Redland Water and Waste

Derivation of Water Supply and Sewerage Infrastructure Charges

March 2007



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1. Introduction

The calculation of charges, as outlined in this report, has been undertaken based on the "Infrastructure Charges Schedules: Incorporating Worked Examples and Sample Calculations" published in October 2004 by the Queensland Department of Local Government and Planning.



2. Definition of Trunk Infrastructure

To calculate the Infrastructure Charge, trunk infrastructure managed by Council needs to be defined. Trunk infrastructure is generally defined by the following criteria:

- Water Supply. Water supply infrastructure transports water from source(s) to each customer. The water trunk infrastructure required to provide this service is defined by the following:
 - All pumping stations,
 - All storage reservoirs,
 - All water treatment plants,
 - All water sources (bores/dams),
 - Water mains:
 - Mainland and SMBI Water mains with a combined equivalent nominal diameter of 300 mm and above.
 - o Water mains connecting reservoirs and supply sources to the reticulation network.
 - o NSI Water mains with a combined equivalent nominal diameter of 250 mm and above
- Sewerage. Sewerage infrastructure collects wastewater from each property, transports the sewage to treatment facilities for final disposal and transports the treated wastewater to reuse facilities. The sewer trunk infrastructure required to provide this service is generally defined by the following:
 - Sewer Mains:
 - Mainland and SMBI Sewer mains with a combined equivalent nominal diameter of 300 mm and above.
 - NSI Sewer mains with a combined equivalent nominal diameter of 225 mm and above
 - All rising mains within the network
 - All reuse transport mains
 - All Pumping stations within the network
 - Sewage treatment plants.

The sewerage infrastructure charges determined in this report only apply to customers that do not have an existing infrastructure agreement in place such as the Mt Cotton Infrastructure Agreement.

This existing and future infrastructure was determined from a number of sources within Council. These sources include:

- Geographical Information Systems (GIS). Enable assets to be readily queried out to meet the criteria for trunk infrastructure.
- **Drawings**. Record or construction drawings can be used to further determine trunk infrastructure within the system.
- **Reports.** Reports that contain information on future system requirements, such as planning reports, can assist in the identification of future trunk infrastructure requirements.



• Standards of Service. Assists in the determination of system requirements in terms of performance standards, and therefore the infrastructure that may be required to meet system demands or loadings in the future.

Figures showing the defined trunk infrastructure included in the calculation of water supply and sewerage Infrastructure Charges are provided in **Appendices C** and **D**. Planning reports were undertaken by Redlands Water and Waste in 2006 to define the future new and augmentation Capital Works to provide the adopted Desired Standards of Service. Reports outlining the required infrastructure are listed in the References section of this report.



3. Calculated Infrastructure Charges

3.1 Administration and Financing Costs

RWW manages the infrastructure charges which consist of the administration of the charge including a three yearly review of the planning and population forecasts. The administration of the charge will require two full time equivalent staff.

The future works to be constructed by RWW will be funded using the available developer contributions collected and through borrowings. It is expected that 50% of the value of future works will be financed through borrowings.

The administration cost is calculated as the total administration costs divided by the sum of the ultimate water supply and sewerage equivalent persons. The calculated value is **\$14 per EP**. The financing cost has been calculated using the same method and is **\$21 per EP**. As such, the total on-costs is a flat fee of **\$35 per EP** or **\$98 per ET**

3.2 Unit Rates

All unit rates used in the calculation of Infrastructure Charges have been derived to reflect construction costs that could be anticipated within the current market (December 2006). These costs incorporate 30% on-costs, and provide a reliable estimate of costs that would be associated with the construction of trunk infrastructure costs. On-costs include the following:

- Infrastructure planning and feasibility assessments,
- Survey and geotechnical investigations,
- Environmental and cultural heritage investigations,
- Detailed design,
- Tendering, contract supervision and management, and
- Administration overheads.

Existing valuations and upgrade costs for bulk water infrastructure and wastewater treatment facilities were provide by Redland Water and Waste. These were compared to rates adopted by similar organisatiion and modified to reflect the current industry.

3.3 Calculated Water Charges

Water supply infrastructure is detailed in **Appendix A** and **Appendix C**. A summary of the calculated Water Supply Infrastructure Cost and Charges is given in **Table 3.1**, **3.2**, **3.3**, **3.4** and **3.5**.



