



Figure D22 Measure FM17 Layout

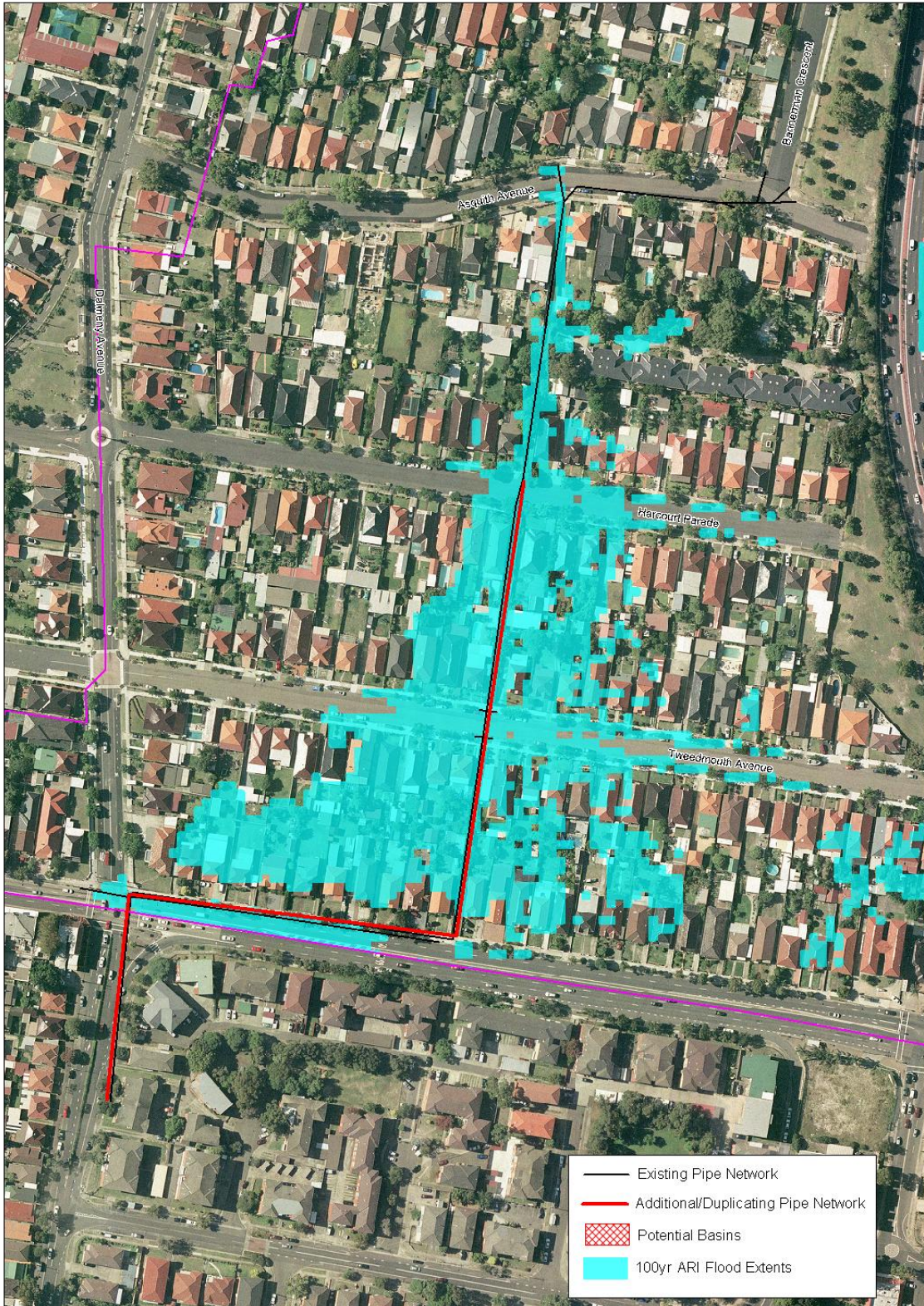


Figure D23 Measure FM18 Layout



Figure D24 Measure FM19 Layout

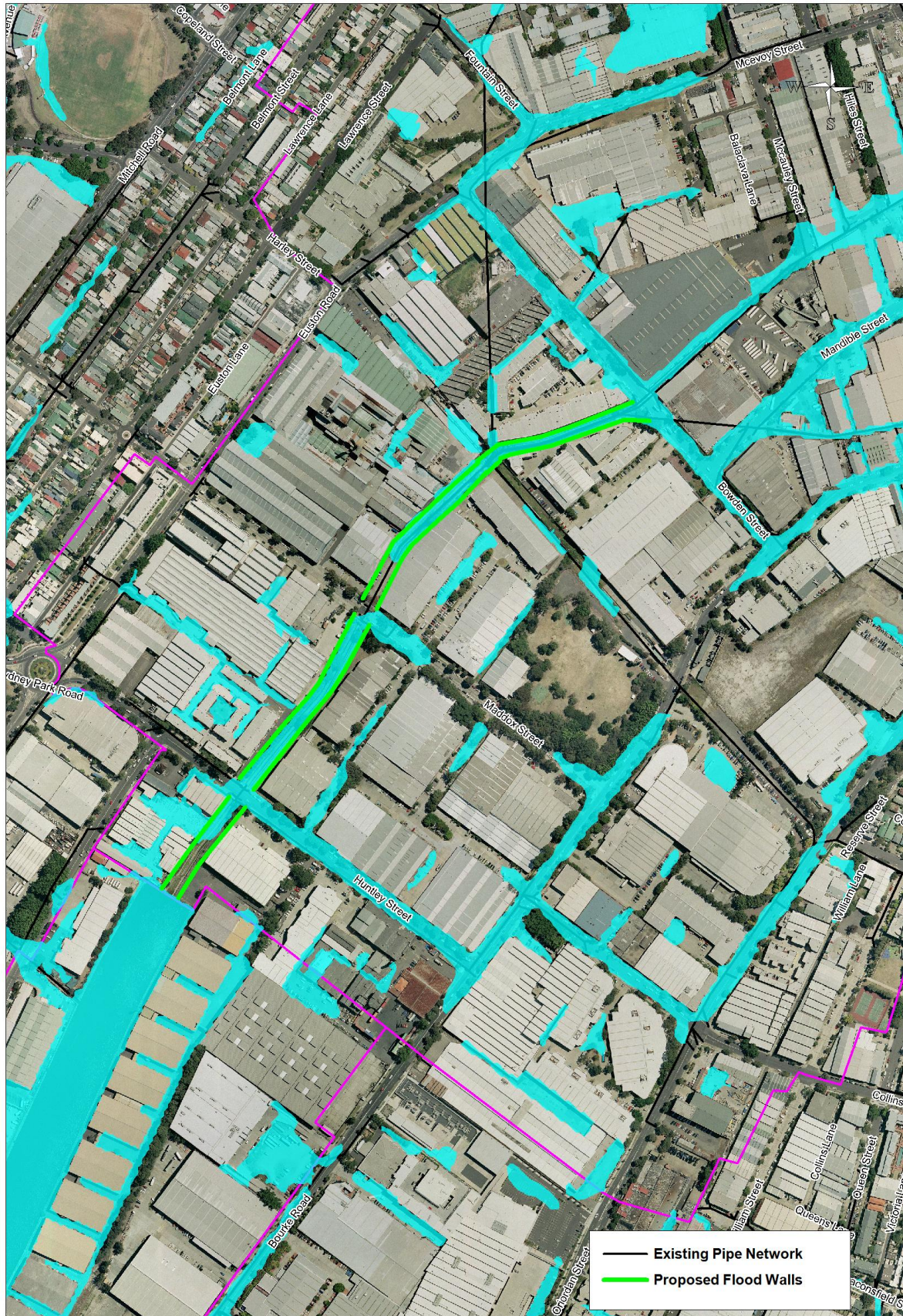


Figure D25 Measure FM20 Layout

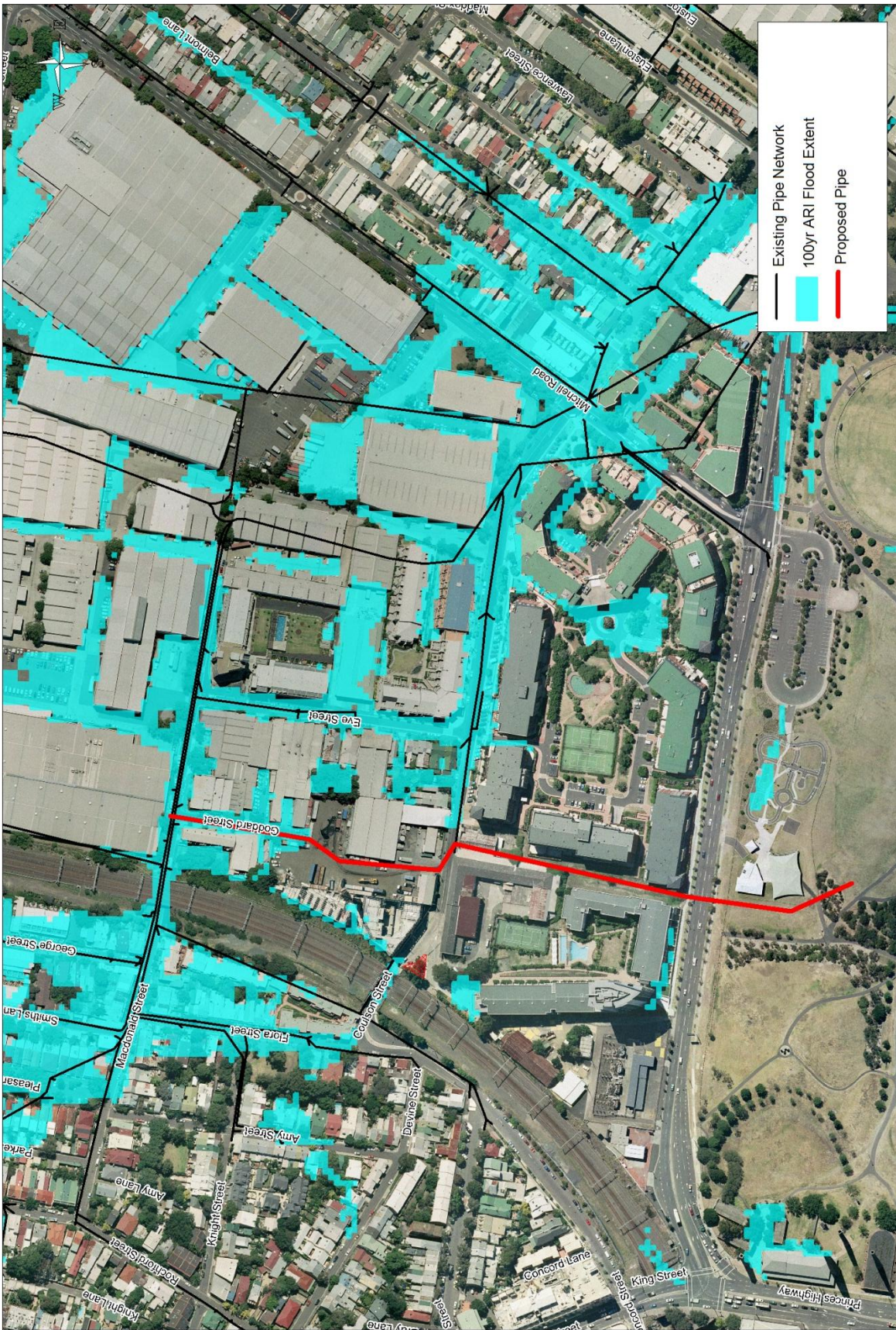


Figure D26 Measure FM21 Layout



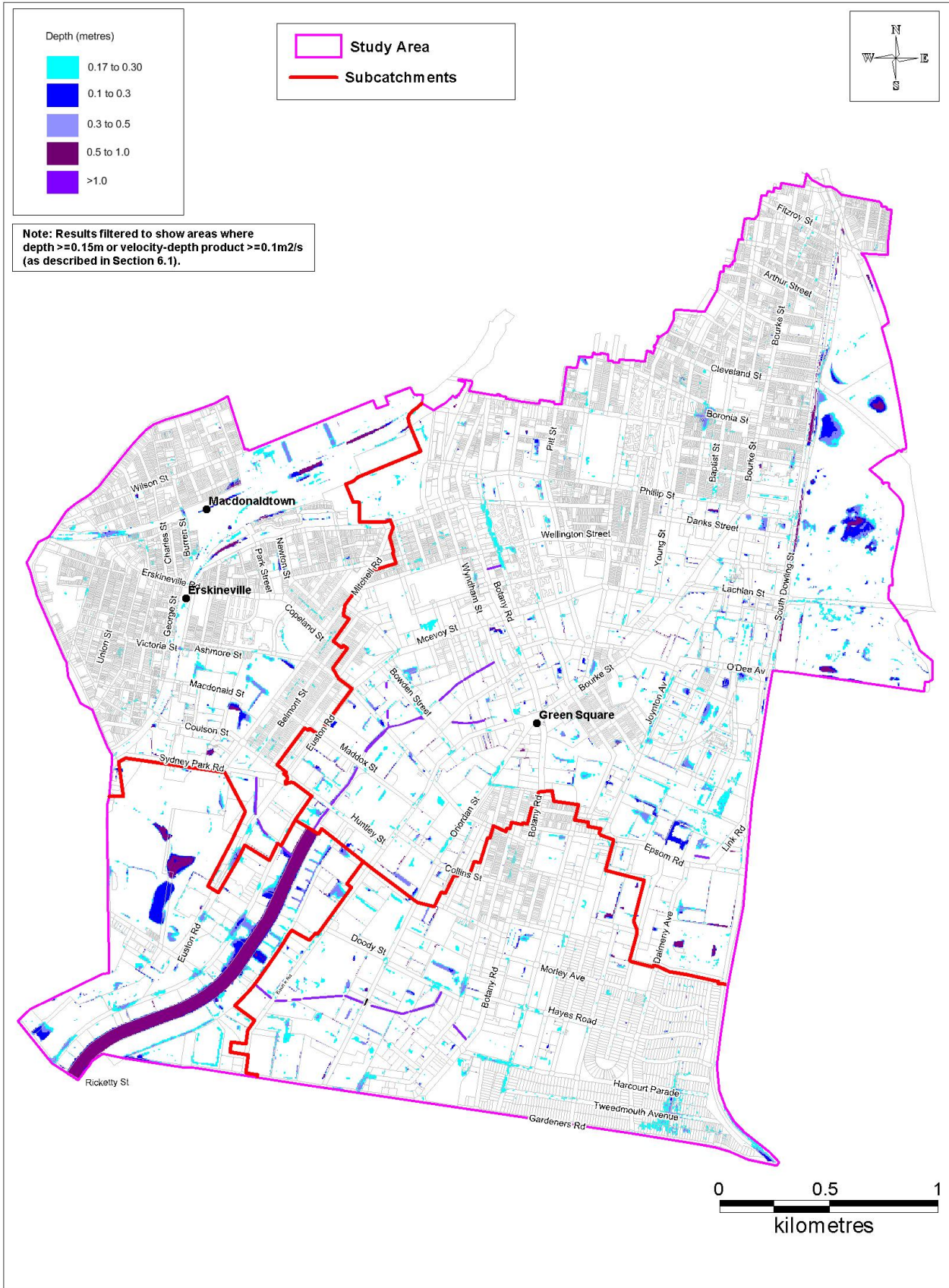


