SUBTOTAL				1,200
7.0	MINOR LANDSCAPING				
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	4,250	sq. m	20	85
7.1	SUBTOTAL	4,230	34.111	20	85
				<u>'</u>	
	CONSTRUCTION SUB-TOTAL				2,088
8.0	CONTINGENCIES				
8.1	50% construction cost				1,044
	CONSTRUCTION TOTAL, excluding GST				3,133
	GST				3,133
	CONSTRUCTION TOTAL, including GST				3,446
					-,

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Cost Estimate
Option: FM 16

Additional Drainage Capacity Gardeners Road

TEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
1.5	SUBTOTAL (Assumed as 15% of works cost)	ı	item		229
2.0	DEMOLITION, CLEARING AND GRUBBING			L.	
2.1	Clearing & grubbing of vegatated areas (nominal allowance)	1,000	sq. m	10	10
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	150	cu. m	25	3
2.3	Dispose of excess topsoil (nominal 10% allowance)	15	cu. m	60	
2.4	Pull up and dispose existing road surface	1680	sq.m	35	58
	SUBTOTAL				73
4.0	DRAINAGE				
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	400	lin.m	2250	900
4.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	8	each	4000	32
4.4	Install new oulet structure, including erosion protection as required	1	each	6000	(
4.5	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	93,800	93
4.5	SUBTOTAL	<u>'</u>	пеш	93,800	1,031
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	1680	sq. m	120	201
	SUBTOTAL				201
6.0	TRAFFIC CONTROL				
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	400	lin.m	500	200
011	SUBTOTAL			000	200
7.0	MINOR LANDSCAPING				
7.4	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	4.000			
7.1	SUBTOTAL	1,000	sq. m	20	20 20
	SUBTOTAL				20
	CONSTRUCTION SUB-TOTAL				1,755
8.0	CONTINGENCIES				
8.1	50% construction cost				877
					2,633
	CONSTRUCTION TOTAL excluding GST				2,000
	CONSTRUCTION TOTAL, excluding GST				202
	GST				263
					2,89° 2,89°

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Cost Estimate FM 17 Option:

Detention Basin in Turruwul Park



ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
	 				
1.5	Geotechnical supervision, testing & certification SUBTOTAL (Assumed as 15% of works cost)	1	item		
2.0	DEMOLITION, CLEARING AND GRUBBING			<u> </u>	396,70
2.1	Clearing & grubbing of park and oval	19 200	sa m	10	192,00
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)			25	72,00
2.3	g & grubbing of park and oval 19,200 sq. m socil & stockpile for re-use (assuming 150mm depth) 2880 cu. m of excess topsoil (nominal 10% allowance) 288 cu. m and dispose existing road surface 2110 sq.m TAL orks ion of park and oval detention basins 19,200 cu.m all of excess cut (assuming 80% of total excavation) 15,360 item		60	17,28	
2.4	Pull up and dispose existing road surface	bil & stockpile for re-use (assuming 150mm depth) f excess topsoil (nominal 10% allowance) d dispose existing road surface 2110	sq.m	35	73,85
	SUBTOTAL				355,13
3.0	Earthworks				
3.1	Excavation of park and oval detention basins	19,200	cu.m	45	864,00
3.2	Disposal of excess cut (assuming 80% of total excavation)	15,360	item	60	921,60
4.0	DRAINAGE			L	1,785,60
	T				
4.1	Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures SUBTOTAL	1	item	120000	120,00
7.0	MINOR LANDSCAPING				120,00
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	19,200	00 m	20	384,00
7.1	SUBTOTAL	19,200	sq. m	20	384,00
	COST COST				30.,00
	CONSTRUCTION SUB-TOTAL				3,041,43
8.0	CONTINGENCIES				
8.1	50% construction cost				1,520,71
	CONSTRUCTION TOTAL, excluding GST				4,562,14
	GST				456,21
	CONSTRUCTION TOTAL, including GST				5,018,36
	CONSTRUCTION TOTAL, rounded				5,018,40

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Cost Estimate Option:

Additional Drainage Network at Rosebury B Catchment

	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
	Geotechnical supervision, testing & certification				
1.5	SUBTOTAL (Assumed as 15% of works cost)	1	item		225.00
2.0	/				235,00
				T I	
2.1		-	-	10	10,00
2.2				25 60	3,75
2.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe) Install new oulet structure, including erosion protection as required Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost) SUBTOTAL PAVEMENTS	35	90 10,50		
2.4		300	54.111	33	25,15
4.0	DRAINAGE				,
4.4	Supply everyte had lay joint healfill and provide connections for 1.5m dia. Dina	400	lin m	2250	4 000 00
4.1				2250 4000	1,080,00
4.4				6000	12,00
		_	odon	0000	12,00
4.5	,	1	item	113,200	113,20 1,245,2 0
5.0	PAVEMENTS				
3.0	PAVEMENTS				
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	300	sq. m	120	36,00
5.1		300	sq. m	120	
5.1 6.0	to provide good jointing	300	sq. m	120	
6.0	to provide good jointing SUBTOTAL TRAFFIC CONTROL				36,00
	to provide good jointing SUBTOTAL	300	sq. m	500	36,00 36,00 240,00 240,00
6.0	to provide good jointing SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING				36,00 240,00
6.0 6.1 7.0	to provide good jointing SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal	480	lin.m	500	240,00 240,00
6.0 6.1	to provide good jointing SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING				240,00 240,00 240,00
6.0 6.1 7.0	to provide good jointing SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	480	lin.m	500	240,00 240,00 240,00
6.0 6.1 7.0	to provide good jointing SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	480	lin.m	500	240,00 240,00 20,00 20,00
6.0 6.1 7.0	to provide good jointing SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL	480	lin.m	500	240,00 240,00 240,00 20,00
6.0 6.1 7.0 7.1	to provide good jointing SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL	480	lin.m	500	240,000 240,000 20,000 20,000 1,801,35
6.0 6.1 7.0 7.1	to provide good jointing SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost	480	lin.m	500	240,000 240,000 20,000 20,000 1,801,35
6.0 6.1 7.0 7.1	to provide good jointing SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost CONSTRUCTION TOTAL, excluding GST	480	lin.m	500	240,00 240,00 240,00 20,00 20,00 1,801,35
6.0 6.1 7.0 7.1	to provide good jointing SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost CONSTRUCTION TOTAL, excluding GST GST	480	lin.m	500	240,00 240,00 240,00 20,00 20,00 1,801,35 900,67 2,702,02 270,20
6.0 6.1 7.0 7.1	to provide good jointing SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost CONSTRUCTION TOTAL, excluding GST	480	lin.m	500	240,0 240,0 240,0 20,0 20,0 1,801,3

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Cost Estimate
Option: FM 19

Detention Basin in Waterloo Park



EM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification				
1.0	SUBTOTAL (Assumed as 15% of works cost)	'	110111		352,50
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of park and oval	16,500	sq. m	10	165,00
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	testing & certification 1 item 5 15% of works cost) 1 16,500 sq. m 10 10 or re-use (assuming 150mm depth) 2475 cu. m 25 (nominal 10% allowance) 247.5 cu. m 60 ng road surface 2110 sq.m 35 16,500 cu.m 45	61,87		
2.3	Dispose of excess topsoil (nominal 10% allowance)	bing of park and oval 16,500 sq. m 10 tockpile for re-use (assuming 150mm depth) 2475 cu. m 25 cs topsoil (nominal 10% allowance) 247.5 cu. m 60 cose existing road surface 2110 sq.m 35 cark and oval detention basins 16,500 cu.m 45		14,85	
2.4	Pull up and dispose existing road surface SUBTOTAL	2110	sq.m	35	73,85
	SOBTOTAL				315,57
3.0	Earthworks				
3.1	Excavation of park and oval detention basins	16,500	cu.m	45	742,50
	Disposal of excess cut (assuming 80% of total excavation)	13.200	item	60	792,00
3.2		.0,200	itom		
3.2	SUBTOTAL	.0,200	ROM	00	
4.0	DRAINAGE	13,233	IOII	33	
	SUBTOTAL	1	item	120000	1,534,50
4.0	SUBTOTAL DRAINAGE Nominal allowance for redirection of existing pipes, and construction of inlet and outlet				1,534,50 0
4.0	SUBTOTAL DRAINAGE Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures				1,534,50 120,00
4.0 4.1 7.0	DRAINAGE Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal	1	item	120000	1,534,50 120,00 120,00
4.0 4.1	DRAINAGE Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures SUBTOTAL MINOR LANDSCAPING				1,534,500 120,000 120,000
4.0 4.1 7.0	DRAINAGE Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance)	1	item	120000	1,534,50 120,00 120,00 330,00 50,00
4.0 4.1 7.0 7.1	DRAINAGE Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	16,500	item	120000	1,534,500 120,000 120,000 330,000 50,000
4.0 4.1 7.0 7.1	DRAINAGE Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance)	16,500	item	120000	1,534,50 120,00 120,00 330,00 50,00 380,00
4.0 4.1 7.0 7.1	Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance) SUBTOTAL	16,500	item	120000	1,534,50 120,00 120,00 330,00 50,00 380,00
4.0 4.1 7.0 7.1 7.2	DRAINAGE Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL	16,500	item	120000	1,534,50 120,00 120,00 330,00 50,00 380,00 2,702,57
4.0 4.1 7.0 7.1 7.2	DRAINAGE Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES	16,500	item	120000	1,534,50 120,00 120,00 330,00 50,00 380,00 2,702,57
4.0 4.1 7.0 7.1 7.2	DRAINAGE Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES	16,500	item	120000	1,534,50 120,00 120,00 330,00 50,00 380,00 2,702,57 1,351,28 4,053,86
4.0 4.1 7.0 7.1 7.2	DRAINAGE Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONSTRUCTION SUB-TOTAL CONSTRUCTION TOTAL, excluding GST	16,500	item	120000	1,534,500 120,000 120,000 330,000 50,000 380,000 2,702,575 4,053,865 405,386 405,386