Zone	Trunk	Pump Stations	Reservoirs	Total Cost
Alexandra Hills ICS Zone	\$90,785,966	\$4,028,395	\$9,797,144	\$104,611,505
Amity Point ICS Zone	\$1,415,604	\$375,326	\$410,228	\$2,201,158
Bay Islands ICS Zone	\$48,534,660	\$0	\$364,050	\$48,898,710
Dunwich ICS Zone	\$782,213	\$1,326,797	\$343,646	\$2,452,657
Mt Cotton ICS Zone	\$34,696,692	\$1,177,526	\$3,995,963	\$39,870,181
Point Lookout ICS Zone	\$24,963,778	\$1,034,376	\$496,140	\$26,494,293
Victoria Point ICS Zone	\$52,753,171	\$4,483,512	\$2,128,460	\$59,365,143
Total Cost	\$253,932,083	\$12,425,932	\$17,535,632	\$283,893,647

Table 3-1 Existing Distribution System Infrastructure

Table 3-2 Existing Bulk Water Supply Infrastructure

Bulk Water System	Total Cost
Capalaba Water Treatment Plant	\$32,063,208
North Stradbroke Island Water Treatment Plant	\$14,624,280
Dunwich Water Treatment Plant	\$1,279,200
Amity Point Water Treatment Plant	\$689,527
Point Lookout Water Treatment Plant	\$964,675
Leslie Harrison Dam	\$27,736,408
Herring Lagoon	\$794,159
North Stradbroke Island Bore Network	\$3,913,720
Total Cost	\$82,065,178

Table 3-3 Ultimate Distribution System Augmentations

Zone	Trunk	Pumping Stations	Reservoirs	Valves	Contingency Items	Totals
Alexandra Hills ICS Zone	\$360,800	\$0	\$6,090,100	\$0	\$2,091,219	\$8,542,119
Amity Point ICS Zone	\$0	\$0	\$0	\$0	\$0	\$0
Bay Islands ICS Zone	\$0	\$0	\$0	\$247,260	\$362,100	\$609,360
Dunwich ICS Zone	\$160,500	\$434,200	\$553,100	\$0	\$0	\$1,147,800
Mt Cotton ICS Zone	\$0	\$0	\$0	\$0	\$301,514	\$301,514
Point Lookout ICS Zone	\$172,500	\$217,100	\$1,352,000	\$0	\$0	\$1,741,600
Victoria Point ICS Zone	\$2,195,900	\$217,100	\$2,827,600	\$0	\$777,056	\$6,017,656
Total Cost	\$2,889,700	\$868,400	\$10,822,800	\$247,260	\$3,531,889	\$18,360,049



Table 3-4 Ultimate Population

ICS Zone	Existing (EP)	Ultimate (EP)
Alexandra Hills ICS Zone	98,299	124,589
Amity Point ICS Zone	1,044	1,362
Bay Islands ICS Zone	5,338	21,573
Dunwich ICS Zone	1,394	2,039
Mt Cotton ICS Zone	7,893	17,963
Point Lookout ICS Zone	2,767	5,161
Victoria Point ICS Zone	28,932	46,295
Total Shire Population	145,670	218,984

Table 3-5 Total Cost per EP and ET

ICS Zone	Distri	bution	Bulk	Water	Adminis Financ	stration & e Charge	Total in Adminis Fin	ncluding stration & ance
	\$/EP	\$/ET*	\$/EP	\$/ET*	\$/EP	\$/ET*	\$/EP	\$/ET*
Alexandra Hills ICS Zone	\$908	\$2,452	\$375	\$1,013	\$35	\$95	\$1,318	\$3,559
Amity Point ICS Zone	\$1,616	\$4,363	\$375	\$1,013	\$35	\$95	\$2,026	\$5,470
Bay Islands ICS Zone	\$2,295	\$6,196	\$375	\$1,013	\$35	\$95	\$2,705	\$7,303
Dunwich ICS Zone	\$1,805	\$4,767	\$375	\$1,013	\$35	\$95	\$2,176	\$5,874
Mt Cotton ICS Zone	\$2,236	\$6,038	\$375	\$1,013	\$35	\$95	\$2,646	\$7,145
Point Lookout ICS Zone	\$5,225	\$14,063	\$375	\$1,013	\$35	\$95	\$5,619	\$15,170
Victoria Point ICS Zone	\$1,412	\$3,813	\$375	\$1,013	\$35	\$95	\$1,822	\$4,920

* - Based on 2.7 equivalent persons per equivalent tenement.