Figure D28 20 Year ARI Peak Depths for Measure FM11

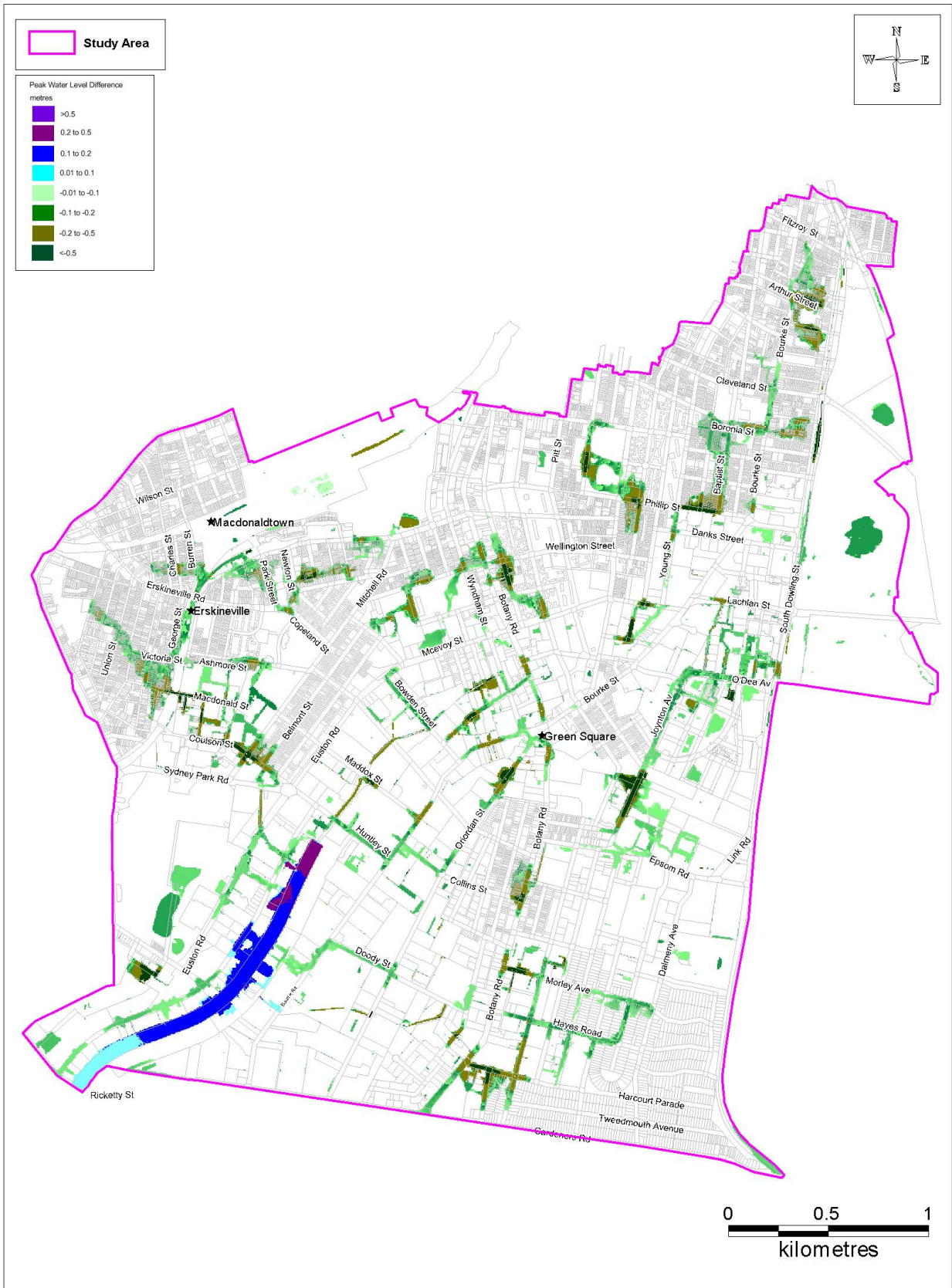


Figure D29 20 Year ARI Peak Water Level Difference for Measure FM11 Less Existing



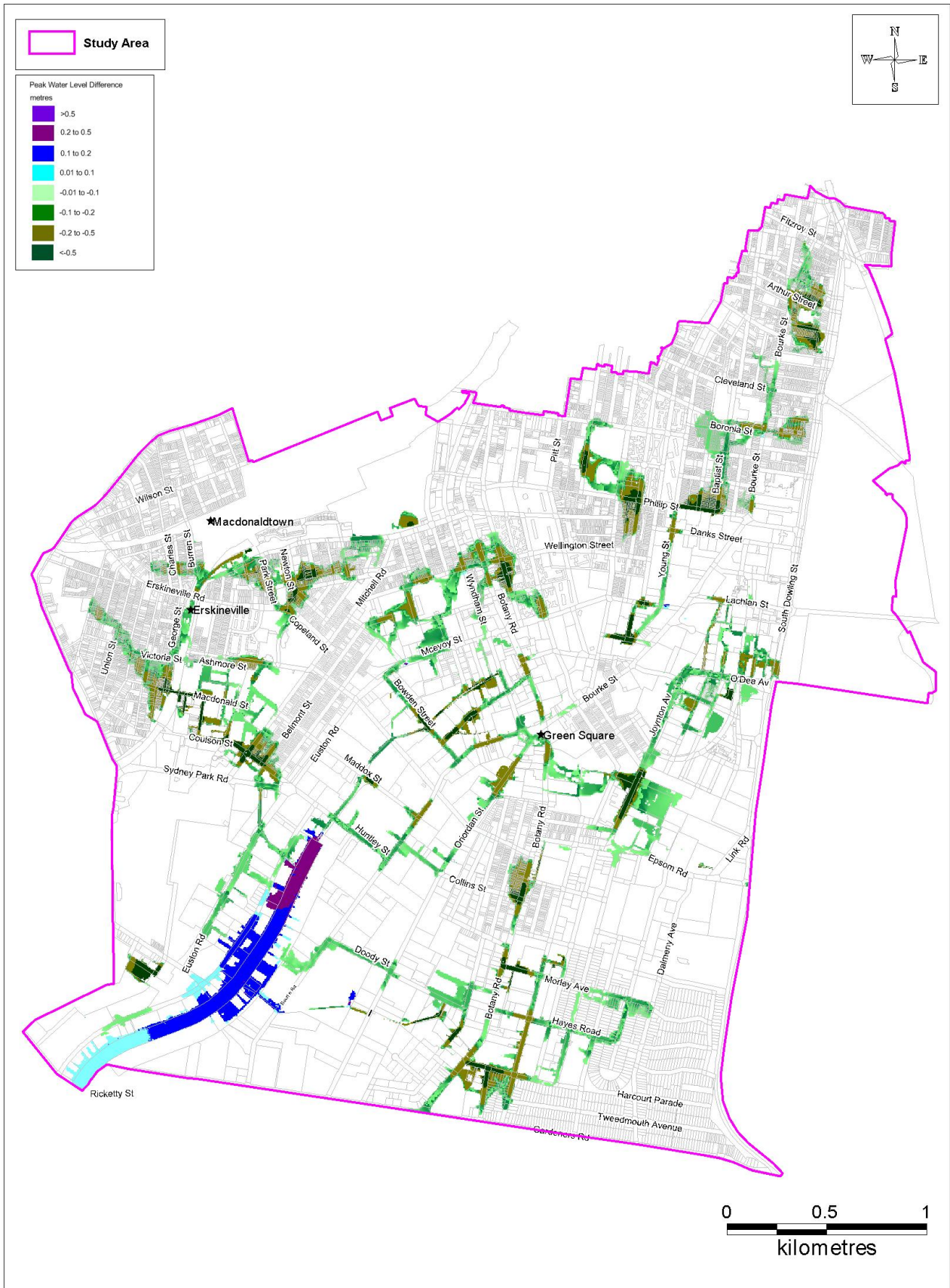


Figure D30 100 Year ARI Peak Water Level Difference for Measure FM11 Less Existing