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Cost Estimate
Option: FM 20

Sheas Creek Flood Walls



EM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost)				279,4
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of vegatated areas (nominal allowance)	1,000	sq. m	10	10,0
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	150	cu. m	25	3,7
2.3	Dispose of excess topsoil (nominal 10% allowance)	15	cu. m	60	9
2.4	Pull up and dispose existing road surface (nominal allowance)	100	sq.m	35	3,5
	SUBTOTAL				18,1
3.0	Flood Walls				
3.1	Construction of Flood Walls incl. footings and spans as required	1,656	sq. face. m	800	1,324,8
	SUBTOTAL				1,324,8
4.0	DRAINAGE				
4.1	Nominal allowance for upgrading culvert capacity along channel	1	item	500000	500,0
	SUBTOTAL				500,0
7.0	MINOR LANDSCAPING				
7.4	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	4.000		20	00.0
7.1	SUBTOTAL	1,000	sq. m	20	20,0 20,0
	0001017/2				20,0
	CONSTRUCTION SUB-TOTAL				2,142,3
8.0	CONTINGENCIES				
8.0	CONTINGENCIES				
8.0	CONTINGENCIES 50% construction cost				1,071,1
	50% construction cost				3,213,5
	50% construction cost CONSTRUCTION TOTAL, excluding GST				1,071,1 3,213,5 321,3 3,534,8

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Cost Estimate
Option: FM 21

Diversion to Sydney Park



ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost)	-			418,500
2.0	DEMOLITION, CLEARING AND GRUBBING			•	
2.1	Clearing & grubbing of vegatated areas (nominal allowance)	1,000	sq. m	10	10,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	150	cu. m	25	3,750
2.3	Dispose of excess topsoil (nominal 10% allowance)	15	cu. m	60	900
2.4	Pull up and dispose existing road surface SUBTOTAL	2000	sq.m	35	70,000 84,650
4.0	DRAINAGE	ı			
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m dia. Pipe	500	lin.m	3900	1,950,000
4.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	10	each	4000	40,000
4.4	Install new oulet structure, including erosion protection as required Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage	1	each	6000	6,000
4.5	installation cost)	1	item	199,600	199,600
	SUBTOTAL			•	2,195,600
5.0	PAVEMENTS Reinstate disturbed road pavement, including demolition and disposal of additional	<u> </u>			
5.1	material to provide good jointing SUBTOTAL	2000	sq. m	120	240,000 240,000
6.0	TRAFFIC CONTROL				240,000
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	500	lin.m	500	250,000
	SUBTOTAL				250,000
7.0	MINOR LANDSCAPING				
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,000
	SUBTOTAL	, , ,	- 45 555		20,000
			•		
	CONSTRUCTION SUB-TOTAL				3,208,750
8.0	CONTINGENCIES				
8.1	50% construction cost				1,604,375
	CONSTRUCTION TOTAL, excluding GST				4,813,125
	GST				481,313
	CONSTRUCTION TOTAL, including GST				5,294,438
	CONSTRUCTION TOTAL, rounded				5,294,500
DISCLAIME	R:			•	

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Cost Estimate - Summary

FM 11 - Alexandra Canal Overall Catchment Long Term Option

Option	Long T	erm
Орион	Capital	Ongoing
Alexandria Park Flowpath	30,174,900	27,800
Arthur Street Flowpath	\$22,212,100	\$11,000
Ashmore Street Flowpath	\$46,177,000	\$26,400
Bourke Street	\$187,081,800	\$79,100
Charles and Boronia Street Flowpaths	\$25,364,400	\$11,000
Doody Street , Botany Road & Rosebery Flowpaths	\$63,063,800	\$55,400
Erskinville Oval Flowpath	\$39,932,600	\$19,300
Mandible Street Flowpath	\$24,949,800	\$17,200
Phillip Street Flowpath	\$60,756,300	\$30,000
Powell Street & Botany Road Flowpath	\$74,009,100	\$26,700
Sydney Water HAF	\$88,586,500	\$34,200
20yr Strategy (FM 11 Option)	\$662,308,300	\$338,100



FM 11 Alexandria Park Flowpath Long Term Option



ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1			
	·		item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost, excluding property purchase)				1,876,
2.0	DEMOLITION, CLEARING AND GRUBBING			T	
2.1	Clearing & grubbing of vegatated areas	1,200	sq. m	10	12
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	180	cu. m	25	4
2.3	Dispose of excess topsoil (nominal 10% allowance)	18	cu. m	60	1
2.4	, , , , , , , , , , , , , , , , , , ,			35	
2.4	Pull up and dispose existing road surface SUBTOTAL	12030	sq.m	35	421 438
3.0	DRAINAGE				
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	115	lin.m	1075	123
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe	170	lin.m	1125	191
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe	135	lin.m	1200	162
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe	260	lin.m	1425	370
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe	225 275	lin.m lin.m	1650 1950	371 536
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.55m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	185	lin.m	2250	416
3.8	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.65m dia. Pipe	200	lin.m	2700	540
3.9	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert	650	lin.m	4200	2,730
3.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.7m x 2.7m culvert	565	lin.m	4800	2,712
3.11	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	56	each	4000	224
3.12	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost) SUBTOTAL	1	item	837,713	837 9,214
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	12030	sq. m	120	1,443
4.1	SUBTOTAL	12000	3 q . III	120	1,443
5.0	TRAFFIC CONTROL				
5.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	2780	lin.m	500	1,390
5.1		2700	1111.111	300	
6.0	PROPERTY BY-BACK				1,390
6.1	Purchase of properties in order to create drainage easements	3	each	1300000	3,900
0	SUBTOTAL		ouon		3,900
7.0	MINOR LANDSCAPING				3,900
7.4	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	4.200	~ ·-	20	
7.1	, ,	1,200	sq. m	20	24
	SUBTOTAL				24
	CONSTRUCTION SUB-TOTAL				18,287
8.0	CONTINGENCIES				
8.1	50% construction cost				9,143
	CONSTRUCTION TOTAL, excluding GST				27,431
· <u> </u>	GST	_			2,743
	CONSTRUCTION TOTAL, including GST				30,174
					30,174
CLAIMER	CONSTRUCTION TOTAL, rounded				

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Cost Estimate FM 11 Arth Arthur Street Flowpath Long Term Option



ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item	1	
	SUBTOTAL (Assumed as 15% of works cost, excluding property purchase)				908,10
2.0	DEMOLITION, CLEARING AND GRUBBING				
			_		
2.1	Clearing & grubbing of vegatated areas (nominal allowance)	1,000	sq. m	10	10,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	150	cu. m	25	3,75
2.3	Dispose of excess topsoil (nominal 10% allowance)	15	cu. m	60	90
2.4	Pull up and dispose existing road surface	16760	sq.m	35	586,600
	SUBTOTAL				601,250
				I.	
3.0	DRAINAGE				
2.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.225m dia. Pipe	E	lin m	905	4 40
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.225m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	5 30	lin.m lin.m	825 1075	4,125 32,25
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe	170	lin.m	1125	191,250
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe	30	lin.m	1200	36,000
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	90 95	lin.m lin.m	1425 1650	128,250 156,750
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe	65	lin.m	1950	126,750
3.8	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	85	lin.m	2250	191,250
3.9	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe	120	lin.m	3300	396,000
3.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m dia. Pipe	109	lin.m	3900	425,100
3.11	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.45m x 0.45m culvert Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m x 0.6m culvert	20 40	lin.m lin.m	1200 1500	24,000 60,000
3.13	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m x 1.2m culvert	100	lin.m	2400	240,000
3.14	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert	55	lin.m	2800	154,000
3.15	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert	85	lin.m	4200	357,000
3.16 3.17	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	22 1	each	4000 261,073	88,000
3.17	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost) SUBTOTAL	'	item	201,073	261,073 2,871,79 8
	SUBTOTAL	1		<u> </u>	2,071,790
4.0	PAVEMENTS				
4.0	TAVENERIO				
	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide	40700		400	0.044.00
4.1	good jointing	16760	sq. m	120	2,011,200
	SUBTOTAL				2,011,200
5.0	PROPERTY BY-BACK				
5.0	PROFERIT BI-BACK				
5.1	Purchase of properties in order to create drainage easements	5	each	1300000	6,500,000
	SUBTOTAL				6,500,000
6.0	TRAFFIC CONTROL				
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	1099	lin.m	500	549,500
	SUBTOTAL				549,500
		1		<u> </u>	0.0,000
7.0	MINOR LANDSCAPING				
			1		
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,000
	SUBTOTAL	1,000	5q		20,000
	OUBTOTAL	1			20,000
	CONSTRUCTION SUB-TOTAL				13,461,848
8.0	CONTINGENCIES				
					6.730.924
8.0 8.1	50% construction cost				6,730,924
	50% construction cost CONSTRUCTION TOTAL, excluding GST				6,730,924 20,192,77 ² 2,019,277
	50% construction cost CONSTRUCTION TOTAL, excluding GST	•			20,192,777
	50% construction cost CONSTRUCTION TOTAL, excluding GST				20,192,77

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Cost Estimate FM 11 Asi **Ashmore Street Flowpath Long Term Option**