3.4 Calculated Sewerage Charges

Sewerage infrastructure is detailed in **Appendix B** and **Appendix D**. A summary of the calculated Sewerage Infrastructure Cost and Charges is given in **Table 3.6**, **3.7**, **3.8**, **3.9** and **3.10**.

Catchment	Gravity Sewers	Rising Mains	Reuse Mains	Pump Stations	Total Cost
Capalaba	\$19,262,436	\$4,070,968	\$0	\$2,236,200	\$25,569,604
Cleveland	\$12,264,124	\$26,026,777	\$0	\$11,237,900	\$49,528,800
Dunwich	\$885,774	\$426,854	\$0	\$396,600	\$1,709,228
Mt Cotton	\$1,548,400	\$4,498,106	\$4,062,972	\$521,800	\$10,631,277
Pt Lookout	\$918,727	\$2,140,272	\$0	\$3,231,600	\$6,290,600
Thorneside	\$28,239,559	\$19,549,037	\$0	\$6,320,400	\$54,108,996
Victoria Point	\$22,142,951	\$9,431,452	\$0	\$8,199,900	\$39,774,303
Total Cost	\$85,261,971	\$66,143,465	\$4,062,972	\$32,144,400	\$187,612,809

Table	3-6 Existing	Sewerage	Collection	System	Infrastructure
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Table 3-7 Existing Sewerage Treatment System Infrastructure

Sewage Treatment Plant	Total Cost	Upgrade Cost
Capalaba Sewage Treatment Plant	\$26,622,100	\$12,458,500
Cleveland Sewage Treatment Plant	\$33,721,400	\$4,973,600
Dunwich Sewage Treatment Plant	\$4,414,200	\$4,432,900
Mt Cotton Sewage Treatment Plant	\$15,449,600	\$693,500
Pt Lookout Sewage Treatment Plant	\$7,724,800	\$23,703,100
Thorneside Sewage Treatment Plant	\$22,110,200	\$21,895,800
Victoria Point Sewage Treatment Plant	\$30,171,800	\$11,049,200
Total Cost	\$140,214,100	\$79,206,600

Table 3-8 Ultimate Sewerage Collection Augmentations

Catchment	Gravity Sewers	Rising Mains	Pump Stations	Total Cost
Capalaba	\$160,900	\$0	\$356,600	\$517,500
Cleveland	\$780,700	\$3,212,800	\$3,886,100	\$7,879,600
Dunwich	\$0	\$0	\$98,900	\$98,900
Mt Cotton	\$0	\$529,200	\$487,300	\$1,016,500
Pt Lookout	\$62,400	\$267,100	\$1,389,700	\$1,719,200
Thorneside	\$160,900	\$750,600	\$2,234,200	\$3,145,700
Victoria Point	\$754,900	\$402,100	\$3,516,500	\$4,673,500
Total Cost	\$1,919,800	\$5,161,800	\$11,969,300	\$19,050,900



Catchment	Existing (EP)	Ultimate (EP)
Capalaba	26,640	29,662
Cleveland	29,777	46,644
Dunwich	541	1,864
Mt Cotton	2,052	5,520
Pt Lookout	2,683	3,710
Thorneside	39,143	47,572
Victoria Point	25,166	40,592
Total Shire Population	126,002	175,564

Table 3-9 Ultimate Population

Table 3-10 Total Cost per EP and ET

Catchment	Collection		Treatment		Admin & Finance Charge		Total Including Admin & Finance Costs	
	(\$/EP)	(\$/ET)	(\$/EP)	(\$/ET)	(\$/EP)	(\$/ET)	(\$/EP)	(\$/ET)
Capalaba	\$868	\$2,343	\$1,318	\$3,557	\$35	\$95	\$2,220	\$5,994
Cleveland	\$1,213	\$3,274	\$830	\$2,240	\$35	\$95	\$2,077	\$5,609
Dunwich	\$970	\$2,619	\$4,746	\$12,815	\$35	\$95	\$5,751	\$15,529
Mt Cotton	\$2,110	\$5,697	\$2,924	\$7,896	\$35	\$95	\$5,070	\$13,688
Pt Lookout	\$2,078	\$5,611	\$8,471	\$22,872	\$35	\$95	\$10,584	\$28,577
Thorneside	\$1,180	\$3,187	\$925	\$2,498	\$35	\$95	\$2,140	\$5,779
Victoria Point	\$1,082	\$2,921	\$1,015	\$2,742	\$35	\$95	\$2,132	\$5,757

* - Based on 2.7 equivalent persons per equivalent tenement.