Alexandra Canal Floodplain Risk  
Management Study and Plan

**APPENDIX E**  
MEASURE COSTING

**Cost Estimate**Option: **FM 5****Erskinville Oval Detention Basins**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>626,300</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of park and oval	61,200	sq. m	10	612,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	9180	cu. m	25	229,500
2.3	Dispose of excess topsoil (nominal 10% allowance)	918	cu. m	60	55,080
2.4	Pull up and dispose existing road surface	900	sq.m	35	31,500
	SUBTOTAL				<b>928,080</b>
<b>3.0 Earthworks</b>					
3.1	Excavation of park and oval detention basins	10,000	cu.m	45	450,000
3.2	Disposal of excess cut (assuming 80% of total excavation)	8,000	item	60	480,000
	SUBTOTAL				<b>930,000</b>
<b>4.0 DRAINAGE</b>					
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe	120	lin.m	1200	144,000
4.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	225	each	2250	506,250
4.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	7	each	4000	28,000
4.4	Install new outlet structure, including erosion protection as required	2	each	6000	12,000
4.5	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	69,025	69,025
	SUBTOTAL				<b>759,275</b>
<b>5.0 PAVEMENTS</b>					
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	900	sq. m	120	108,000
	SUBTOTAL				<b>108,000</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	352	lin.m	500	176,000
	SUBTOTAL				<b>176,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	61,200	sq. m	20	1,224,000
7.2	Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance)	1	item	50000	50,000
	SUBTOTAL				<b>1,274,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>4,801,655</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>2,400,828</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>7,202,483</b>
<b>GST</b>					<b>720,248</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>7,922,731</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>7,922,800</b>

**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.

**NOTES:**

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

**Cost Estimate**

Option: FM 6

**Ashmore Street Flowpath**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>1,988,800</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated areas	61,200	sq. m	10	612,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	9180	cu. m	25	229,500
2.3	Dispose of excess topsoil (nominal 10% allowance)	918	cu. m	60	55,080
2.4	Pull up and dispose existing road surface	8710	sq.m	35	304,850
	SUBTOTAL				<b>1,201,430</b>
<b>3.0 DRAINAGE</b>					
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe	690	lin.m	3300	2,277,000
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for twin 1.8m dia. Pipe	850	each	6750	5,737,500
3.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	31	each	4000	124,000
3.4	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	813,850	813,850
	SUBTOTAL				<b>8,952,350</b>
<b>4.0 PAVEMENTS</b>					
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	8710	sq. m	120	1,045,200
	SUBTOTAL				<b>1,045,200</b>
<b>5.0 TRAFFIC CONTROL</b>					
5.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	1571	lin.m	500	785,500
	SUBTOTAL				<b>785,500</b>
<b>6.0 MINOR LANDSCAPING</b>					
6.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	61,200	sq. m	20	1,224,000
6.2	Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance)	1	item	50000	50,000
	SUBTOTAL				<b>1,274,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>15,247,280</b>
<b>7.0 CONTINGENCIES</b>					
7.1	50% construction cost				<b>7,623,640</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>22,870,920</b>
<b>GST</b>					<b>2,287,092</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>25,158,012</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>25,158,100</b>

**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.

**NOTES:**

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

Option: FM 7

Phillips Street Flowpath

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>628,000</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of park and vacant lot	63,000	sq. m	10	630,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	9450	cu. m	25	236,250
2.3	Dispose of excess topsoil (nominal 10% allowance)	945	cu. m	60	56,700
2.4	Pull up and dispose existing road surface	1530	sq.m	35	53,550
	SUBTOTAL				<b>976,500</b>
<b>3.0 Earthworks</b>					
3.1	Excavation of park and oval detention basins	15,000	cu.m	45	675,000
3.2	Disposal of excess cut (assuming 80% of total excavation)	12,000	item	60	720,000
	SUBTOTAL				<b>1,395,000</b>
<b>4.0 DRAINAGE</b>					
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m dia. Pipe	50	lin.m	975	48,750
4.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	125	each	1075	134,375
4.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	4	each	4000	16,000
4.4	Install new outlet structure, including erosion protection as required	2	each	6000	12,000
4.2	Adjustment of exsiting services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	21,113	21,113
	SUBTOTAL				<b>232,238</b>
<b>5.0 PAVEMENTS</b>					
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	1530	sq. m	120	183,600
	SUBTOTAL				<b>183,600</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	179	lin.m	500	89,500
	SUBTOTAL				<b>89,500</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	63,000	sq. m	20	1,260,000
7.2	Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance)	1	item	50000	50,000
	SUBTOTAL				<b>1,310,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>4,814,838</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>2,407,419</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>7,222,256</b>
<b>GST</b>					<b>722,226</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>7,944,482</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>7,944,500</b>

**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.

**NOTES:**

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**Option: **FM 8**

Alexandria Park Flowpath

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>703,000</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of park and oval	50,700	sq. m	10	507,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	7605	cu. m	25	190,125
2.3	Dispose of excess topsoil (nominal 10% allowance)	760.5	cu. m	60	45,630
2.4	Pull up and dispose existing road surface	2110	sq.m	35	73,850
	SUBTOTAL				<b>816,605</b>
<b>3.0 Earthworks</b>					
3.1	Excavation of park and oval detention basins	15,000	cu.m	45	675,000
3.2	Disposal of excess cut (assuming 80% of total excavation)	12,000	item	60	720,000
	SUBTOTAL				<b>1,395,000</b>
<b>4.0 DRAINAGE</b>					
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.45m dia. Pipe	50	lin.m	925	46,250
4.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	125	each	1075	134,375
4.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	350	each	1650	577,500
4.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	11	each	4000	44,000
4.4	Install new outlet structure, including erosion protection as required	2	each	6000	12,000
4.5	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	81,413	81,413
	SUBTOTAL				<b>895,538</b>
<b>5.0 PAVEMENTS</b>					
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	2110	sq. m	120	253,200
	SUBTOTAL				<b>253,200</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	525	lin.m	500	262,500
	SUBTOTAL				<b>262,500</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	50,700	sq. m	20	1,014,000
7.2	Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance)	1	item	50000	50,000
	SUBTOTAL				<b>1,064,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>5,389,843</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>2,694,921</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>8,084,764</b>
<b>GST</b>					<b>808,476</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>8,893,240</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>8,893,300</b>

**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.

**NOTES:**

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

 Option: **FM 9**  
**Sydney Water HAF**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>7,002,900</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
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)	165	cu. m	60	9,900
2.4	Pull up and dispose existing road surface	1160	sq.m	35	40,600
	SUBTOTAL				<b>201,750</b>
<b>4.0 DRAINAGE</b>					
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	20	lin.m	1650	33,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m x 0.6m culvert	105	lin.m	2200	231,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m x 1.2m culvert	10	lin.m	2400	24,000
	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	140	lin.m	8200	1,148,000
	Supply, excavate, bed, lay, joint, backfill and provide connections for 4.5m x 1.5m culvert	45	lin.m	13100	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	1,025	lin.m	16500	16,912,500
4.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.6m x 2.4m culvert	15	lin.m	4400	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 outlet structure, including erosion protection as required	2	each	6000	12,000
4.5	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	3,993,175	3,993,175
	SUBTOTAL				<b>43,924,925</b>
<b>6.0 STORAGE TANK</b>					
6.1	Construction of storage tank (nominal allowance)	1	item	500000	500,000
	SUBTOTAL				<b>500,000</b>
<b>5.0 PAVEMENTS</b>					
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	1160	sq. m	120	139,200
	SUBTOTAL				<b>139,200</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	3,400	lin.m	500	1,700,000
	SUBTOTAL				<b>1,700,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	11,000	sq. m	20	220,000
	SUBTOTAL				<b>220,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>53,688,775</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>26,844,388</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>80,533,163</b>
<b>GST</b>					<b>8,053,316</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>88,586,479</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>88,586,500</b>

**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.

**NOTES:**

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

**Cost Estimate**Option: **FM 12****Detention Basin in Moore Park (off set storage)**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>1,169,700</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
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)	165	cu. m	60	9,900
2.4	Pull up and dispose existing road surface	1160	sq.m	35	40,600
	SUBTOTAL				<b>201,750</b>
<b>3.0 EARTHWORKS</b>					
3.1	Excavation of storage	2,320	cu.m	45	104,400
3.2	Disposal of excess cut (assuming 80% of total excavation)	1,856	item	60	111,360
	SUBTOTAL				<b>215,760</b>
<b>4.0 DRAINAGE</b>					
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 0.6m culvert	95	lin.m	3200	304,000
4.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.6m culvert	170	lin.m	5100	867,000
4.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.9m x 0.6m culvert	130	lin.m	7200	936,000
4.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.9m x 0.6m culvert	50	lin.m	72000	3,600,000
4.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	9	each	4000	36,000
4.4	Install new outlet structure, including erosion protection as required	1	each	6000	6,000
4.5	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	574,900	574,900
	SUBTOTAL				<b>6,323,900</b>
<b>6.0 STORAGE TANK</b>					
6.1	Construction of storage tank (nominal allowance)	1	item	500000	500,000
	SUBTOTAL				<b>500,000</b>
<b>5.0 PAVEMENTS</b>					
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	1160	sq. m	120	139,200
	SUBTOTAL				<b>139,200</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	395	lin.m	500	197,500
	SUBTOTAL				<b>197,500</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	11,000	sq. m	20	220,000
	SUBTOTAL				<b>220,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>8,967,810</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>4,483,905</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>13,451,715</b>
<b>GST</b>					<b>1,345,172</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>14,796,887</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>14,796,900</b>

**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.

**NOTES:**

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**Option: **FM 13****Detention Basin in Newtown Public School**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>239,700</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
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)	165	cu. m	60	9,900
2.4	Pull up and dispose existing road surface	2110	sq.m	35	73,850
	SUBTOTAL				<b>235,000</b>
<b>3.0 Earthworks</b>					
3.1	Excavation of park and oval detention basins	11,000	cu.m	45	495,000
3.2	Disposal of excess cut (assuming 80% of total excavation)	8,800	item	60	528,000
	SUBTOTAL				<b>1,023,000</b>
<b>4.0 DRAINAGE</b>					
4.1	Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures	1	item	120000	120,000
	SUBTOTAL				<b>120,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	11,000	sq. m	20	220,000
	SUBTOTAL				<b>220,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>1,837,700</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>918,850</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>2,756,550</b>
<b>GST</b>					<b>275,655</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>3,032,205</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>3,032,300</b>

**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.

**NOTES:**

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**Option: **FM 14****Detention Basin near Burren Street**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0</b>	<b>GENERAL AND PRELIMINARIES</b>				
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)				<b>272,500</b>
<b>2.0</b>	<b>DEMOLITION, CLEARING AND GRUBBING</b>				
2.1	Clearing & grubbing of park and oval	4,250	sq. m	10	42,500
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	637.5	cu. m	25	15,938
2.3	Dispose of excess topsoil (nominal 10% allowance)	63.75	cu. m	60	3,825
2.4	Pull up and dispose existing road surface	2110	sq.m	35	73,850
	SUBTOTAL				<b>136,113</b>
<b>3.0</b>	<b>Earthworks</b>				
3.1	Excavation of park and oval detention basins	4,250	cu.m	45	191,250
3.2	Disposal of excess cut (assuming 80% of total excavation)	3,400	item	60	204,000
	SUBTOTAL				<b>395,250</b>
<b>4.0</b>	<b>DRAINAGE</b>				
4.1	Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures	1	item	1200000	1,200,000
	SUBTOTAL				<b>1,200,000</b>
<b>7.0</b>	<b>MINOR LANDSCAPING</b>				
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	4,250	sq. m	20	85,000
	SUBTOTAL				<b>85,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>2,088,863</b>
<b>8.0</b>	<b>CONTINGENCIES</b>				
8.1	50% construction cost				<b>1,044,431</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>3,133,294</b>
<b>GST</b>					<b>313,329</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>3,446,623</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>3,446,700</b>