	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
1.0	SUBTOTAL (Assumed as 15% of works cost, excluding property purchase)	·	NO.		2,63
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of vegatated areas	1,850	sq. m	10	
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	277.5	cu. m	25	
2.3	Dispose of excess topsoil (nominal 10% allowance)	27.75		60	
			cu. m		
2.4	Pull up and dispose existing road surface	12130	sq.m	35	42
	SUBTOTAL				4:
3.0	DRAINAGE				
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.1m dia. Pipe	55	lin.m	750	
3.2 3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.375m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 0.675m dia. Pipe	50 330	lin.m lin.m	900 1000	3:
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe	80	lin.m	1125	
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe	60	lin.m	1200	,
3.6 3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	180 105	lin.m lin.m	1425 1650	<u>2</u> 1
3.8	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe	125	lin.m	1950	2
3.9	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	65	lin.m	2250	1
.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.65m dia. Pipe	340	lin.m	2700	9
.11 .12	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert Supply, excavate, bed, lay, joint, backfill and provide connections for 2.7m x 2.7m culvert	60 50	lin.m lin.m	4200 4800	2
.13	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert	190	lin.m	6150	1,1
.14	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.8m culvert	260	lin.m	7050	1,8
.15 .16	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 2.7m culvert Supply, excavate, bed, lay, joint, backfill and provide connections for 5.5m x 2.7m culvert	585 109	lin.m lin.m	9300 14000	5,4 1,5
.16	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	53	each	4000	1,5
.18	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	1,298,800	1,2
	SUBTOTAL				14,2
4.0	PAVEMENTS				
4.0	Painetate disturbed road payament including domalition and disposal of additional material to				
	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	12130	sq. m	120	1,4
	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing SUBTOTAL	12130	sq. m	120	
4.1	provide good jointing	12130	sq. m	120	
5.0	provide good jointing SUBTOTAL PROPERTY BY-BACK				1,4
5.0	provide good jointing SUBTOTAL	12130	sq. m	120	7,8
5.0 5.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements				7,8
5.0 5.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL				7,8 7,8
5.0 5.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL	6	each	1300000	7,8 7,8
4.1 5.0 5.1 6.0	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	6	each	1300000	7,8 7,8
5.0 5.1 6.0 6.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL	6	each	1300000	7,8 7,8 1,3
4.1 5.0 5.1 6.0 6.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING	2644	each	500	1,4! 7,8! 7,8! 1,3:
5.0 5.1 6.0 6.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	2644	each	500	7,8 7,8 7,8 1,3
5.0 5.1 6.0 6.1 7.0	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL	2644	each	500	7,8 7,8 7,8 1,3
6.0 6.1 7.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES	2644	each	500	1,4 7,8 7,8 1,3 1,3
5.0 5.1 6.0 6.1 7.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL	2644	each	500	1,4 7,8 7,8 1,3 1,3
5.0 5.1 6.0 6.1 7.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost	1,850	each	500	1,4 7,8 7,8 1,3 1,3 1,3 1,3 41,9
5.0 5.1 6.0 7.0	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost	1,850	each	500	1,44 1,44 7,86 7,86 1,32 1,32 27,98 13,99 41,97 4,18

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- 2. Estimate / rates in 2010 dollars and does not allow for inflation

1.0 GENERAL AND PRELIMINARIES 1.1 Site establishment, security fencing, facilities & disestablishment 1.2 Provision of sediment & erosion control 1.3 Construction setout & survey 1.4 Work as executed survey & documentation 1.5 Geotechnical supervision, testing & certification 1.5 Geotechnical supervision, testing & certification 1.5 Geotechnical supervision, testing & certification 2.0 DEMOLITION, CLEARING AND GRUBBING 2.1 Clearing & grubbing of vegatated areas (nominal allowance) 2.2 Strip topsoil & stockpile for re-use (assuming 150mm depth) 1.2 Strip topsoil & stockpile for re-use (assuming 150mm depth) 1.2 Supply and dispose existing road surface 2.4 Pull up and dispose existing road surface 3.5 Supply, excavate, bed, lay, joint, backfill and provide connections for 0,225m dia. Pipe 3.2 Supply, excavate, bed, lay, joint, backfill and provide connections for 0,525m dia. Pipe 3.3 Supply, excavate, bed, lay, joint, backfill and provide connections for 0,552m dia. Pipe 3.4 Supply, excavate, bed, lay, joint, backfill and provide connections for 0,552m dia. Pipe 3.5 Supply, excavate, bed, lay, joint, backfill and provide connections for 0,552m dia. Pipe 3.6 Supply, excavate, bed, lay, joint, backfill and provide connections for 0,552m dia. Pipe 3.7 Supply, excavate, bed, lay, joint, backfill and provide connections for 0,550m dia. Pipe 3.8 Supply, excavate, bed, lay, joint, backfill and provide connections for 0,55m dia. Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1,55m dia. Pipe 3.8 Supply, excavate, bed, lay, joint, backfill and provide connections for 1,55m dia. Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1,55m dia. Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1,55m dia. Pipe 4.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1,55m dia. Pipe 4.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1,55m dia. Pipe 4.9 Supply, excavate, bed, lay, joint, backf	item item item item item item item item	m 100 m 250 m 2700 m 1900 m 2400 m 24	5 3,750 0 900 5 1,719,900 1,734,550 1,734,550 5 4,125 5 75,250 6 90,000 6 627,000 6 627,000 156,750 0 128,750 0 324,000 759,000 0 759,000 0 24,000
1.2 Provision of sediment & erosion control 1.3 Construction setout & survey 1.4 Work as executed survey & documentation 1.5 Geotechnical supervision, testing & certification SUBTOTAL (Assumed as 15% of works cost, excluding property purchase) 2.0 DEMOLITION, CLEARING AND GRUBBING 2.1 Clearing & grubbing of vegatated areas (nominal allowance) 2.2 Strip topsoil & stockpile for re-use (assuming 150mm depth) 2.3 Dispose of excess topsoil (nominal 10% allowance) 1.0 Subsport of subsport of the strip of	item item item item item item item item	m 100 m 250 m 2700 m 1900 m 2400 m 24	10,000 10,000 10,719,900 1,734,550 1,734,550 1,734,550 1,734,550 1,734,550 1,75,250 1,7
1.3 Construction setout & survey 1.4 Work as executed survey & documentation 1.5 Geotechnical supervision, testing & certification SUBTOTAL (Assumed as 15% of works cost, excluding property purchase) 2.0 DEMOLITION, CLEARING AND GRUBBING 2.1 Clearing & grubbing of vegatated areas (nominal allowance) 2.2 Strip topsoil & stockpile for re-use (assuming 150mm depth) 1.5 Dispose of excess topsoil (nominal 10% allowance) 2.4 Pull up and dispose existing road surface 3.0 DRAINAGE 3.1 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.225m dia, Pipe 3.2 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.525m dia, Pipe 3.3 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia, Pipe 3.4 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia, Pipe 3.5 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia, Pipe 3.6 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia, Pipe 3.7 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia, Pipe 3.8 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.9m dia, Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.9m dia, Pipe 3.1 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.9m dia, Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.9m dia, Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.9m dia, Pipe 3.10 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.9m dia, Pipe 3.11 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.9m dia, Pipe 3.12 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.9m dia, Pipe 3.11 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.9m dia, Pipe 3.12 Supply, excavate, bed, lay, joint, backfill and provide connections fo	iten cu. I cu.	m 100 m 260 m 250 m 250 m 100 m 1500 m 2400	10,000 10,000 10,000 11,719,900 11,734,550 11,734,550 11,734,550 11,250
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2.4 Pull up and dispose existing road surface 3.0 DRAINAGE 3.1 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.225m dia. Pipe 3.2 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.525m dia. Pipe 3.3 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe 3.4 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe 3.5 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe 3.6 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe 3.7 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe 3.8 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.10 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.11 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe 3.12 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe 3.13 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.8m × 0.45m culvert 3.14 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m × 0.5m culvert 3.15 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m × 0.45m culvert 3.16 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m × 0.45m culvert 3.17 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m × 0.45m culvert 3.18 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m × 0.45m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m × 0.9m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m ×	40 sq.r lin.n lin	n 825 n 950 n 950 n 1075 n 1126 n 1200 n 1425 n 1950 n 2250 n 2700 n 3300 n 1500 n 1500 n 1900	5 1,719,900 1,734,550 1,734,550 5 4,12: 0 23,750 5 90,000 5 627,000 5 627,000 6 126,750 0 126,750 0 324,000 759,000
3.0 DRAINAGE 3.1 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.225m dia. Pipe 3.2 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.525m dia. Pipe 3.3 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe 3.4 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe 3.5 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe 3.6 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe 3.7 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe 3.8 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.10 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.10 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.11 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.12 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.13 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.5m x 0.45m culvert 3.14 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.5m x 0.5m culvert 3.15 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.5m x 0.5m culvert 3.16 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m x 0.45m culvert 3.17 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m x 0.7m culvert 3.18 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m x 0.7m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m x 0.7m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m x 0.7m culvert 3.20 Supply, excavate, bed, lay, joi		n 825 n 950 n 1075 n 1126 n 1200 n 1425 n 1450 n 1950 n 2250 n 2700 n 3300 n 1500 n 1500 n 1900	1,734,55 4,12 2,3,75 5,75,25 5,191,25 6,627,00 1,56,75 1,26
3.0 DRAINAGE 3.1 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.225m dia. Pipe 3.2 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.525m dia. Pipe 3.3 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe 7.3.4 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.85m dia. Pipe 7.3.5 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe 7.5 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe 7.6 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.25m dia. Pipe 8.7 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.25m dia. Pipe 9.8 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe 9.8 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.10 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.11 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.12 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.5m dia. Pipe 3.13 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.5m dia. Pipe 3.14 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m x 0.6m culvert 3.15 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.7m x 0.7m culvert 3.16 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 3.17 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 3.18 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 3.19 Supply, excavate, bed, lay, joint,	5 lin.n li	n 950 n 1075 n 1126 n 1127 n 1200 n 1425 n 1425 n 1656 n 1956 n 2256 n 2700 n 3300 n 1500 n 1500 n 1900	5 4,12 0 23,75 5 75,25 6 191,25 0 90,00 1 156,75 0 126,75 0 324,00 759,00 0 24,00
3.1 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.225m dia. Pipe 3.2 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.525m dia. Pipe 3.3 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe 7.3.4 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe 7.3.5 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe 7.3.6 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe 7.3.7 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe 3.8 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.10 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.11 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.12 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.45m x 0.45m culvert 3.13 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.45m x 0.45m culvert 3.14 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m x 0.9m culvert 3.15 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m x 0.4m culvert 3.16 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 3.17 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 3.18 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 1.5m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 0.9m culvert 3.20 Supply, excavate, bed, lay, j	5 lin.n li	n 950 n 1075 n 1126 n 1127 n 1200 n 1425 n 1425 n 1656 n 1956 n 2256 n 2700 n 3300 n 1500 n 1500 n 1900	23,75 5 75,25 5 191,25 6 90,00 6 627,00 156,75 0 126,75 0 324,00 0 759,00 0 24,00
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3.3 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe 3.4 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe 3.5 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe 3.6 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe 3.7 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe 3.8 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.25m dia. Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.55m dia. Pipe 3.10 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.55m dia. Pipe 3.11 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.55m dia. Pipe 3.12 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.55m dia. Pipe 3.13 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.55m dia. Pipe 3.14 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.45m x 0.45m culvert 3.15 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.95m x 0.95m culvert 3.16 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.95m x 0.95m culvert 3.16 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.25m x 1.25m culvert 3.17 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.25m x 1.25m culvert 3.18 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.25m x 1.25m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.25m x 1.25m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.25m x 1.25m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.25m x 1.25m culvert 3.20 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.35m x 3.35m culvert 3.22 Supply, excav	0 lin.n 0 lin.n 5 lin.n 5 lin.n 6 lin.n 6 lin.n 6 lin.n 6 lin.n 7 lin.n 7 lin.n 7 lin.n 0 lin.n	n 1075 n 11275 n 12075 n 12207 n 1425 n 1426 n 1650 n 1950 n 2250 n 2700 n 3300 n 1200 n 1500 n 1900 n 1900	5 75,25 5 191,25 0 90,00 6 627,00 156,75 0 126,75 0 461,25 0 324,00 0 759,00
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3.8 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe 3.9 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe 3.10 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.6m dia. Pipe 3.11 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe 3.12 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.45m x 0.45m culvert 3.13 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m x 0.6m culvert 4. Supply, excavate, bed, lay, joint, backfill and provide connections for 0.5m x 0.5m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m x 1.2m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 1.2m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 1.2m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 1.2m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 1.2m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 1.2m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 1.5m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 5. Supply, excavate, bed, lay, joint, backfill and provide	5 lin.n 5 lin.n 6 lin.n 0 lin.n 5 lin.n 5 lin.n	n 1950 n 2250 n 2700 n 3300 n 1200 n 1500 n 1900 n 2400	126,75(126
3.10 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.65m dia. Pipe 3.11 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe 3.21 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.45m x 0.45m culvert 2.2 3.13 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m x 0.6m culvert 3.14 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m x 0.9m culvert 3.15 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m x 1.2m culvert 3.16 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 3.17 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 3.18 Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m x 2.1m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert 3.20 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 1.5m culvert 3.21 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 1.5m culvert 3.22 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.23 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.22 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.23 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.24 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.24 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.24 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.25 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.25 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m	0 lin.n 0 lin.n 0 lin.n 10 lin.n 10 lin.n 10 lin.n 10 lin.n 10 lin.n 10 lin.n 15 lin.n 15 lin.n 15 lin.n	n 2700 n 3300 n 1200 n 1500 n 1900 n 2400	324,000 759,000 24,000
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3.14 Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m x 0.9m culvert 3.15 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m x 1.2m culvert 3.16 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 5.3.17 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 1.8m culvert 5.3.18 Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m x 2.1m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert 3.20 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 1.5m culvert 3.2.1 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.2.2 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert 3.2.3 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert 3.2.3 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert 3.2.4 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert 3.2.4 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert 3.2.4 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert 3.2.4 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert 7.7	0 lin.n 0 lin.n 5 lin.n 0 lin.n 5 lin.n 0 lin.n	n 1900 n 2400	60.000
3.15 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m x 1.2m culvert 3.16 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 5.3.17 Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert 5.3.18 Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m x 2.1m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert 7.3.20 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.21 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.22 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.23 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert 3.24 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert 3.25 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert 3.26 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert 3.26 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert 3.27 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert	0 lin.n 5 lin.n 0 lin.n 5 lin.n	n 2400	
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3.18 Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m x 2.1m culvert 3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert 77 3.20 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 1.5m culvert 3.21 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 3.22 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert 3.23 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert 3.24 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert 76	5 lin.n		
3.19 Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert 77 3.20 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 1.5m culvert 3 3.21 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 2 3.22 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert 8 3.23 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert 3 3.24 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert 77	E 10		
3.21 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert 2: 3.22 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert 8: 3.23 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert 3: 3.24 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert 77			
3.22 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert 8: Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert 3: 3.24 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert 7: 76			
3.24 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert 70	5 lin.n	n 6150	5,135,250
	5 lin.n		3,766,500
3.26 Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 3.6m culvert			
3.27 Supply, excavate, bed, lay, joint, backfill and provide connections for 4.3m x 1.9m culvert 3.27 Supply, excavate, bed, lay, joint, backfill and provide connections for 5.0m x 1.8m culvert 74			
3.28 Supply, excavate, bed, lay, joint, backfill and provide connections for 5.5m x 1.5m culvert 23			3,172,500
3.29 Supply, excavate, bed, lay, joint, backfill and provide connections for 6.0m x 1.8m culvert 36 3.30 Install new drainage / junction pit (assumed 1 pit per 50m of pipe) 15			6,022,500 636,000
3.31 Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost)	iten		
SUBTOTAL			64,381,213
4.0 PAVEMENTS			
Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good 4.1 jointing 491	40 sq. r	m 120	5,896,800
SUBTOTAL	40 3q. i	120	5,896,800
			3,030,000
5.0 PROPERTY BY-BACK			
5.1 Purchase of properties in order to create drainage easements 2	eac	h 1300000	
SUBTOTAL			26,000,000
6.0 TRAFFIC CONTROL			
6.1 Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) 79	05 lin.n	n 500	3,952,500
SUBTOTAL			3,952,500
7.0 MINOR LANDSCAPING			
7.1 Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) 1,0	00 sq. r	m 20	20,00
SUBTOTAL			20,000
CONSTRUCTION SUB-TOTAL			113,382,863
8.0 CONTINGENCIES			
8.1 50% construction cost			56,691,43
CONSTRUCTION TOTAL avaluation COT	_		170,074,29
CONSTRUCTION TOTAL, excluding GST			170,074,294
CONSTRUCTION TOTAL including CST			
CONSTRUCTION TOTAL, including GST			187,081,723
CONSTRUCTION TOTAL, rounded DISCLAIMER:			187,081,800