4. References

- Draft Desired Standards of Service and Design Criteria for Water and Sewerage Infrastructure. June 2006. MWH Australia.
- *Redlands Sewerage Collection System Master Plan,* June 2006, MWH Australia.
- Redlands Water Supply System Master Plan, June 2006, MWH Australia.
- *IPA Infrastructure Guideline 1/03* "Priority Infrastructure Plans: Incorporating PIP Template 1 and proposals for Regulated Infrastructure Charges". November 2003. Department of Local Government and Planning (Queensland, Australia).
- *IPA Infrastructure Guideline 2/03* "Infrastructure Charges Schedules: Incorporating worked examples and sample calculations". November 2003. Department of Local Government and Planning (Queensland, Australia).



Appendix A: Water Supply Infrastructure



Appendix A.1 - Alexandra Hills ICS Zone

Table A1.1: Trunk Mains

Aug ID	Install Year	Length	Diameter	Model ID	Total Construction Cost
AUG034	2018	455.0	300	MWH2393	\$360,800

Table A1.2: Reservoirs

Model ID	Install Year	Description	Volume (ML)	Construction Cost
MWH7006	2006	New reservoir at Alexandra Hills reservoir complex	20.0	\$2,827,600
MWH7006	2025	New reservoir at Alexandra Hills reservoir complex	32.6	\$3,262,500



Appendix A.2 - Amity ICS Zone

No augmentations required.



Appendix A.3 - Dunwich ICS Zone

Table A3.1: Trunk Mains

Aug ID	Install Year	Length	Diameter	Model ID	Total Construction Cost
AUG005	2006	504.2	100	MWH2203	\$160,500

Table A3.2 Pump Stations

Install Year	Description	Model ID	Power (kW)	Cost (\$)
2006	Rainbow Crescent reservoir and pumping station complex (new duty pump)	MWH5111	9.7	217,100
2006	Rainbow Crescent reservoir and pumping station complex (new standby pump)	MWH5129	9.7	217,100

Table A3.3: Reservoirs

			Volume	Construction
Install Year	Description	Model ID	(ML)	Cost
2006	Upgrade of Illawong Reservoir from 90kL to 280kL	MWH7038	0.3	\$189,000
2006	New reservoir at Rainbow Crescent (Dunwich)	MWH7028	1.7	\$364,100



Appendix A.4 - Mt Cotton ICS Zone

No augmentations required.



Appendix A.5 - Point Lookout ICS Zone

Table A5.1: Trunk Mains

Aug ID	Install Year	Length	Diameter	Model ID	Total Construction Cost
AUG047	2006	164.4	225	MWH2123	\$99,400
AUG048	2006	121	225	MWH2121	\$73,100

Table A5.2: Pump Stations

Install Year	Description	Model ID	Power (kW)	Cost (\$)
2008	Point lookout (new duty pump)	MWH5119	8.2	\$217,100

Table A5.3: Reservoirs

			Volume	Construction
Install Year	Description	Model ID	(ML)	Cost
2008	New reservoir at Point Lookout reservoir complex	MWH7088	5.7	\$1,352,000



Appendix A.6 - Southern Moreton Bay Islands ICS Zone

Table A6.1: Valves

Install Year	Description	Model ID	Diameter	Cost (\$)
2013	Russel Island	MWH9035	375	\$123,630
2018	Russel Island	MWH9071	375	\$123,630



Appendix A.7 - Victoria Point ICS Zone

Table A7.1: Trunk Mains

Aug ID	Install Year	Length	Diameter	Model ID	Total Construction Cost
AUG013	2013	314.9	225	MWH2171	\$190,400
AUG023	2025	4.2	225	MWH2411	\$2,500
AUG010	2008	664.1	250	MWH1175	\$449,700
AUG008	2008	759.6	300	MWH1173	\$602,300
AUG020	2025	957.6	300	MWH2031	\$759,300
AUG021	2025	241.8	300	MWH2139	\$191,700