**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.

**NOTES:**

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**Option: **FM 16****Additional Drainage Capacity Gardeners Road**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>229,000</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated 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	1680	sq.m	35	58,800
	SUBTOTAL				<b>73,450</b>
<b>4.0 DRAINAGE</b>					
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	400	lin.m	2250	900,000
4.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	8	each	4000	32,000
4.4	Install new outlet structure, including erosion protection as required	1	each	6000	6,000
4.5	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	93,800	93,800
	SUBTOTAL				<b>1,031,800</b>
<b>5.0 PAVEMENTS</b>					
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	1680	sq. m	120	201,600
	SUBTOTAL				<b>201,600</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	400	lin.m	500	200,000
	SUBTOTAL				<b>200,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,000
	SUBTOTAL				<b>20,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>1,755,850</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>877,925</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>2,633,775</b>
<b>GST</b>					<b>263,378</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>2,897,153</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>2,897,200</b>

**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.

**NOTES:**

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**Option: **FM 17****Detention Basin in Turruwul Park**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>396,700</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of park and oval	19,200	sq. m	10	192,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	2880	cu. m	25	72,000
2.3	Dispose of excess topsoil (nominal 10% allowance)	288	cu. m	60	17,280
2.4	Pull up and dispose existing road surface	2110	sq.m	35	73,850
	SUBTOTAL				<b>355,130</b>
<b>3.0 Earthworks</b>					
3.1	Excavation of park and oval detention basins	19,200	cu.m	45	864,000
3.2	Disposal of excess cut (assuming 80% of total excavation)	15,360	item	60	921,600
	SUBTOTAL				<b>1,785,600</b>
<b>4.0 DRAINAGE</b>					
4.1	Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures	1	item	120000	120,000
	SUBTOTAL				<b>120,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	19,200	sq. m	20	384,000
	SUBTOTAL				<b>384,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>3,041,430</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>1,520,715</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>4,562,145</b>
<b>GST</b>					<b>456,215</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>5,018,360</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>5,018,400</b>

**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.

**NOTES:**

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

**Cost Estimate**Option: **FM 18****Additional Drainage Network at Rosebury B Catchment**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>235,000</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated 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	300	sq.m	35	10,500
	SUBTOTAL				<b>25,150</b>
<b>4.0 DRAINAGE</b>					
4.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	480	lin.m	2250	1,080,000
4.3	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	10	each	4000	40,000
4.4	Install new outlet structure, including erosion protection as required	2	each	6000	12,000
4.5	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	113,200	113,200
	SUBTOTAL				<b>1,245,200</b>
<b>5.0 PAVEMENTS</b>					
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	300	sq. m	120	36,000
	SUBTOTAL				<b>36,000</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	480	lin.m	500	240,000
	SUBTOTAL				<b>240,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,000
	SUBTOTAL				<b>20,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>1,801,350</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>900,675</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>2,702,025</b>
<b>GST</b>					<b>270,203</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>2,972,228</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>2,972,300</b>

**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.

**NOTES:**

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

**Cost Estimate**Option: **FM 19****Detention Basin in Waterloo Park**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>352,500</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of park and oval	16,500	sq. m	10	165,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	2475	cu. m	25	61,875
2.3	Dispose of excess topsoil (nominal 10% allowance)	247.5	cu. m	60	14,850
2.4	Pull up and dispose existing road surface	2110	sq.m	35	73,850
	SUBTOTAL				<b>315,575</b>
<b>3.0 Earthworks</b>					
3.1	Excavation of park and oval detention basins	16,500	cu.m	45	742,500
3.2	Disposal of excess cut (assuming 80% of total excavation)	13,200	item	60	792,000
	SUBTOTAL				<b>1,534,500</b>
<b>4.0 DRAINAGE</b>					
4.1	Nominal allowance for redirection of existing pipes, and construction of inlet and outlet structures	1	item	120000	120,000
	SUBTOTAL				<b>120,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	16,500	sq. m	20	330,000
7.2	Reinstate park and oval infrastructure including stands, tracks, etc. (nominal allowance)	1	item	50000	50,000
	SUBTOTAL				<b>380,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>2,702,575</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>1,351,288</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>4,053,863</b>
<b>GST</b>					<b>405,386</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>4,459,249</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>4,459,300</b>

**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.

**NOTES:**

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**Option: **FM 20****Sheas Creek Flood Walls**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>279,400</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated 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 (nominal allowance)	100	sq.m	35	3,500
	SUBTOTAL				<b>18,150</b>
<b>3.0 Flood Walls</b>					
3.1	Construction of Flood Walls incl. footings and spans as required	1,656	sq. face. m	800	1,324,800
	SUBTOTAL				<b>1,324,800</b>
<b>4.0 DRAINAGE</b>					
4.1	Nominal allowance for upgrading culvert capacity along channel	1	item	500000	500,000
	SUBTOTAL				<b>500,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,000
	SUBTOTAL				<b>20,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>2,142,350</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>1,071,175</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>3,213,525</b>
<b>GST</b>					<b>321,353</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>3,534,878</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>3,534,900</b>

**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.

**NOTES:**

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**Option: **FM 21****Diversion to Sydney Park**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0</b>	<b>GENERAL AND PRELIMINARIES</b>				
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)				<b>418,500</b>
<b>2.0</b>	<b>DEMOLITION, CLEARING AND GRUBBING</b>				
2.1	Clearing & grubbing of vegetated 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	2000	sq.m	35	70,000
	SUBTOTAL				<b>84,650</b>
<b>4.0</b>	<b>DRAINAGE</b>				
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 outlet structure, including erosion protection as required	1	each	6000	6,000
4.5	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	199,600	199,600
	SUBTOTAL				<b>2,195,600</b>
<b>5.0</b>	<b>PAVEMENTS</b>				
5.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	2000	sq. m	120	240,000
	SUBTOTAL				<b>240,000</b>
<b>6.0</b>	<b>TRAFFIC CONTROL</b>				
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	500	lin.m	500	250,000
	SUBTOTAL				<b>250,000</b>
<b>7.0</b>	<b>MINOR LANDSCAPING</b>				
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,000
	SUBTOTAL				<b>20,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>3,208,750</b>
<b>8.0</b>	<b>CONTINGENCIES</b>				
8.1	50% construction cost				<b>1,604,375</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>4,813,125</b>
<b>GST</b>					<b>481,313</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>5,294,438</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>5,294,500</b>

**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.

**NOTES:**

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 - Summary**
**FM 11 - Alexandra Canal Overall Catchment  
 Long Term Option**

Option	Long Term	
	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
<b>20yr Strategy ( FM 11 Option)</b>	<b>\$662,308,300</b>	<b>\$338,100</b>

## Cost Estimate

 FM 11 Alexandria Park Flowpath  
 Long Term Option

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>1,876,700</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated areas	1,200	sq. m	10	12,000
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	180	cu. m	25	4,500
2.3	Dispose of excess topsoil (nominal 10% allowance)	18	cu. m	60	1,080
2.4	Pull up and dispose existing road surface	12030	sq.m	35	421,050
	SUBTOTAL				<b>438,630</b>
<b>3.0 DRAINAGE</b>					
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	115	lin.m	1075	123,625
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe	170	lin.m	1125	191,250
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe	135	lin.m	1200	162,000
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe	260	lin.m	1425	370,500
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	225	lin.m	1650	371,250
3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe	275	lin.m	1950	536,250
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	185	lin.m	2250	416,250
3.8	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.65m dia. Pipe	200	lin.m	2700	540,000
3.9	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert	650	lin.m	4200	2,730,000
3.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.7m x 2.7m culvert	565	lin.m	4800	2,712,000
3.11	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	56	each	4000	224,000
3.12	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	837,713	837,713
	SUBTOTAL				<b>9,214,838</b>
<b>4.0 PAVEMENTS</b>					
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	12030	sq. m	120	1,443,600
	SUBTOTAL				<b>1,443,600</b>
<b>5.0 TRAFFIC CONTROL</b>					
5.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	2780	lin.m	500	1,390,000
	SUBTOTAL				<b>1,390,000</b>
<b>6.0 PROPERTY BY-BACK</b>					
6.1	Purchase of properties in order to create drainage easements	3	each	1300000	3,900,000
	SUBTOTAL				<b>3,900,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,200	sq. m	20	24,000
	SUBTOTAL				<b>24,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>18,287,768</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>9,143,884</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>27,431,651</b>
<b>GST</b>					<b>2,743,165</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>30,174,816</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>30,174,900</b>

**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.

**NOTES:**

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

## Cost Estimate

 FM 11 Arthur Street Flowpath  
 Long Term Option

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>908,100</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated 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	16760	sq.m	35	586,600
	SUBTOTAL				<b>601,250</b>
<b>3.0 DRAINAGE</b>					
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.225m dia. Pipe	5	lin.m	825	4,125
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	30	lin.m	1075	32,250
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	90	lin.m	1425	128,250
3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	95	lin.m	1650	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	20	lin.m	1200	24,000
3.12	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m x 0.6m culvert	40	lin.m	1500	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	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	22	each	4000	88,000
3.17	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	261,073	261,073
	SUBTOTAL				<b>2,871,798</b>
<b>4.0 PAVEMENTS</b>					
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	16760	sq. m	120	2,011,200
	SUBTOTAL				<b>2,011,200</b>
<b>5.0 PROPERTY BY-BACK</b>					
5.1	Purchase of properties in order to create drainage easements	5	each	1300000	6,500,000
	SUBTOTAL				<b>6,500,000</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	1099	lin.m	500	549,500
	SUBTOTAL				<b>549,500</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,000
	SUBTOTAL				<b>20,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>13,461,848</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>6,730,924</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>20,192,771</b>
<b>GST</b>					<b>2,019,277</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>22,212,048</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>22,212,100</b>

**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.

**NOTES:**

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 Ashmore Street Flowpath  
 Long Term Option

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>2,633,000</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated areas	1,850	sq. m	10	18,500
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	277.5	cu. m	25	6,938
2.3	Dispose of excess topsoil (nominal 10% allowance)	27.75	cu. m	60	1,665
2.4	Pull up and dispose existing road surface	12130	sq.m	35	424,550
	SUBTOTAL				<b>451,653</b>
<b>3.0 DRAINAGE</b>					
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.1m dia. Pipe	55	lin.m	750	41,250
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.375m dia. Pipe	50	lin.m	900	45,000
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.675m dia. Pipe	330	lin.m	1000	330,000
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe	80	lin.m	1125	90,000
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe	60	lin.m	1200	72,000
3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe	180	lin.m	1425	256,500
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	105	lin.m	1650	173,250
3.8	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe	125	lin.m	1950	243,750
3.9	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	65	lin.m	2250	146,250
3.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.65m dia. Pipe	340	lin.m	2700	918,000
3.11	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert	60	lin.m	4200	252,000
3.12	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.7m x 2.7m culvert	50	lin.m	4800	240,000
3.13	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert	190	lin.m	6150	1,168,500
3.14	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.8m culvert	260	lin.m	7050	1,833,000
3.15	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 2.7m culvert	585	lin.m	9300	5,440,500
3.16	Supply, excavate, bed, lay, joint, backfill and provide connections for 5.5m x 2.7m culvert	109	lin.m	14000	1,526,000
3.17	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	53	each	4000	212,000
3.18	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	1,298,800	1,298,800
	SUBTOTAL				<b>14,286,800</b>
<b>4.0 PAVEMENTS</b>					
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	12130	sq. m	120	1,455,600
	SUBTOTAL				<b>1,455,600</b>
<b>5.0 PROPERTY BY-BACK</b>					
5.1	Purchase of properties in order to create drainage easements	6	each	130000	7,800,000
	SUBTOTAL				<b>7,800,000</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	2644	lin.m	500	1,322,000
	SUBTOTAL				<b>1,322,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,850	sq. m	20	37,000
	SUBTOTAL				<b>37,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>27,986,053</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>13,993,026</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>41,979,079</b>
<b>GST</b>					<b>4,197,908</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>46,176,987</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>46,177,000</b>