1. This estimate of cost is provided in good faith using information available at this stage. This estimate of cost is not guaranteed.

Cardno (NSW) will not accept liability in the event that actual costs exceed the estimate.

- 1. Estimate does not include Consultant's fees, including design or project management
- 2. Estimate / rates in 2010 dollars and does not allow for inflation



Cost Estimate

FM 11 Charles and Boronia Street Flowpaths

Long Term Option

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
1.5	SUBTOTAL (Assumed as 15% of works cost, excluding property purchase)		item	1	1,157,30
2.0	DEMOLITION, CLEARING AND GRUBBING				1,107,50
2.1	Clearing & grubbing of vegatated areas (nominal allowance)	1,000	sq. m	10	10,00
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	150	cu. m	25	3,75
2.3	Dispose of excess topsoil (nominal 10% allowance)	150		60	90
			cu. m		
2.4	Pull up and dispose existing road surface	7200	sq.m	35	252,00
3.0	DRAINAGE	l			266,65
2.4	Supply everyone had law joint healfill and provide connections for 0.505m dia Dis-	25	lin m	950	20.77
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.525m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	45	lin.m lin.m	1075	23,75 48,37
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe	140	lin.m	1425	199,50
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m x 0.9m culvert	120 50	lin.m	2250	270,00
3.5 3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert	30	lin.m lin.m	1900 6300	95,00 189,00
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert	690	lin.m	6600	4,554,00
3.8	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	22	each	4000	88,00
3.9	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	546,763	546,76
	SUBTOTAL				6,014,38
4.0	PAVEMENTS Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	7200	sq. m	120	864,00
	SUBTOTAL				864,00
5.0	PROPERTY BY-BACK				
5.1	Purchase of properties in order to create drainage easements	5	each	1300000	6,500,00
	SUBTOTAL				6,500,00
6.0	TRAFFIC CONTROL				
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	1100	lin.m	500	550,00
	SUBTOTAL				550,00
7.0	MINOR LANDSCAPING				
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,00
	SUBTOTAL	,	,	•	20,00
	CONSTRUCTION SUB-TOTAL				15,372,33
8.0	CONTINGENCIES				
8.1	50% construction cost				7,686,16
	CONSTRUCTION TOTAL, excluding GST				23,058,50
	GST				2,305,85
	CONSTRUCTION TOTAL, including GST CONSTRUCTION TOTAL, rounded				25,364,35 25,364,40

DISCLAIMER:

1. This estimate of cost is provided in good faith using information available at this stage. This estimate of cost is not guaranteed.

Cardno (NSW) will not accept liability in the event that actual costs exceed the estimate.

- 1. Estimate does not include Consultant's fees, including design or project management
- 2. Estimate / rates in 2010 dollars and does not allow for inflation

Cardno Shaping the Future

Cost Estimate

FM 11 Doody Street , Botany Road & Rosebery Flowpaths Long Term Option

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
-	SUBTOTAL (Assumed as 15% of works cost, excluding property purchase)			1	4,985,300
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of vegatated areas (nominal allowance)	2,500	sq. m	10	25,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	375	cu. m	25	9,375
2.3	Dispose of excess topsoil (nominal 10% allowance)	37.5	cu. m	60	2,250
2.4	Pull up and dispose existing road surface	28900		35	
2.4	SUBTOTAL	20900	sq.m	33	1,011,500 1,048,125
3.0	DRAINAGE				
2.4	Cumply everyote had lay joint healfill and provide connections for 0.375m dia Disc	145	lin m	000	400.500
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.375m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 0.45m dia. Pipe	145 10	lin.m lin.m	900 925	130,500 9,250
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.525m dia. Pipe	245	lin.m	950	232,750
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m dia. Pipe	40	lin.m	975	39,000
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	92 115	lin.m lin.m	1200 1650	110,400 189,750
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	290	lin.m	2250	652,500
3.8	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.65m dia. Pipe	110	lin.m	2700	297,000
3.9	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe	480	lin.m	3300	1,584,000
3.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.95m dia. Pipe	205	lin.m	3600	738,000
3.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m x 0.6m culvert	240 440	lin.m lin.m	3900 1500	936,000 660,000
3.12	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m x 2.1m culvert	720	lin.m	4000	2,880,000
3.13	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 1.5m culvert	170	lin.m	4000	680,000
3.14	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.7m x 2.7m culvert	690	lin.m	4800	3,312,000
3.15 3.16	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.8m culvert	620 930	lin.m lin.m	7050	4,092,000 6,556,500
3.17	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	111	each	4000	444,000
3.18	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	2,354,365	2,354,365
0.10	SUBTOTAL	·	NO.	2,001,000	25,898,015
4.0	PAVEMENTS				
4.4	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide	20000		420	2 400 000
4.1	good jointing SUBTOTAL	28900	sq. m	120	3,468,000 3,468,000
	SUBTOTAL				3,400,000
5.0	TRAFFIC CONTROL				
5.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	5542	lin.m	500	2,771,000
	SUBTOTAL				2,771,000
6.0	MINOR LANDSCAPING				
6.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	2,500	sq. m	20	50,000
0.1	SUBTOTAL	2,000	5q. 111	20	50,000
	CONSTRUCTION SUB-TOTAL				20 220 440
	CONSTRUCTION SUB-TOTAL	•			38,220,440
7.0	CONTINGENCIES				
7.1	50% construction cost				19,110,220
	CONSTRUCTION TOTAL, excluding GST				57,330,660
	GST	•			5,733,066
	631			i i	
	CONSTRUCTION TOTAL, including GST				63,063,726