Table A7.2 Pump Stations

Install				
Year	Description	Model ID	Power (kW)	Cost (\$)
2013	Coochiemudlo Island Booster Pump Station	COOCH01	7.5	\$217,100

Table A7.3: Reservoirs

Install Year	Description	Model ID	Volume (ML)	Construction Cost
2006	New reservoir at Heinemann Road	MWH7012	22.2	\$2,827,600



Appendix A.8 – Contingency Infrastructure (Regional Assets)

ID	Install Year	Description	Length	Diameter	Total Construction Cost
CON1	2008	Reverse pump at Eprapah Creek PS	-	-	\$130,000
CON2	2008	Install control valve at Mt Cotton Reservoir inlet	-	-	\$123,630
CON3	2013	Cleveland-Redland Bay Road. Augmentation between Bunker Road and Ziegenfusz Road	2530	500	\$4,164,300
CON4	2008	Mt Cotton PRV			\$75,000



Appendix B: Sewerage Infrastructure



Appendix B.1 – Capalaba Sewerage Collection System

Table B1.1: Trunk Sewer Mains

Pipe ID	Year	Pipe Diameter	Length	Total Cost			
Gravity Sewers							
GS10	2006	150	311	\$160,900			
Gravity Sewers Total				\$160,900			

Table B1.2: Pump Units

Pump ID	Year	Ultimate Flow (L/s)	KW Rating	Wet Well Volume (kL)	Cost (\$)	Notes
						Impeller
PS047	2006	18	6.8	1.35	\$50,000	Only
						Impeller
PS062	2006	36	11.8	2.7	\$50,000	Only
Pumping Stations						
Total					\$100,000	

Table B1.3: Pump Wet Well

Pumping Station No.	Year	Storage Volume Required (m ³)	Actual Storage Volume (m ³)	$\begin{array}{c} \text{Increase in} \\ \text{Volume} \\ \text{Required} \\ (\text{m}^3) \end{array}$	Cost (\$)	Notes
SPS24	2006	8.8	4.6	4.2	\$32,200	
Wet Well Upgrade Total					\$32,200	

Table B1.4: Emergency Storage

Pumping Station No.	Catchment	Storage Volume Required (m ³)	Existing Storage Volume (m ³)	Additional Storage Volume Required (m ³)	Cost (\$)
SPS62	Capalaba	103.7	64.1	39.6	\$224,400
Total Cost					\$224,400

Table B1.5: Sewerage Treatment Plant

Zone	Existing Capacity (EP)	Required Upgrade (EP)	Upgrade Year	Total Cost
Capalaba	30,000	0	2025	12,458,500



Appendix B.2 - Cleveland Sewerage Collection System

Table B2.1: Trunk Sewer Mains

Pipe ID	Year	Pipe Diameter	Length	Total Cost					
	Gravity Sewers								
GS1	2006	450	360	\$401,900					
GS4	2018	225	362	\$170,600					
GS6	2013	300	334	\$208,200					
Gravity Sewers Total				\$780,700					
	Ris	ing Mains							
R3	2018	250	375	\$216,700					
R6	2006	200	540	\$245,800					
R7	2008	200	3,800	\$1,729,400					
R8	2008	150	2,640	\$1,020,900					
Rising Mains Total				\$3,392,800					

Table B2.2: Pump Units

Pump ID	Year	Ultimate Flow (L/s)	KW Rating	Wet Well Volume (kL)	Cost (\$)	Notes
PS006	2006	400	220	72	\$1,181,500	
PS012	2006	25	33	1.875	\$457,700	
PS086	2006	46	55	8.28	\$440,600	
						New
PS SE Thornlands	2008	46	30	3.45	\$323,500	Development
PS074	2025	42	11.8	3.15	\$103,300	
Pumping Stations					¢1 247 400	
TULAI					\$1,347,400	