**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.

**NOTES:**

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

## Cost Estimate

 FM 11 Bourke Street  
 Long Term Option

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				11,397,800
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated 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	49140	sq.m	35	1,719,900
	SUBTOTAL				1,734,550
<b>3.0 DRAINAGE</b>					
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.225m dia. Pipe	5	lin.m	825	4,125
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.525m dia. Pipe	25	lin.m	950	23,750
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	70	lin.m	1075	75,250
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.825m dia. Pipe	170	lin.m	1125	191,250
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe	75	lin.m	1200	90,000
3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe	440	lin.m	1425	627,000
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	95	lin.m	1650	156,750
3.8	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe	65	lin.m	1950	126,750
3.9	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	205	lin.m	2250	461,250
3.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.65m dia. Pipe	120	lin.m	2700	324,000
3.11	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe	230	lin.m	3300	759,000
3.12	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.45m x 0.45m culvert	20	lin.m	1200	24,000
3.13	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m x 0.6m culvert	40	lin.m	1500	60,000
3.14	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m x 0.9m culvert	50	lin.m	1900	95,000
3.15	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m x 1.2m culvert	100	lin.m	2400	240,000
3.16	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 0.4m culvert	55	lin.m	2800	154,000
3.17	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m x 1.8m culvert	500	lin.m	3200	1,600,000
3.18	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m x 2.1m culvert	155	lin.m	4000	620,000
3.19	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert	715	lin.m	4200	3,003,000
3.20	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 1.5m culvert	35	lin.m	5100	178,500
3.21	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert	210	lin.m	5700	1,197,000
3.22	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert	835	lin.m	6150	5,135,250
3.23	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert	30	lin.m	6300	189,000
3.24	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert	700	lin.m	6600	4,620,000
3.25	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 2.0m culvert	465	lin.m	8100	3,766,500
3.26	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 3.6m culvert	875	lin.m	13200	11,550,000
3.27	Supply, excavate, bed, lay, joint, backfill and provide connections for 4.3m x 1.9m culvert	280	lin.m	12800	3,584,000
3.27	Supply, excavate, bed, lay, joint, backfill and provide connections for 5.0m x 1.8m culvert	740	lin.m	13300	9,842,000
3.28	Supply, excavate, bed, lay, joint, backfill and provide connections for 5.5m x 1.5m culvert	235	lin.m	13500	3,172,500
3.29	Supply, excavate, bed, lay, joint, backfill and provide connections for 6.0m x 1.8m culvert	365	lin.m	16500	6,022,500
3.30	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	159	each	4000	636,000
3.31	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	5,852,838	5,852,838
	SUBTOTAL				64,381,213
<b>4.0 PAVEMENTS</b>					
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	49140	sq. m	120	5,896,800
	SUBTOTAL				5,896,800
<b>5.0 PROPERTY BY-BACK</b>					
5.1	Purchase of properties in order to create drainage easements	20	each	1300000	26,000,000
	SUBTOTAL				26,000,000
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	7905	lin.m	500	3,952,500
	SUBTOTAL				3,952,500
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,000
	SUBTOTAL				20,000
<b>CONSTRUCTION SUB-TOTAL</b>					<b>113,382,863</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				56,691,431
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>170,074,294</b>
<b>GST</b>					<b>17,007,429</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>187,081,723</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>187,081,800</b>

## 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.

## NOTES:

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
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>1,157,300</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated 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	7200	sq.m	35	252,000
	SUBTOTAL				<b>266,650</b>
<b>3.0 DRAINAGE</b>					
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.525m dia. Pipe	25	lin.m	950	23,750
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.75m dia. Pipe	45	lin.m	1075	48,375
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe	140	lin.m	1425	199,500
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	120	lin.m	2250	270,000
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m x 0.9m culvert	50	lin.m	1900	95,000
3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.9m culvert	30	lin.m	6300	189,000
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert	690	lin.m	6600	4,554,000
3.8	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	22	each	4000	88,000
3.9	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	546,763	546,763
	SUBTOTAL				<b>6,014,388</b>
<b>4.0 PAVEMENTS</b>					
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	7200	sq. m	120	864,000
	SUBTOTAL				<b>864,000</b>
<b>5.0 PROPERTY BY-BACK</b>					
5.1	Purchase of properties in order to create drainage easements	5	each	1300000	6,500,000
	SUBTOTAL				<b>6,500,000</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	1100	lin.m	500	550,000
	SUBTOTAL				<b>550,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,000
	SUBTOTAL				<b>20,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>15,372,338</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>7,686,169</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>23,058,506</b>
<b>GST</b>					<b>2,305,851</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>25,364,357</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>25,364,400</b>

**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.

**NOTES:**

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

## Cost Estimate

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

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>4,985,300</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated 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	sq.m	35	1,011,500
	SUBTOTAL				<b>1,048,125</b>
<b>3.0 DRAINAGE</b>					
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.375m dia. Pipe	145	lin.m	900	130,500
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.45m dia. Pipe	10	lin.m	925	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	92	lin.m	1200	110,400
3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	115	lin.m	1650	189,750
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m 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	240	lin.m	3900	936,000
3.11	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m x 0.6m culvert	440	lin.m	1500	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	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert	620	lin.m	6600	4,092,000
3.16	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.8m culvert	930	lin.m	7050	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 existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	2,354,365	2,354,365
	SUBTOTAL				<b>25,898,015</b>
<b>4.0 PAVEMENTS</b>					
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	28900	sq. m	120	3,468,000
	SUBTOTAL				<b>3,468,000</b>
<b>5.0 TRAFFIC CONTROL</b>					
5.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	5542	lin.m	500	2,771,000
	SUBTOTAL				<b>2,771,000</b>
<b>6.0 MINOR LANDSCAPING</b>					
6.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	2,500	sq. m	20	50,000
	SUBTOTAL				<b>50,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>38,220,440</b>
<b>7.0 CONTINGENCIES</b>					
7.1	50% construction cost				<b>19,110,220</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>57,330,660</b>
<b>GST</b>					<b>5,733,066</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>63,063,726</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>63,063,800</b>

**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.

**NOTES:**

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

## Cost Estimate

 FM 11 Erskinville Oval Flowpath  
 Long Term Option

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0</b>	<b>GENERAL AND PRELIMINARIES</b>				
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)				<b>1,461,100</b>
<b>2.0</b>	<b>DEMOLITION, CLEARING AND GRUBBING</b>				
2.1	Clearing & grubbing of vegetated areas	3,320	sq. m	10	33,200
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	498	cu. m	25	12,450
2.3	Dispose of excess topsoil (nominal 10% allowance)	49.8	cu. m	60	2,988
2.4	Pull up and dispose existing road surface	6455	sq.m	35	225,925
	SUBTOTAL				<b>274,563</b>
<b>3.0</b>	<b>DRAINAGE</b>				
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.525m dia. Pipe	100	lin.m	950	95,000
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.6m dia. Pipe	20	lin.m	975	19,500
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe	35	lin.m	1425	49,875
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	255	lin.m	1650	420,750
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.35m dia. Pipe	40	lin.m	1950	78,000
3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	60	lin.m	2250	135,000
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.65m dia. Pipe	40	lin.m	2700	108,000
3.8	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe	190	lin.m	3300	627,000
3.9	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.0m x 2.1m culvert	310	lin.m	3900	1,209,000
3.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert	400	lin.m	4200	1,680,000
3.11	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.7m x 2.7m culvert	203	lin.m	4800	974,400
3.12	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 3.0m culvert	280	lin.m	5700	1,596,000
3.13	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	39	each	4000	156,000
3.14	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	714,853	714,853
	SUBTOTAL				<b>7,863,378</b>
<b>4.0</b>	<b>PAVEMENTS</b>				
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	6455	sq. m	120	774,600
	SUBTOTAL				<b>774,600</b>
<b>5.0</b>	<b>PROPERTY BY-BACK</b>				
5.1	Purchase of properties in order to create drainage easements	10	each	1300000	13,000,000
	SUBTOTAL				<b>13,000,000</b>
<b>6.0</b>	<b>TRAFFIC CONTROL</b>				
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	1523	sq. m	500	761,500
	SUBTOTAL				<b>761,500</b>
<b>7.0</b>	<b>MINOR LANDSCAPING</b>				
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	3,320	sq. m	20	66,400
	SUBTOTAL				<b>66,400</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>24,201,541</b>
<b>8.0</b>	<b>CONTINGENCIES</b>				
8.1	50% construction cost				<b>12,100,770</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>36,302,311</b>
<b>GST</b>					<b>3,630,231</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>39,932,542</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>39,932,600</b>

**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.

**NOTES:**

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 Mandible Street Flowpath  
 Long Term Option

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>1,972,300</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated 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	7190	sq.m	35	251,650
	SUBTOTAL				<b>266,300</b>
<b>3.0 DRAINAGE</b>					
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.2m dia. Pipe	45	lin.m	1650	74,250
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.5m dia. Pipe	120	lin.m	2250	270,000
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m dia. Pipe	490	lin.m	3900	1,911,000
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 0.6m culvert	185	lin.m	3200	592,000
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.0m x 0.9m culvert	495	lin.m	4800	2,376,000
3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.8m x 1.8m culvert	240	lin.m	12100	2,904,000
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 5.0m x 1.8m culvert	140	lin.m	13300	1,862,000
3.12	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	35	each	4000	140,000
3.13	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	1,012,925	1,012,925
	SUBTOTAL				<b>11,142,175</b>
<b>4.0 PAVEMENTS</b>					
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	7190	sq. m	120	862,800
	SUBTOTAL				<b>862,800</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	1715	lin.m	500	857,500
	SUBTOTAL				<b>857,500</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,000
	SUBTOTAL				<b>20,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>15,121,075</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>7,560,538</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>22,681,613</b>
<b>GST</b>					<b>2,268,161</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>24,949,774</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>24,949,800</b>

**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.

**NOTES:**

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

## Cost Estimate

**FM 11 Phillip Street Flowpath  
 Long Term Option**

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>3,955,000</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated areas	980	sq. m	10	9,800
2.2	Strip topsoil & stockpile for re-use (assuming 150mm depth)	147	cu. m	25	3,675
2.3	Dispose of excess topsoil (nominal 10% allowance)	14.7	cu. m	60	882
2.4	Pull up and dispose existing road surface	15020	sq.m	35	525,700
	SUBTOTAL				<b>540,057</b>
<b>3.0 DRAINAGE</b>					
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 0.9m dia. Pipe	45	lin.m	1200	54,000
3.2	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.65m dia. Pipe	120	lin.m	2700	324,000
3.3	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.8m dia. Pipe	490	lin.m	3300	1,617,000
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.1m x 2.1m culvert	185	lin.m	4000	740,000
3.5	Supply, excavate, bed, lay, joint, backfill and provide connections for 2.4m x 2.4m culvert	495	lin.m	4200	2,079,000
3.6	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert	240	lin.m	6150	1,476,000
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 0.6m culvert	140	lin.m	5100	714,000
3.8	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 3.3m culvert	240	lin.m	11500	2,760,000
3.9	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.5m culvert	245	lin.m	6600	1,617,000
3.10	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 1.8m culvert	280	lin.m	7050	1,974,000
3.11	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.6m x 3.6m culvert	520	lin.m	13200	6,864,000
3.12	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	60	each	4000	240,000
3.13	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	2,045,900	2,045,900
	SUBTOTAL				<b>22,504,900</b>
<b>4.0 PAVEMENTS</b>					
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	15020	sq. m	120	1,802,400
	SUBTOTAL				<b>1,802,400</b>
<b>5.0 PROPERTY BY-BACK</b>					
5.1	Purchase of properties in order to create drainage easements	5	each	1300000	6,500,000
	SUBTOTAL				<b>6,500,000</b>
<b>6.0 TRAFFIC CONTROL</b>					
6.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	3000	lin.m	500	1,500,000
	SUBTOTAL				<b>1,500,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	980	sq. m	20	19,600
	SUBTOTAL				<b>19,600</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>36,821,957</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>18,410,979</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>55,232,936</b>
<b>GST</b>					<b>5,523,294</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>60,756,229</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>60,756,300</b>