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Cost Estimate FM 11 Erskinville Oval Flowpath **Long Term Option**



EM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
	·				
1.5	Geotechnical supervision, testing & certification	1	item	1	
	SUBTOTAL (Assumed as 15% of works cost, excluding property purchase)				1,46
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of vegatated areas	3,320	sq. m	10	3
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	498	cu. m	25	1
2.3	Dispose of excess topsoil (nominal 10% allowance)	49.8	cu. m	60	
2.4	Pull up and dispose existing road surface	6455	sq.m	35	22
2.4	SUBTOTAL	0433	54.111	33	27
3.0	DRAINAGE			l	
3.1	Supply excavate hed lay joint hackfill and provide connections for 0.525m dia. Pina	100	lin m	950	9
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.525m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m dia. Pipe	20	lin.m lin.m	950	
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe	35	lin.m	1425	4
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	255	lin.m	1650	42
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe	40	lin.m	1950	7
3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe Supply, excavate, bed, lay, joint, backfill and provide connections for 1.65m dia. Pipe	60 40	lin.m lin.m	2250 2700	13 10
3.8	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.85m dia. Pipe	190	lin.m	3300	62
3.9	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.0m x 2.1m culvert	310	lin.m	3900	1,20
3.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert	400	lin.m	4200	1,68
3.11	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.7m x 2.7m culvert	203	lin.m	4800	97
3.12	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert	280	lin.m	5700	1,59
3.13	Install new drainage / junction pit (assumed 1 pit per 50m of pipe) Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost)	39 1	each	4000 714,853	15 71
0	SUBTOTAL		ito	111,000	7,86
4.0	PAVEMENTS			,	
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	6455	sq. m	120	77
	SUBTOTAL				77
5.0	PROPERTY BY-BACK			l	
5.1	Purchase of properties in order to create drainage easements	10	each	1300000	13,00
	SUBTOTAL				13,00
6.0	TRAFFIC CONTROL				,
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	1523	sq. m	500	76
	SUBTOTAL	2	245.00		76
				<u> </u>	
7.0	MINOR LANDSCAPING				
	MINOR LANDSCAPING	3,320	sg. m	20	
7.0 7.1	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	3,320	sq. m	20	
	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL	3,320	sq. m	20	
	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	3,320	sq. m	20	(
7.1	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES	3,320	sq. m	20	24,20
7.1	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost	3,320	sq. m	20	24,20
7.1	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES	3,320	sq. m	20	24,20 12,10 36,30
7.1	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost	3,320	sq. m	20	24,20
7.1	MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost CONSTRUCTION TOTAL, excluding GST	3,320	sq. m	20	24,20 12,10 36,30

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Cost Estimate

FM 11 Mandible Street Flowpath
Long Term Option

1.1 Sit 1.2 Pro 1.3 Co 1.4 W/s 1.5 Go St. 2.0 DE 2.1 Cld 2.2 Str 2.3 Dis 2.4 Pu St. 3.0 DF 3.1 Su	ite establishment, security fencing, facilities & disestablishment rovision of sediment & erosion control construction setout & survey York as executed survey & documentation eotechnical supervision, testing & certification UBTOTAL (Assumed as 15% of works cost, excluding property purchase) EMOLITION, CLEARING AND GRUBBING Idearing & grubbing of vegatated areas (nominal allowance) trip topsoil & stockpile for re-use (assuming 150mm depth) ispose of excess topsoil (nominal 10% allowance) ull up and dispose existing road surface UBTOTAL RAINAGE	1 1 1 1 1 1 1,000 150 15 7190	item item item item item item cu. m cu. m sq.m	10 25 60 35	10,00 3,78
1.2 Pr 1.3 Cc 1.4 Wr 1.5 Ge SL 2.0 DE 2.1 Clc 2.2 Str 2.3 Dis 2.4 Pu SL 3.0 DF	rovision of sediment & erosion control construction setout & survey /ork as executed survey & documentation eetechnical supervision, testing & certification UBTOTAL (Assumed as 15% of works cost, excluding property purchase) EMOLITION, CLEARING AND GRUBBING learing & grubbing of vegatated areas (nominal allowance) trip topsoil & stockpile for re-use (assuming 150mm depth) ispose of excess topsoil (nominal 10% allowance) ull up and dispose existing road surface UBTOTAL	1 1 1 1 1 1,000 150	item item item item sq. m cu. m	25 60	10,0(3,7! 9(
1.3 Cc 1.4 WW 1.5 Ge SL 2.0 DE 2.1 Clc 2.2 Str 2.3 Dis 2.4 Pu SL 3.0 DF	fork as executed survey & documentation eotechnical supervision, testing & certification UBTOTAL (Assumed as 15% of works cost, excluding property purchase) EMOLITION, CLEARING AND GRUBBING Ilearing & grubbing of vegatated areas (nominal allowance) trip topsoil & stockpile for re-use (assuming 150mm depth) ispose of excess topsoil (nominal 10% allowance) ull up and dispose existing road surface UBTOTAL	1 1 1 1,000 150	item item item sq. m cu. m	25 60	10,0(3,7! 9(
1.4 Word 1.5 Ge St. 2.0 DE 2.1 Clu 2.2 Str 2.3 Dis 2.4 Pu St. 3.0 DF 3.1 Su	Vork as executed survey & documentation eotechnical supervision, testing & certification UBTOTAL (Assumed as 15% of works cost, excluding property purchase) EMOLITION, CLEARING AND GRUBBING learing & grubbing of vegatated areas (nominal allowance) trip topsoil & stockpile for re-use (assuming 150mm depth) ispose of excess topsoil (nominal 10% allowance) ull up and dispose existing road surface UBTOTAL	1,000 150	sq. m cu. m	25 60	10,0 3,7: 9(
1.4 Word 1.5 Ge St. 2.0 DE 2.1 Clu 2.2 Str 2.3 Dis 2.4 Pu St. 3.0 DF 3.1 Su	Vork as executed survey & documentation eotechnical supervision, testing & certification UBTOTAL (Assumed as 15% of works cost, excluding property purchase) EMOLITION, CLEARING AND GRUBBING learing & grubbing of vegatated areas (nominal allowance) trip topsoil & stockpile for re-use (assuming 150mm depth) ispose of excess topsoil (nominal 10% allowance) ull up and dispose existing road surface UBTOTAL	1,000 150	sq. m cu. m	25 60	10,0(3,7! 9(
1.5 Ge SL 2.0 DE 2.1 Cle 2.2 Str 2.3 Dis 2.4 Pu SL 3.0 DF	eotechnical supervision, testing & certification UBTOTAL (Assumed as 15% of works cost, excluding property purchase) EMOLITION, CLEARING AND GRUBBING learing & grubbing of vegatated areas (nominal allowance) trip topsoil & stockpile for re-use (assuming 150mm depth) ispose of excess topsoil (nominal 10% allowance) ull up and dispose existing road surface UBTOTAL	1,000 150 15	sq. m cu. m cu. m	25 60	10,0(3,7! 9(
2.0 DE 2.1 Cle 2.2 Str 2.3 Dis 2.4 Pu SL 3.0 DF	UBTOTAL (Assumed as 15% of works cost, excluding property purchase) EMOLITION, CLEARING AND GRUBBING learing & grubbing of vegatated areas (nominal allowance) trip topsoil & stockpile for re-use (assuming 150mm depth) ispose of excess topsoil (nominal 10% allowance) ull up and dispose existing road surface UBTOTAL	1,000 150 15	sq. m cu. m cu. m	25 60	3,75 90
2.0 DE 2.1 Cle 2.2 Str 2.3 Dis 2.4 Pu SL 3.0 DF	EMOLITION, CLEARING AND GRUBBING learing & grubbing of vegatated areas (nominal allowance) trip topsoil & stockpile for re-use (assuming 150mm depth) ispose of excess topsoil (nominal 10% allowance) ull up and dispose existing road surface UBTOTAL	150 15	cu. m	25 60	10,00 3,75 90
2.2 Str 2.3 Dis 2.4 Pu SL 3.0 DF	trip topsoil & stockpile for re-use (assuming 150mm depth) ispose of excess topsoil (nominal 10% allowance) ull up and dispose existing road surface UBTOTAL	150 15	cu. m	25 60	3,75 90
2.2 Str 2.3 Dis 2.4 Pu SL 3.0 DF	trip topsoil & stockpile for re-use (assuming 150mm depth) ispose of excess topsoil (nominal 10% allowance) ull up and dispose existing road surface UBTOTAL	150 15	cu. m	25 60	3,75
2.3 Dis 2.4 Pu SL 3.0 DF	ispose of excess topsoil (nominal 10% allowance) ull up and dispose existing road surface UBTOTAL	15	cu. m	60	91
2.4 Pu SL 3.0 DF 3.1 Su	ull up and dispose existing road surface UBTOTAL				
3.0 DF 3.1 Su	UBTOTAL	7190	sq.m	35	
3.0 DF					251,65
3.1 Su	RAINAGE				266,30
	upply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	45	lin.m	1650	74,25
	upply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	120	lin.m	2250	270,00
	upply, excavate, bed, lay, joint, backfill and provide connections for 2.1m dia. Pipe upply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 0.6m culvert	490 185	lin.m lin.m	3900 3200	1,911,00 592,00
	upply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 0.9m culvert	495	lin.m	4800	2,376,00
	upply, excavate, bed, lay, joint, backfill and provide connections for 3.8m x 1.8m culvert	240	lin.m	12100	2,904,00
	upply, excavate, bed, lay, joint, backfill and provide connections for 5.0m x 1.8m culvert	140	lin.m	13300	1,862,00
	stall new drainage / junction pit (assumed 1 pit per 50m of pipe)	35	each	4000	140,00
	djustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	1,012,925	1,012,92
50	UBTOTAL				11,142,17
	AVEMENTS				
	einstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	7190	sq. m	120	862,80
	UBTOTAL	7190	34.111	120	862,80
30	OBTOTAL	L			802,80
6.0 TR	RAFFIC CONTROL				
6.1 Co	ontrol of traffic during works (nominal allowance) (assumed \$500 per lin.m)	1715	lin.m	500	857,50
SI	UBTOTAL				857,50
7.0 MI	INOR LANDSCAPING				
7.1 Re	epair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,00
	UBTOTAL	1,000	5q. III	20	20,00
	OBTOTAL	I			20,00
	CONSTRUCTION SUB-TOTAL	•			15,121,07
8.0 CC	ONTINGENCIES				
8.1 50	0% construction cost				7,560,53
	CONSTRUCTION TOTAL, excluding GST	,			22,681,61
	•				
	GST CONSTRUCTION TOTAL includior CST				2,268,16
	CONSTRUCTION TOTAL, including GST CONSTRUCTION TOTAL, rounded				24,949,77 24,949,80