Table B2.3: Pump Wet Well

Pumping Station No.	Year	Storage Volume Required (m ³)	Actual Storage Volume (m ³)	Increase in Volume Required (m ³)	Cost (\$)
SPS100	2006	8.4	4.5	3.9	\$32,200
SPS4	2006	3.2	2.3	0.9	\$21,500
SPS6	2006	72	36.9	35.1	\$224,400
SPS74	2006	3.1	2.3	0.8	\$21,500
SPS86	2006	7.9	2.3	5.6	\$47,100
SPS141	2006	30.6	17.7	12.9	\$89,500
Wet Well Upgrade Total					\$436,200



Table B2.4: Emergency Storage

Pumping Station No.	Catchment	Storage Volume Required (m ³)	Existing Storage Volume (m ³)	Additional Storage Volume Required (m ³)	Cost (\$)
SPS86	Cleveland	302.4	84.3	218.1	\$1,011,300
SPS92	Cleveland	201.6	99	102.6	\$488,600
SPS123	Cleveland	5.8	5.6	0.1	\$21,500
Total Emergency Stora	\$1,521,400				

Table 2.5: Sewerage Treatment Plant

Zone	Existing Capacity (EP)	Required Upgrade (EP)	Upgrade Year	Total Cost
Cleveland	38,000	8,644	2018	4,973,600



Appendix B.3 – Thorneside Sewerage Collection System

Table B3.1: Trunk Sewer Mains

Pipe ID	Year	Pipe Diameter	Length	Total Cost						
Gravity Sewers										
GS9	2006	150	311	\$160,900						
Gravity Sewers Total				\$160,900						
Rising Mains										
R2	2025	450	535	\$750,600						
Rising Mains Total				\$750,600						

Table B3.2: Pump Units

Pump ID	Year	Ultimate Flow (L/s)	KW Rating	Wet Well Volume (kL)	Cost (\$)	Notes
PS035	2006	280	220	4.5	\$457,700	
PS048*	2008	64	33	2.3	\$50,000	Impeller Only
Pumping Stations Total					\$507,700	

Table B3.3: Pump Wet Wells

Pumping Station No.	Year	Storage Volume Required (m ³)	Actual Storage Volume (m ³)	Increase in Volume Required (m ³)	Cost (\$)
SPS29	2006	42	36.9	5.1	\$47,100
SPS33	2006	75.4	36.9	38.5	\$224,400
SPS35	2006	31.5	4.5	27	\$167,000
SPS48	2006	4.8	2.3	2.5	\$26,800
SPS41	2006	13.2	2.3	10.9	\$89,500
Wet Well Upgrade Total					\$554,8000

Table B3.4 Emergency Storage

Pumping Station No.	Catchment	Storage Volume Required (m ³)	Existing Storage Volume (m ³)	Additional Storage Volume Required (m ³)	Cost (\$)
SPS33	Thorneside	1,206.70	978	228.7	\$1,053,500
SPS36	Thorneside	69.1	52.2	16.9	\$118,200
SPS99	Thorneside	14.4	0	14.4	\$89,500
Total Cost					\$1,261,200

Table B3.5: Sewerage Treatment Plant

Zone	Existing Capacity (EP)	Required Upgrade (EP)	Upgrade Year	Total Cost
Thorneside	45,000	2,572	2018	21,895,800



Appendix B.4 – Victoria Point Sewerage Collection System

Table B4.1: Trunk Sewer Mains

Pipe ID	Year	Pipe Diameter	Length	Subsystem	Total Cost					
	Gravity Sewers									
GS2	2013	225	400	Victoria Point	\$232,000					
GS3	2013	225	391	Victoria Point	\$183,900					
GS5	2018	225	425	Victoria Point	\$199,500					
GS8	2006	150	268	Victoria Point	\$139,500					
Gravity Sewers Total					\$754,900					
Rising Mains										
R1	2006	300	555	Victoria Point	\$402,100					
Rising Mains Total					\$612,900					

Table B4.2: Pump Unit

Pump ID	Year	Ultimate Flow (L/s)	KW Rating	Wet Well Volume (kL)	Cost (\$)	Notes
PS061	2006	36	31	2.7	\$240,900	
PS092	2006	70	80	12.6	\$504,600	
PS112	2006	30	31	2.25	\$240,000	
PS049	2013	88	24	6.6	\$172,500	
PS054	2018	60	7.1	4.5	\$69,500	
PS090	2018	36	44	2.7	\$50,000	Impeller Only
PS067	2025	262	150	47.16	\$1,115,000	
Pumping Stations Total					\$2,392,500	