**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.

**NOTES:**

- Estimate does not include Consultant's fees, including design or project management
- 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
<b>1.0 GENERAL AND PRELIMINARIES</b>					
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)				<b>5,002,700</b>
<b>2.0 DEMOLITION, CLEARING AND GRUBBING</b>					
2.1	Clearing & grubbing of vegetated 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	15100	sq.m	35	528,500
	SUBTOTAL				<b>543,150</b>
<b>3.0 DRAINAGE</b>					
3.1	Supply, excavate, bed, lay, joint, backfill and provide connections for 1.05m dia. Pipe	90	lin.m	1425	128,250
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	210	lin.m	5700	1,197,000
3.4	Supply, excavate, bed, lay, joint, backfill and provide connections for 3.3m x 3.3m culvert	590	lin.m	6150	3,628,500
3.5	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	9,842,000
3.7	Supply, excavate, bed, lay, joint, backfill and provide connections for 6.0m x 1.8m culvert	365	lin.m	16500	6,022,500
3.8	Install new drainage / junction pit (assumed 1 pit per 50m of pipe)	54	each	4000	216,000
3.9	Adjustment of existing services (nominal allowance) (assumed 10% of drainage installation cost)	1	item	2,694,875	2,694,875
	SUBTOTAL				<b>29,643,625</b>
<b>4.0 PAVEMENTS</b>					
4.1	Reinstate disturbed road pavement, including demolition and disposal of additional material to provide good jointing	15100	sq. m	120	1,812,000
	SUBTOTAL				<b>1,812,000</b>
<b>5.0 TRAFFIC CONTROL</b>					
5.1	Control of traffic during works (nominal allowance) (assumed \$500 per lin.m)	2665	lin.m	500	1,332,500
	SUBTOTAL				<b>1,332,500</b>
<b>6.0 PROPERTY BY-BACK</b>					
6.1	Purchase of properties in order to create drainage easements	5	each	1300000	6,500,000
	SUBTOTAL				<b>6,500,000</b>
<b>7.0 MINOR LANDSCAPING</b>					
7.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1,000	sq. m	20	20,000
	SUBTOTAL				<b>20,000</b>
<b>CONSTRUCTION SUB-TOTAL</b>					<b>44,853,975</b>
<b>8.0 CONTINGENCIES</b>					
8.1	50% construction cost				<b>22,426,988</b>
<b>CONSTRUCTION TOTAL, excluding GST</b>					<b>67,280,963</b>
<b>GST</b>					<b>6,728,096</b>
<b>CONSTRUCTION TOTAL, including GST</b>					<b>74,009,059</b>
<b>CONSTRUCTION TOTAL, rounded</b>					<b>74,009,100</b>

**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.

**NOTES:**

- Estimate does not include Consultant's fees, including design or project management
- 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 30,000m<sup>3</sup> 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 5400m<sup>3</sup>.

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 5400m<sup>3</sup>.

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.