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Cost Estimate FM 11 Pr Phillip Street Flowpath Long Term Option



	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
1.0	SUBTOTAL (Assumed as 15% of works cost, excluding property purchase)	1	item		3,955
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of vegatated areas	980	sq. m	10	9
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	147	cu. m	25	3
2.3	Dispose of excess topsoil (nominal 10% allowance)	14.7	cu. m	60	
					505
2.4	Pull up and dispose existing road surface SUBTOTAL	15020	sq.m	35	525 540
3.0	DRAINAGE				
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe	45	lin.m	1200	54
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.65m dia. Pipe	120	lin.m	2700	324
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe	490	lin.m	3300	1,617
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m x 2.1m culvert	185	lin.m	4000	740
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert	495 240	lin.m lin.m	4200 6150	2,079 1,476
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.6m culvert	140	lin.m	5100	714
3.8	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 3.3m culvert	240	lin.m	11500	2,760
3.9	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert	245	lin.m	6600	1,617
3.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.8m culvert Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 3.6m culvert	280 520	lin.m	7050 13200	1,974 6,864
3.12	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	60	lin.m each	4000	240
3.13	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	2,045,900	2,04
5.15	SUBTOTAL		item	2,043,300	22,504
4.0	PAVEMENTS				
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to	15020	00 m	120	1 900
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing SUBTOTAL	15020	sq. m	120	
4.1 5.0	provide good jointing	15020	sq. m	120	
5.0	provide good jointing SUBTOTAL PROPERTY BY-BACK				1,802
	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements	15020	sq. m	120	1,802 6,500
5.0	provide good jointing SUBTOTAL PROPERTY BY-BACK				1,802 6,500
5.0	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements				1,802 6,500
5.0 5.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL				1,802 6,500 6,50 0
5.0 5.1 6.0	PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL	5	each	1300000	1,802 6,500 6,500
5.0 5.1 6.0	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	5	each	1300000	1,802 6,500 6,500
5.0 5.1 6.0 6.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL	5	each	1300000	1,802 6,500 6,500 1,500
5.0 5.1 6.0 6.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING	3000	each	1300000	1,802 1,802 6,500 6,500 1,500
5.0 5.1 6.0 6.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL	3000	each	1300000	1,802 6,500 6,500 1,500 1,500
5.0 5.1 6.0 6.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	3000	each	1300000	1,802 6,500 6,500 1,500 1,500
5.0 5.1 6.0 6.1 7.0 7.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONSTRUCTION SUB-TOTAL	3000	each	1300000	1,802 6,500 6,500 1,500 1,500
5.0 5.1 6.0 6.1 7.0	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL	3000	each	1300000	1,802 6,500 6,500 1,500
5.0 5.1 6.0 6.1 7.0 7.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONSTRUCTION SUB-TOTAL	3000	each	1300000	1,802 6,500 6,500 1,500 1,500
5.0 5.1 6.0 6.1 7.0 7.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONSTRUCTION SUB-TOTAL CONSTRUCTION TOTAL, excluding GST	3000	each	1300000	1,802 6,500 6,500 1,500 1,500 1,500 1,500
5.0 5.1 6.0 6.1 7.0 7.1	provide good jointing SUBTOTAL PROPERTY BY-BACK Purchase of properties in order to create drainage easements SUBTOTAL TRAFFIC CONTROL Control of traffic during works (nominal allowance) (assumed \$500 per lin.m) SUBTOTAL MINOR LANDSCAPING Repair disturbed areas in accordance with landscape architects requirements (nominal allowance) SUBTOTAL CONSTRUCTION SUB-TOTAL CONTINGENCIES 50% construction cost	3000	each	1300000	1,802 6,500 6,500 1,500 1,500 1,500 1,500

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- 2. Estimate / rates in 2010 dollars and does not allow for inflation



Cost Estimate

FM 11 Powell Street & Botany Road Flowpath Long Term Option

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL (Assumed as 15% of works cost, excluding property purchase)				5,002,70
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing of vegatated areas (nominal allowance)	1,000	sq. m	10	10,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	150	cu. m	25	3,750
2.3	Dispose of excess topsoil (nominal 10% allowance)	15	cu. m	60	90
2.4	Pull up and dispose existing road surface	15100	sq.m	35	528,50
	SUBTOTAL	10100	oq		543,150
3.0 3.1	DRAINAGE Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe	90	lin.m	1425	128,25
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m dia. Pipe	315	lin.m	3900	1,228,500
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert	210 590	lin.m lin.m	5700 6150	1,197,000 3,628,500
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.5m x 3.5m culvert Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 3.6m culvert	355	lin.m	13200	4,686,000
3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 5.0m x 1.8m culvert	740	lin.m	13300	9,842,00
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 6.0m x 1.8m culvert	365	lin.m	16500 4000	6,022,50
3.8	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	54	each	4000	216,00
3.9	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost) SUBTOTAL	1	item	2,694,875	2,694,87 29,643,62
4.0	PAVEMENTS				
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to	15100	60 m	120	1 912 00
4.1	provide good jointing	15100	sq. m	120	1,812,00
	SUBTOTAL				1,812,00
5.0	TRAFFIC CONTROL				
5.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	2665	lin.m	500	1,332,50
	SUBTOTAL				1,332,500
6.0	PROPERTY BY-BACK				
6.1	Purchase of properties in order to create drainage easements	5	each	1300000	6,500,00
	SUBTOTAL				6,500,00
7.0	MINOR LANDSCAPING				
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,00
	SUBTOTAL				20,000
	CONSTRUCTION SUB-TOTAL				44,853,97
8.0	CONTINGENCIES				
8.1	50% construction cost				22,426,98
CONSTRUCTION TOTAL, excluding GST					67,280,96
GST					6,728,09
	CONSTRUCTION TOTAL, including GST				74,009,059
	CONSTRUCTION TOTAL, rounded				74,009,100

DISCLAIMER:

1. This estimate of cost is provided in good faith using information available at this stage. This estimate of cost is not guaranteed.

Cardno (NSW) will not accept liability in the event that actual costs exceed the estimate.

- 1. Estimate does not include Consultant's fees, including design or project management
- 2. Estimate / rates in 2010 dollars and does not allow for inflation

Alexandra Canal Floodplain Risk Management Study and Plan

APPENDIX F GREEN SQUARE SUPERSEDED OPTIONS REVIEW



Green Square Superseded Options Review

Flood modification measures assessed are detailed in **Section 11.3**. Options that were evaluated in connection with the Green Square Town Centre Assessment are detailed in **Section 11.3.1.1** and the superseded measures are described in this Appendix.

FM1 - Raising Joynton Avenue and Incorporating Epsom Park Basin

Measure FM1 comprises raising Joynton Avenue and constructing a dual-purpose detention basin in the Epsom Park Precinct (on the east side of Joynton Avenue). Joynton Avenue would be raised by up to 1.4m at its lowest point (between Elizabeth Street and Hansard Street) to mitigate the depth of ponding at this location. A dual purpose sports field / detention basin of capacity 30,000m³ would offset the informal storage on Joynton Avenue. **Figure F1** shows the general configuration of the system.

Preliminary modelling results shown in **Figure F2** indicate a reduction of up to 0.5m in a 100 year ARI event on Joynton Avenue and to the east of the basin. Reductions in peak water level of up to 0.2m are shown in locations near the trunk drainage line.

FM2 - Additional culvert from Joynton Avenue to Sheas Creek - Bowden Street Alignment

Measure FM2 comprises an additional trunk drainage system from Joynton Avenue through Green Square Town Centre (GSTC) to Sheas Creek at Bowden Street. **Figure F3** shows the alignment of the measure.

It is designed to relieve ponding in Joynton Avenue and provide additional underground conveyance to the Sheas Creek open channel downstream. An additional culvert 3.0m wide by 1.5m high is connected to the trunkline from Link Road with additional inlets at Joynton Avenue and connected to existing branchlines along its alignment. Drying Green Storage within GSTC provides a storage area with volume up to 5400m³.

This measure is similar to FM3 which has a different alignment to the channel from Bourke Road along Maddox Street.

Figure F4 shows the resultant change in peak water levels for the 100 year ARI event for Measure FM2 compared to existing. Reduction in peak flood levels occur along Joynton Avenue (greater than 0.5m) and to a lesser extent ORiordan Street, Bourke Road, Mandible Street and some adjoining areas (of 0.1 to 0.5m). Increased flood levels result along Bowden Street and along the open channel upstream of Alexandra Canal (up to 0.2m) where the additional runoff conveyed by the new drainage line connects to the existing drainage system.

FM3 - Additional culvert from Joynton Avenue to Sheas Creek - Maddox Street Alignment

Measure FM3 comprises an additional trunk drainage system from Joynton Avenue through Green Square Town Centre (GSTC) to Sheas Creek at Maddox Street. **Figure F3** shows the alignment of the measure.