Table B4.3: Pump Wet Well

Pump ID	Year	Storage Volume Required (m ³)	Actual Storage Volume (m ³)	Increase in Volume Required (m ³)	Cost (\$)	Notes
SPS49	2006	6.6	4.5	2.1	\$26,800	
SPS54	2006	4.4	2.3	2.1	\$26,800	
SPS61	2006	2.7	2.3	0.4	0	Operating level change
SPS67	2006	47.2	36.9	10.3	\$89,500	
SPS90	2006	2.7	2.3	0.4	0	Operating level change
SPS92	2006	7.9	4.5	3.4	\$32,200	
Wet Well Upgrade Total					\$175,300	



Table B4.4: Emergency Storage

Pumping Station No.	Catchment	Storage Volume Required (m ³)	Existing Storage Volume (m ³)	Additional Storage Volume Required (m ³)	Cost (\$)
SPS54	Victoria Point	167	77	90.1	\$460,100

Table B4.5: Sewerage Treatment Plant

Zone	Existing Capacity (EP)	Required Upgrade (EP)	Upgrade Year	Total Cost
Victoria Point	34,000	6,592	2018	11,049,200



Appendix B.5 – Mt Cotton Sewerage Collection System

Table B5.1: Trunk Sewer Mains

Pipe ID	Year	Pipe Diameter	Length	Subsystem	Total Cost				
Rising Mains									
R4 2013 225 1080 Mt Cotton \$529,200									
Rising Mains Total					\$529,200				

Table B5.2 Pump Unit

Pump ID	Year	Ultimate Flow (L/s)	KW Rating	Wet Well Volume (kL)	Cost (\$)
PS134	2013	82	77.4	14.76	\$487,300
Pumping Stations Total					\$487,300

Table B5.3: Sewerage Treatment Plant

Zone	Existing Capacity (EP)	Required Upgrade (EP)	Upgrade Year	Total Cost
Mt Cotton	3,500	2,020	2013	693,500



Appendix B.6 – Dunwich Sewerage Collection System

Table B6.1: Pump Units

Pump ID	Year	Ultimate Flow (L/s)	KW Rating	Wet Well Volume (kL)	Cost (\$)
PS142	2006	32	14	2.4	\$98,900
Pumping Stations Total					\$98,900

Table B6.2: Sewerage Treatment Plant

Zone	Existing Capacity (EP)	Required Upgrade (EP)	Upgrade Year	Total Cost
Dunwich	1,000	864	2013	4,432,900



Appendix B.7 – Point Lookout Sewerage Collection System

Table B7.1: Trunk Sewer Mains

Pipe ID	Year	Pipe Diameter	Length	Subsystem	Total Cost
	Gravity Sewers				
GS7	2006	150	226	Point Lookout	\$62,400
Gravity Sewers Total					\$62,400
		Rising N	lains		
R5	2006	225	545	Point Lookout	\$267,100
Rising Mains Total					\$267,100

Table B7.2: Pump Units

Pump ID	Year	Ultimate Flow (L/s)	KW Rating	Wet Well Volume (kL)	Cost (\$)
PS070	2006	52	60	9.36	\$456,300
PS071	2006	44	90	7.92	\$547,400
Pumping Stations Total					\$1,003,700

Table B7.3: Pump Wet Wells

Pump ID	Year	Storage Volume Required (m ³)	Actual Storage Volume (m ³)	Increase in Volume Required (m ³)	Cost (\$)
SPS103	2006	4	2.3	1.7	\$26,800
SPS70	2006	5.8	2.3	3.5	\$32,200
SPS71	2006	4.9	2.3	2.6	\$26,800
Wet Well Upgrade Total					\$85,800

Table B7.4: Emergency Storage

Pumping Station No.	Catchment	Storage Volume Required (m ³)	Existing Storage Volume (m ³)	Additional Storage Volume Required (m ³)	Cost (\$)
SPS103	Point Lookout	103.7	53.3	50.4	\$300,200
Total Cost					\$300,200

Table B7.5: Sewerage Treatment Plant

Zone	Existing Capacity (EP)	Required Upgrade (EP)	Upgrade Year	Total Cost
Point Lookout	1,750	1,960	2006	23,703,100



Appendix C: Water Supply Infrastructure Layouts































Appendix D: Sewerage Infrastructure Layouts









