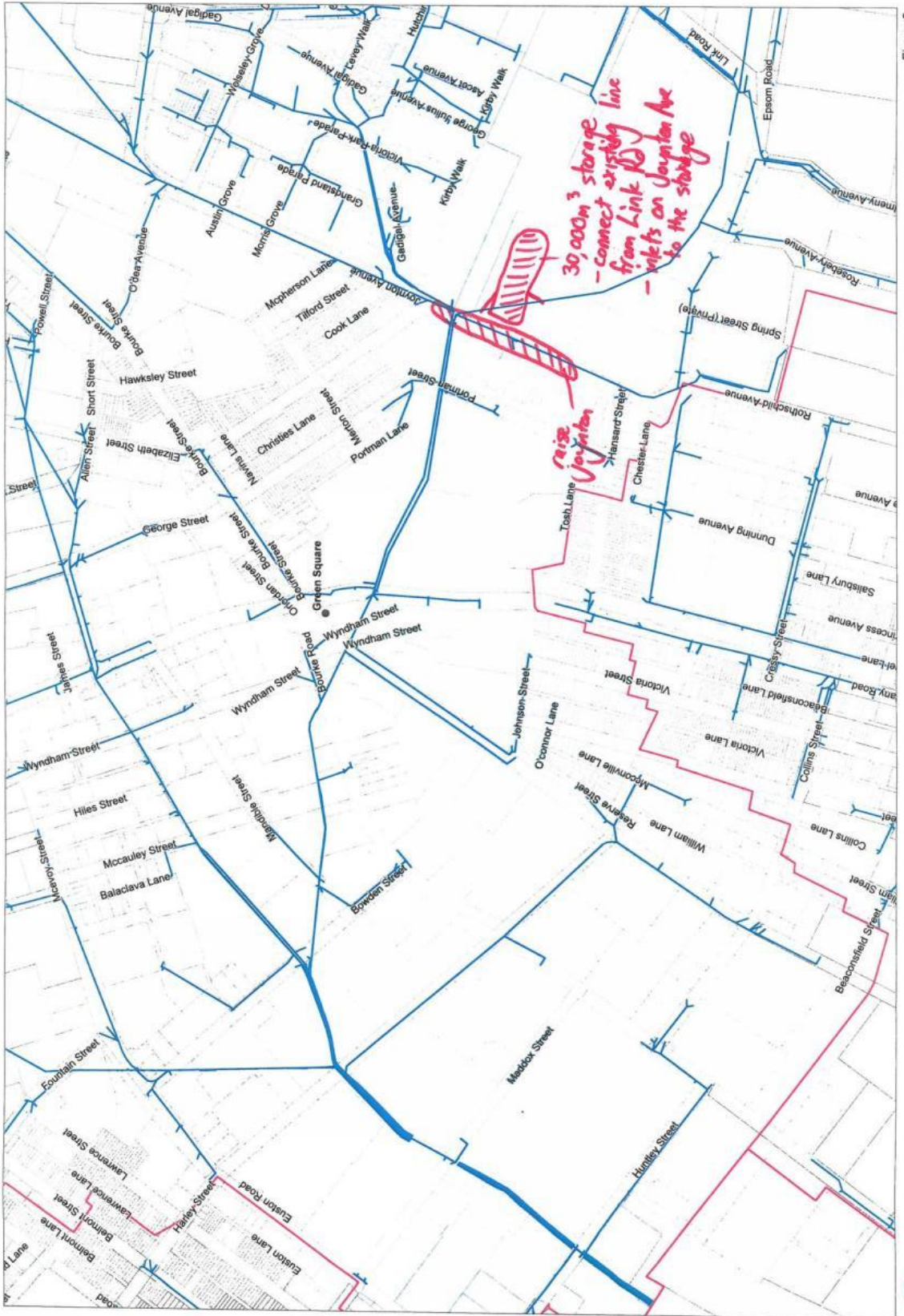


Figure F1 Measure FM1 Layout





Figure F2 Layout 100 Year ARI Peak Water Level Difference for FM1 Less Existing

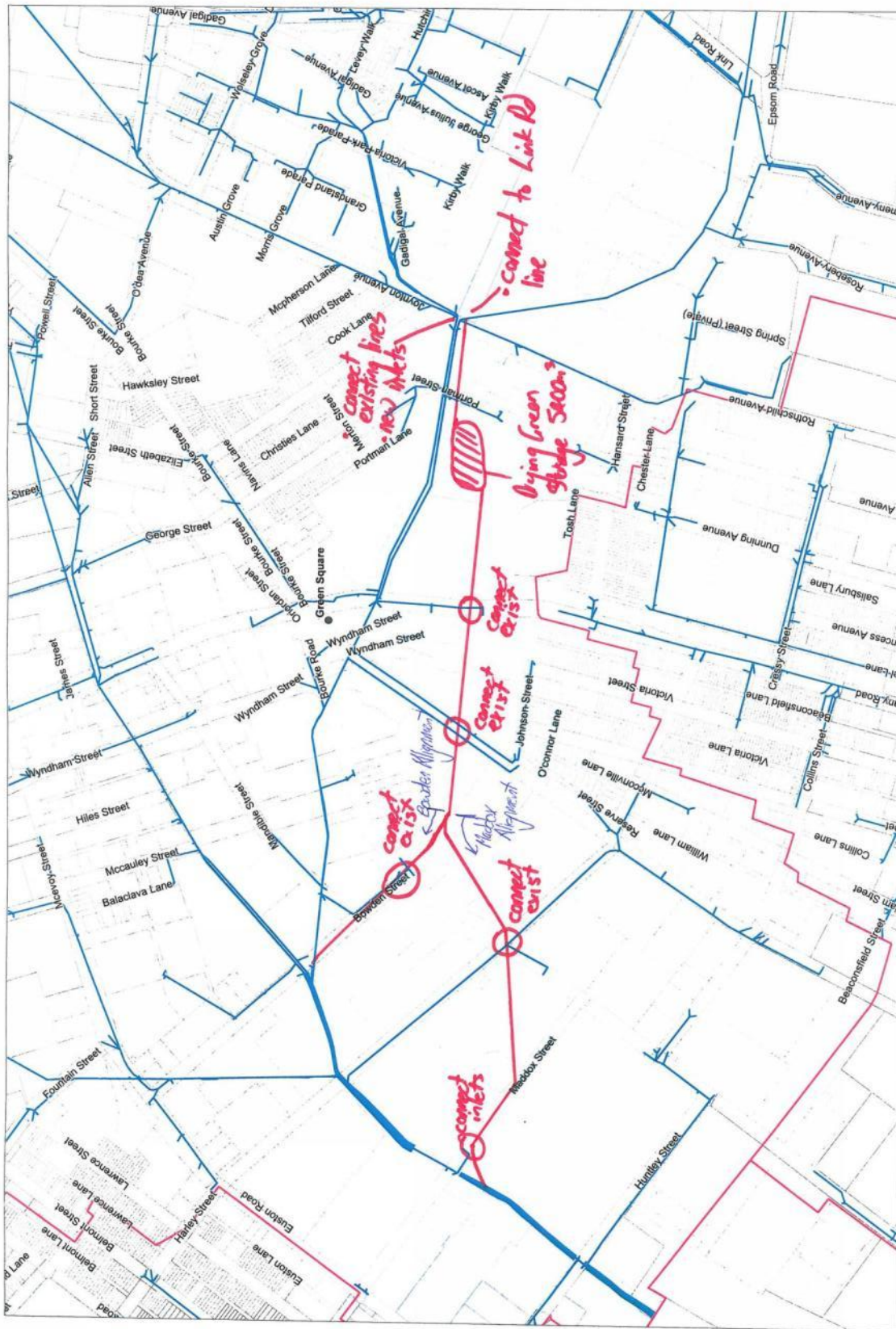


Figure F3 Measure FM2, FM3, and FM4 Layout

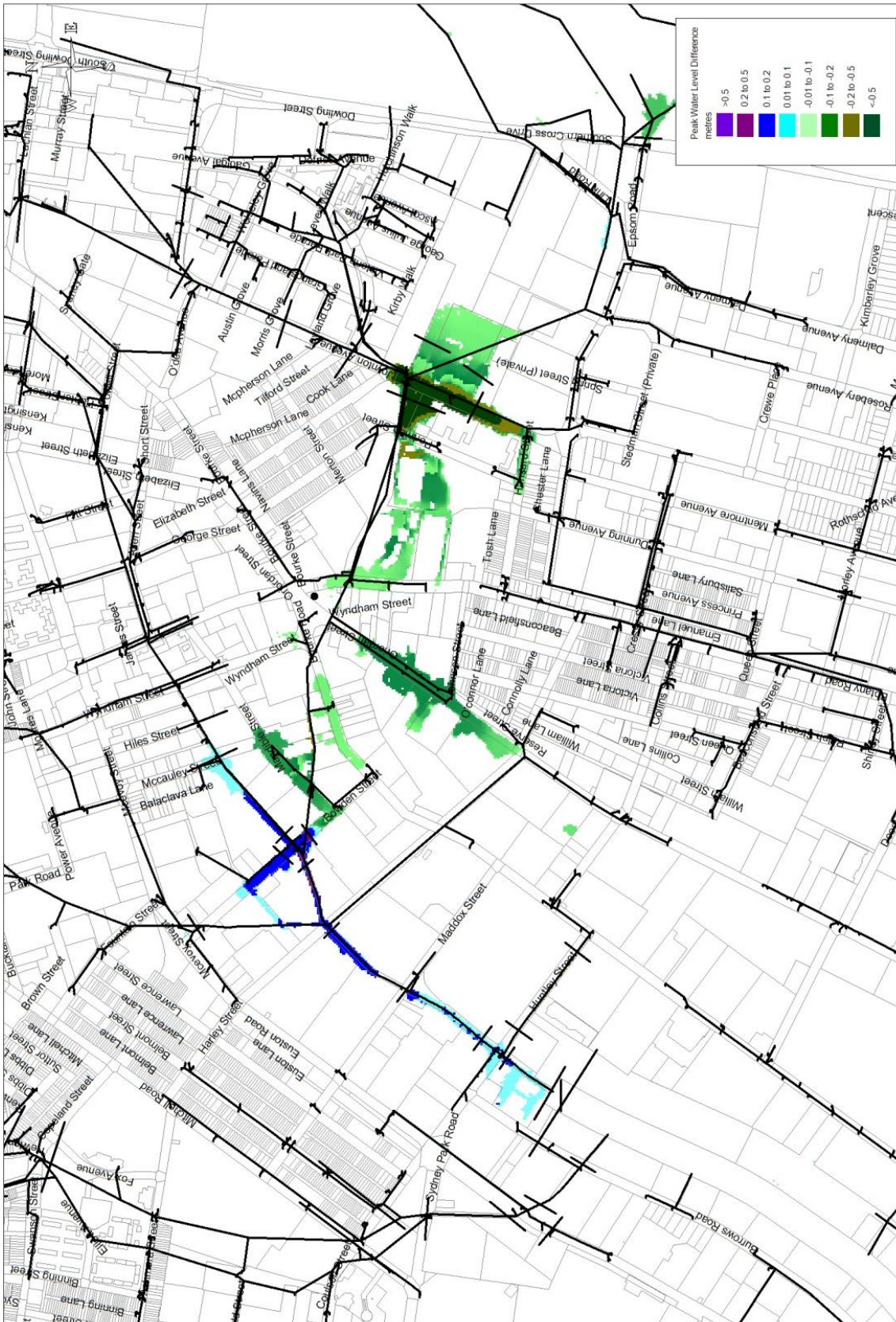


Figure F4 100 Year ARI Peak Water Level Difference for FM2 Less Existing

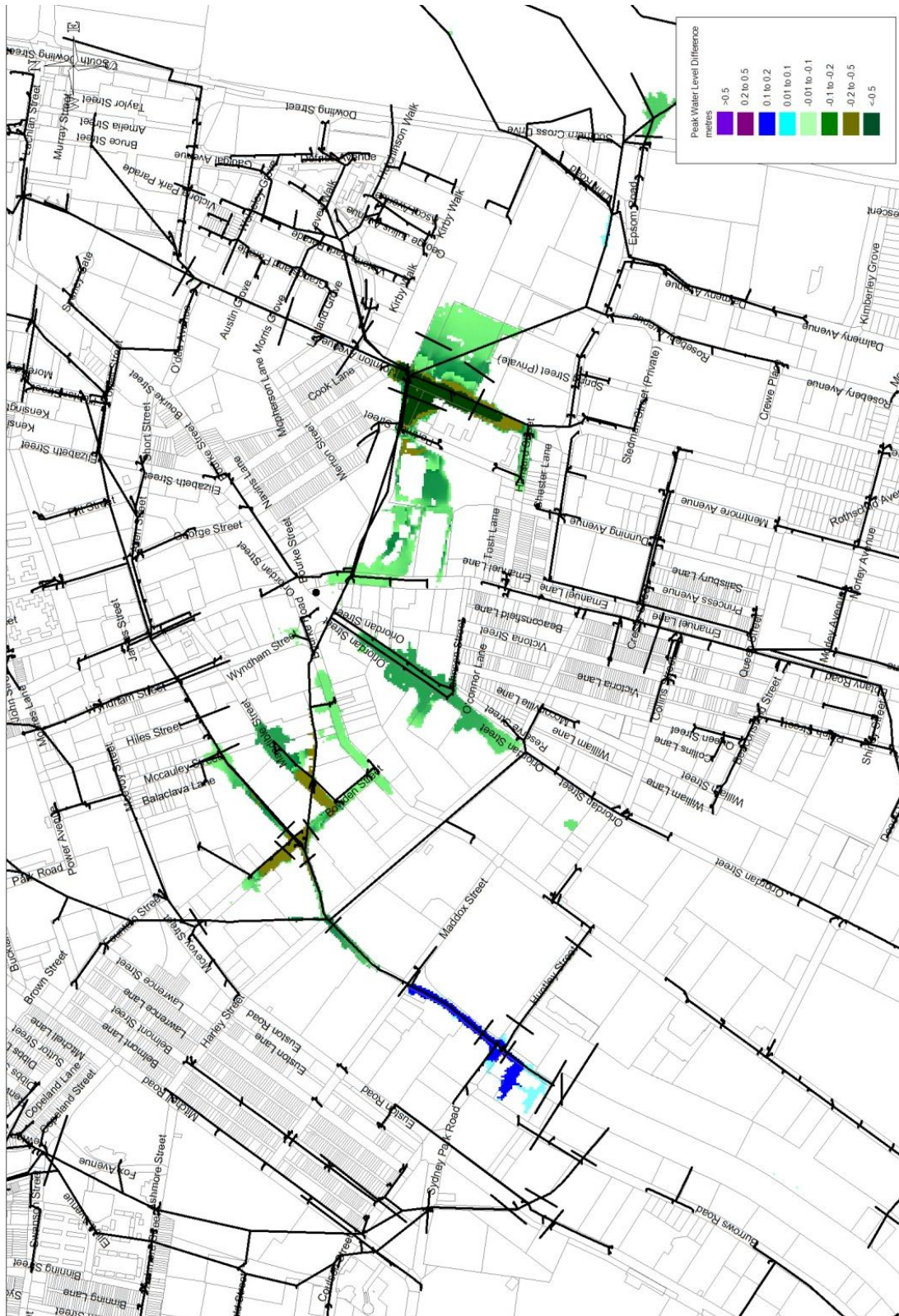


Figure F5 100 Year ARI Peak Water Level Difference for FM3 Less Existing



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