It is designed to relieve ponding in Joynton Avenue and provide additional underground conveyance to the Sheas Creek open channel downstream. An additional culvert 3.0m wide by 1.5m high is connected to the trunkline from Link Road with additional inlets at Joynton Avenue

and connected to existing branchlines along its alignment. Drying Green Storage within GSTC provides a storage area with volume up to 5400m³.

This measure is similar to FM3 which has a different alignment to the channel from Bourke Road along Maddox Street.

Figure F5 shows the resultant change in peak water levels for the 100 year ARI event for Measure FM2 compared to existing. A reduction in flood levels occur along Joynton Avenue (greater than 0.5m) and to a lesser extent ORiordan Street, Bourke Road, Mandible Street, Bowden Street and some adjoining areas (0.1 to 0.5m). Increased flood levels result along the open channel upstream of Alexandra Canal and downstream of Maddox Street (up to 0.2m) where the additional runoff conveyed by the new drainage line connects to the existing drainage system.

FM4 - Additional culvert from Joynton Avenue to Sheas Creek - Maddox Street Alignment excluding Drying Green Storage

Measure FM4 is the same system as FM3 but excludes the Drying Green Storage to facilitate evaluation of the effectiveness of Drying Green Storage to mitigate flooding. **Figure F6** shows that the exclusion of Drying Green Storage in FM4 results in increases in 100 year ARI peak water levels between 0.01-0.1m in areas both upstream and downstream compared to Measure FM3. Joynton Avenue shows an increase of up to 0.5m between these measures as Drying Green Storage provides additional capacity to offset ponding.

FM9 - Link Road to Alexandra Canal Upgrade - Maddox Street Alignment

Measure FM9 comprises additional piped drainage capacity generally within the Green Square Town Centre precinct to Alexandra Canal. **Figure F7** shows the alignment of the system. It comprises elements of the Mid-term Drainage Response strategy (discussed in **Section 11.3.1.1**) and the Sydney Water Housing Assistance Fund (HAF) system (discussed in **Section 11.3.1.6**).

An additional trunk culvert from Joynton Avenue to Alexandra Canal provides additional capacity to convey runoff underground. The Measure also includes:

- Augmentation of the existing drainage system from Link Road to Joynton Avenue;
- Additional piped drainage from the Mid-Block Precinct (Lachlan Street to O'Dea Avenue) to Joynton Avenue; and
- Additional piped drainage in Mandible Street.

Measure FM10 is similar to FM9 except for the different alignment along the Sydney Water easement off Bourke Road to the north of Perry Park rather than along Maddox Street.

Figure F8 shows widespread benefits across the Sheas Creek catchment in a 100 year ARI event associated with this measure with significant reductions in flood levels (greater than 0.5m) at Joynton Avenue, ORiordan Street and Mandible Street. An increase in peak water level of about 0.06m is shown in Alexandra Canal due to the additional flows conveyed from upstream.

A revised Measure FM9 system, shown in **Figure F7**, was modelled with additional inlets and increased pipe sizes of branch lines to drain localised trapped lowpoints to take advantage of the additional conveyance in the new trunk drainage line. **Figure F9** shows similar reductions in a 100 year ARI event across the catchment to Measure FM9 with additional reductions in peak depths in several localised trapped lowpoints along its alignment.

These Measure FM9 systems, both with and without additional inlets, have been superseded by the system detailed in **Section 11.3.1.6**.

FM10 - Link Road to Alexandra Canal Upgrade - Sydney Water Easement Alignment

Measure FM10 is the same as FM9 (not the revised system with additional lowpoint inlets) except that the system alignment is along the Sydney Water easement off Bourke Road to the north of Perry Park rather than along Maddox Street.

The results shown in **Figure F10** for the 100 year ARI event are similar as to those from Measure FM9 with reductions in flood levels across the Sheas Creek catchment and the greatest flood benefits resulting at Joynton Avenue, Mandible Street and streets and properties north of O'Dea Avenue.