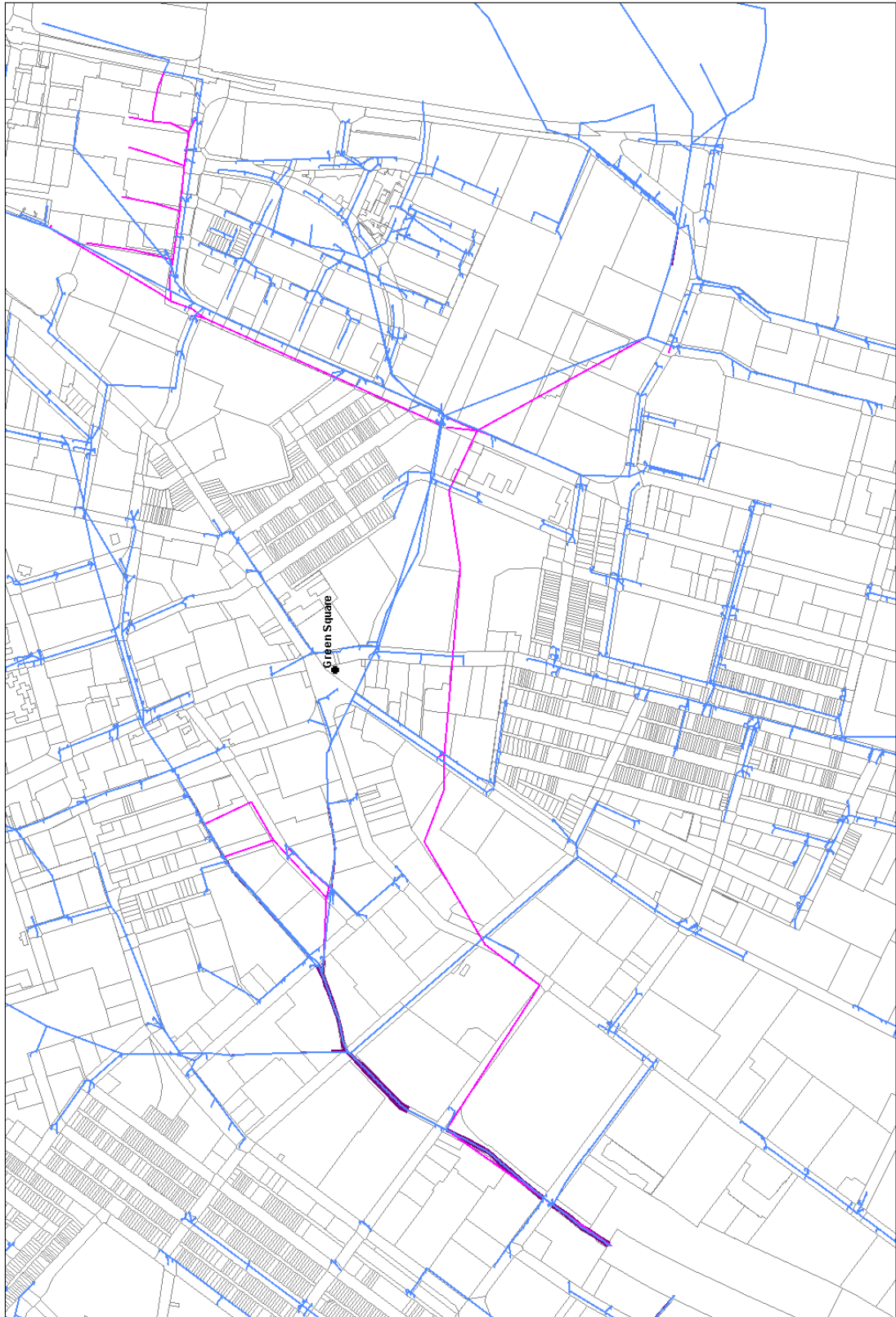


Figure F7 Measure FM9 Layout

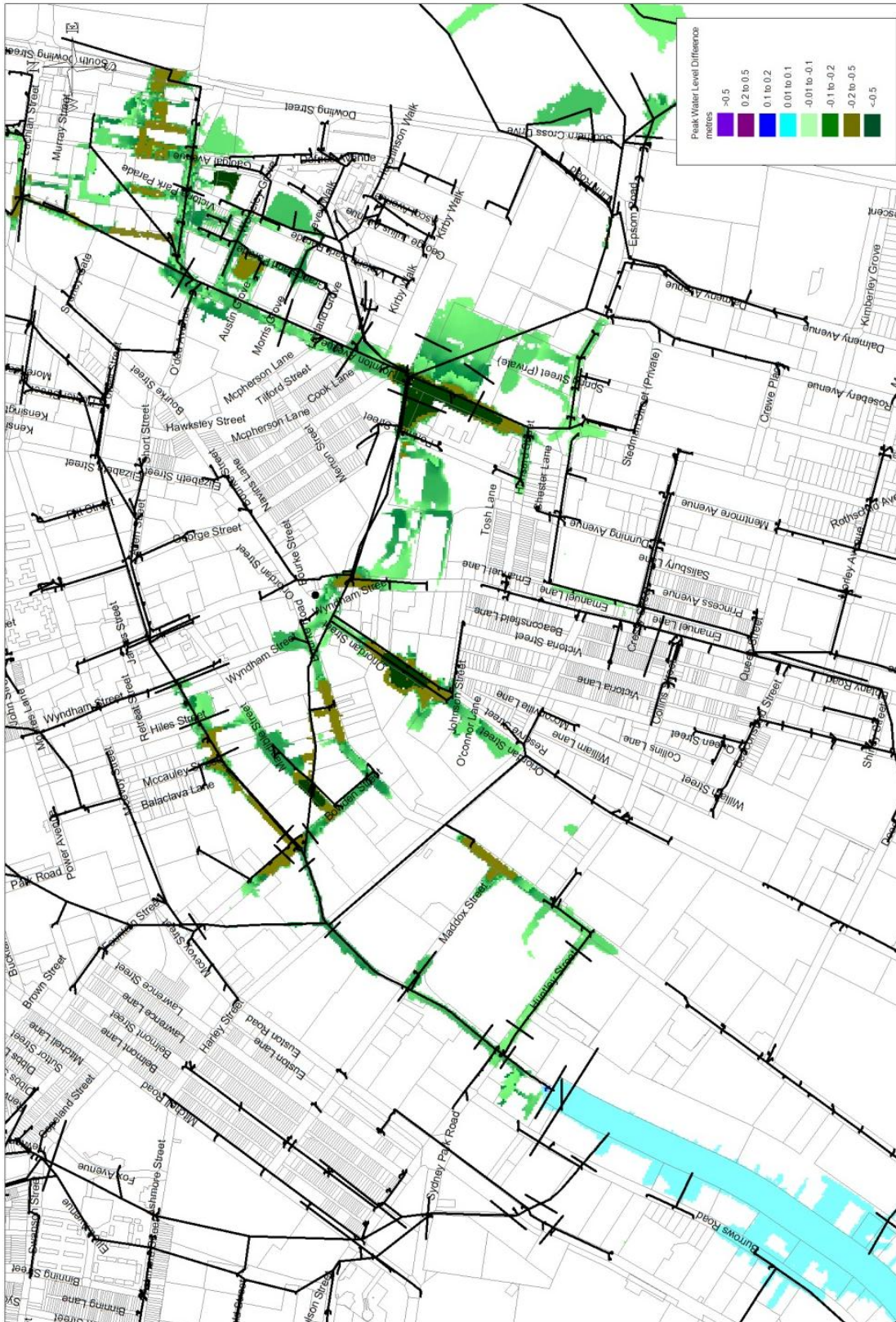


Figure F8 100 Year ARI Peak Water Level Difference for FM 9 Less Existing

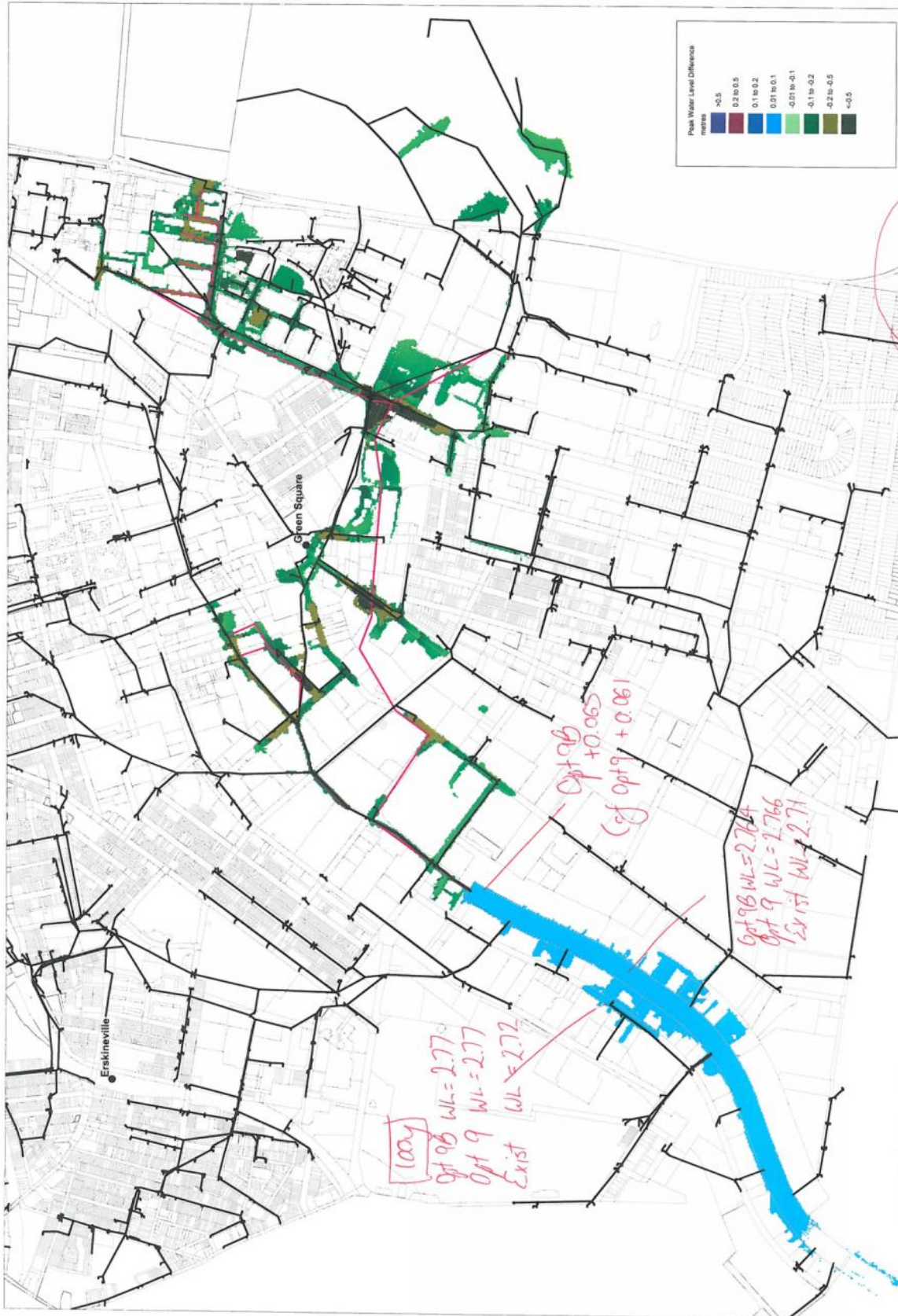


Figure F9 100 Year ARI Peak Water Level Difference for FM 9b Less Existing



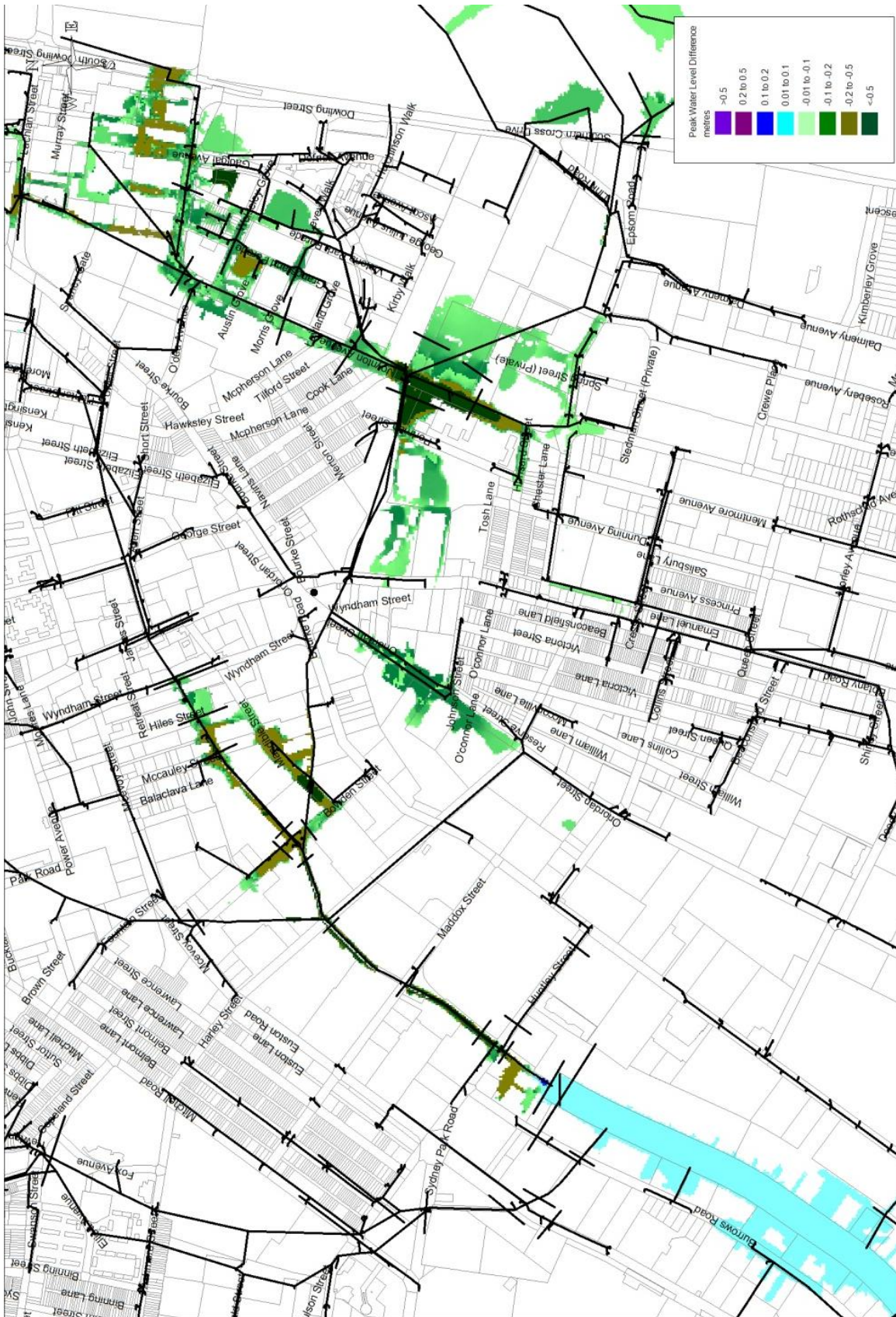


Figure F10 100 Year ARI Peak Water Level Difference for FM 10 Less Existing

Alexandra Canal Floodplain Risk  
Management Study and Plan

**APPENDIX G**  
MULTI-CRITERIA ASSESSMENT