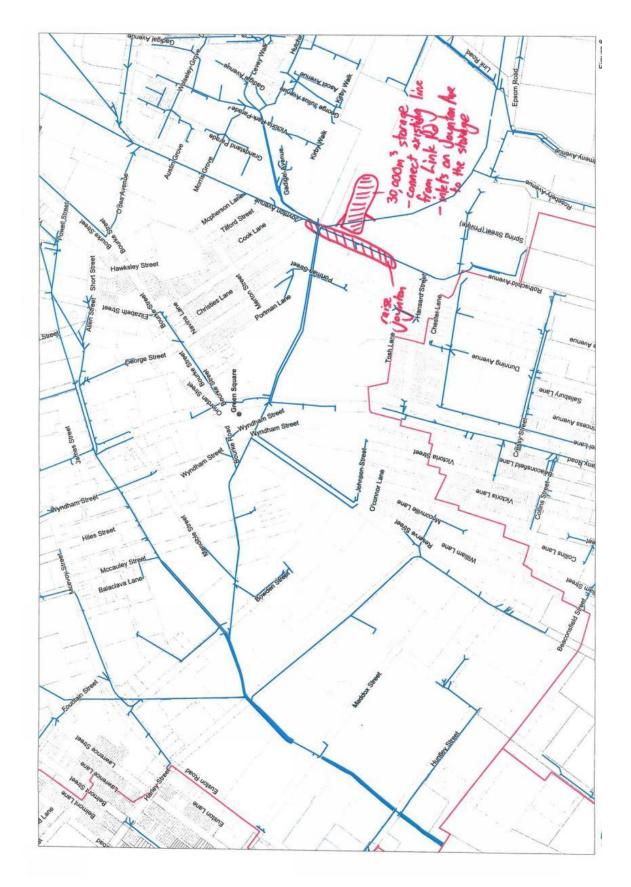


Figure F1 Measure FM1 Layout

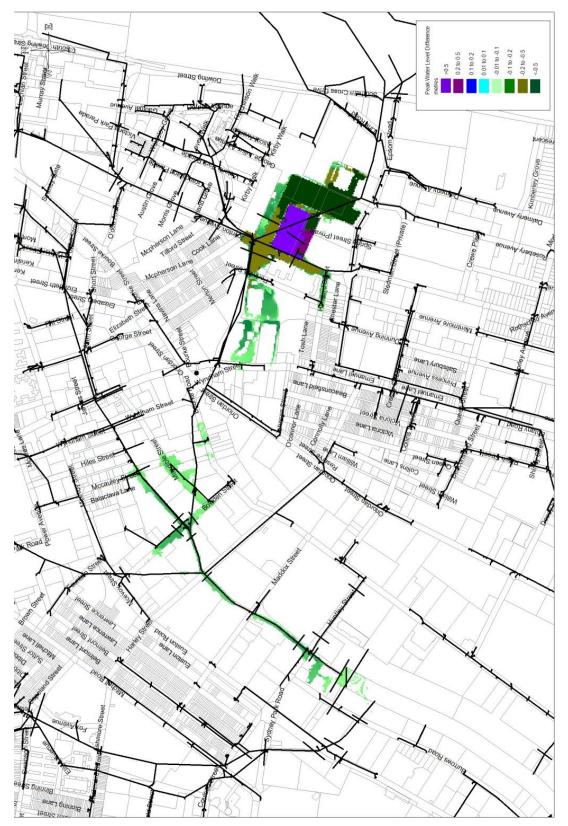


Figure F2 Layout100 Year ARI Peak Water Level Difference for FM1 Less Existing

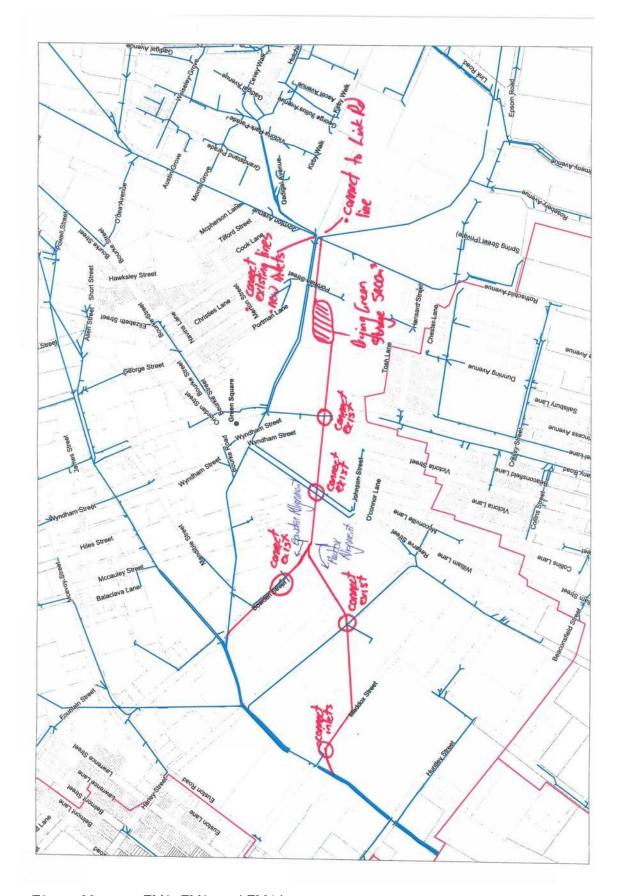


Figure F3 Measure FM2, FM3, and FM4 Layout

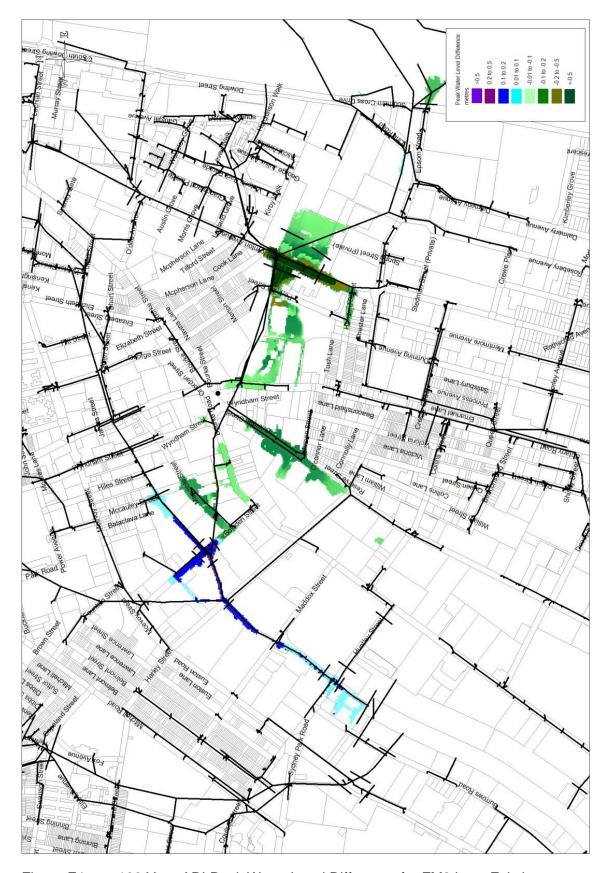


Figure F4 100 Year ARI Peak Water Level Difference for FM2 Less Existing

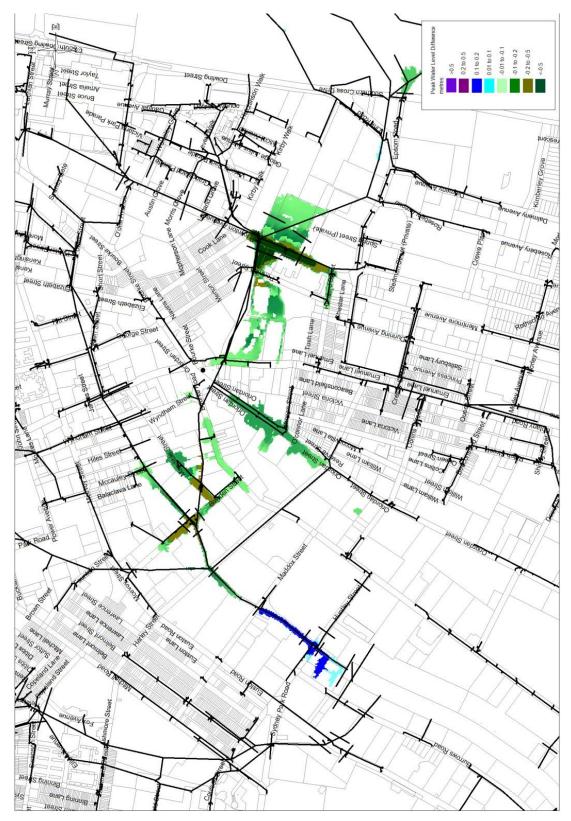


Figure F5 100 Year ARI Peak Water Level Difference for FM3 Less Existing



Figure F6 100 Year ARI Peak Water Level Difference for FM4 Less FM3

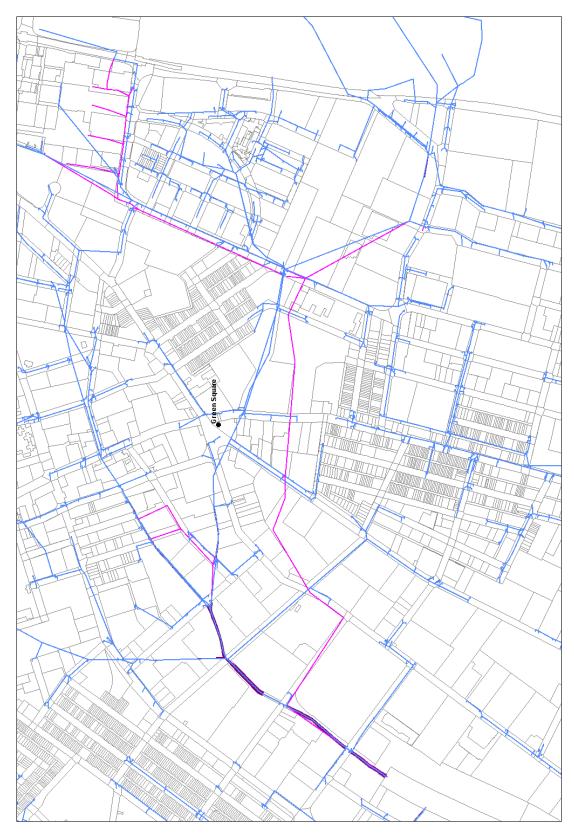


Figure F7 Measure FM9 Layout

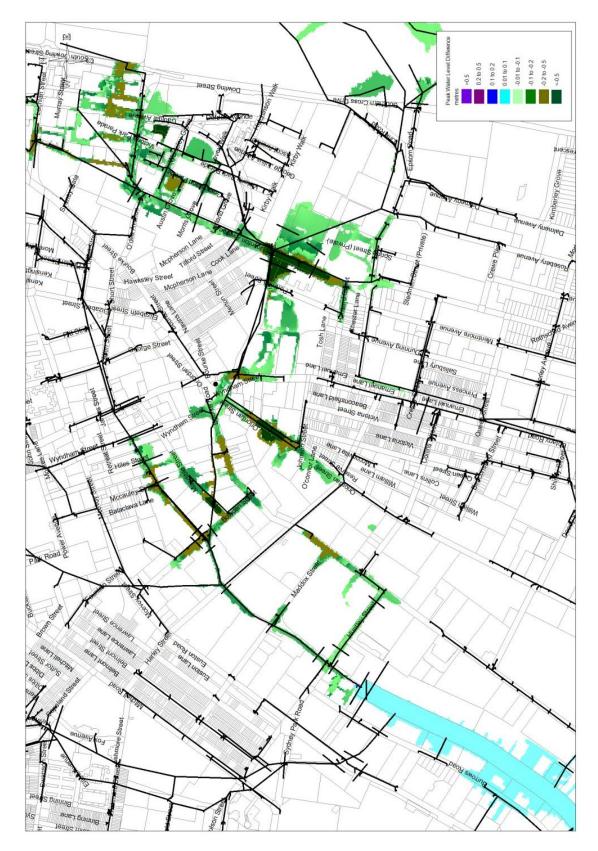


Figure F8 100 Year ARI Peak Water Level Difference for FM 9 Less Existing

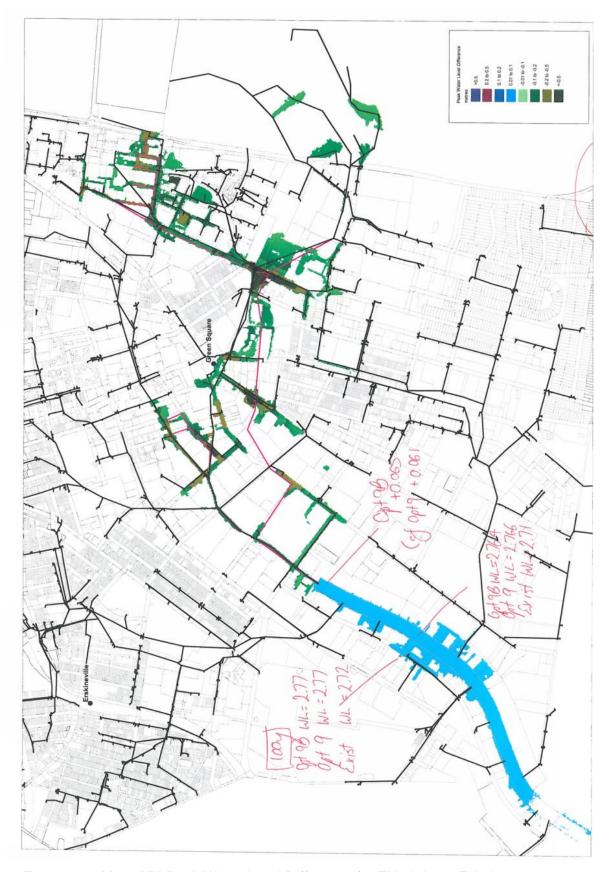


Figure F9 100 Year ARI Peak Water Level Difference for FM 9b Less Existing

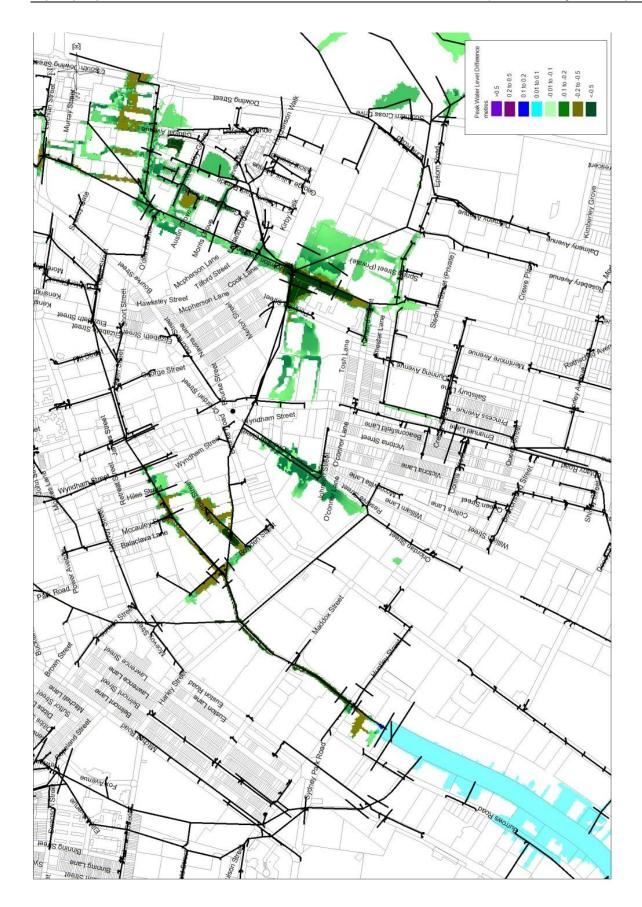


Figure F10 100 Year ARI Peak Water Level Difference for FM 10 Less Existing

Alexandra Canal Floodplain Risk Management Study and Plan

APPENDIX G MULTI-CRITERIA ASSESSMENT



Appendix G – Multi-Criteria Matrix

	49.6%
1	Essential Infrastructure Future Development
	72.6% 62.9%
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4 6 0 <td>0</td>	0
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4 4 4 2 4 3 1 1 3 0 1 0	0
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2 4 1 0 1 0 2 0 0 2 0 0 0 0 0 0 0 0	0