WIDE BAY water
CORPORATION

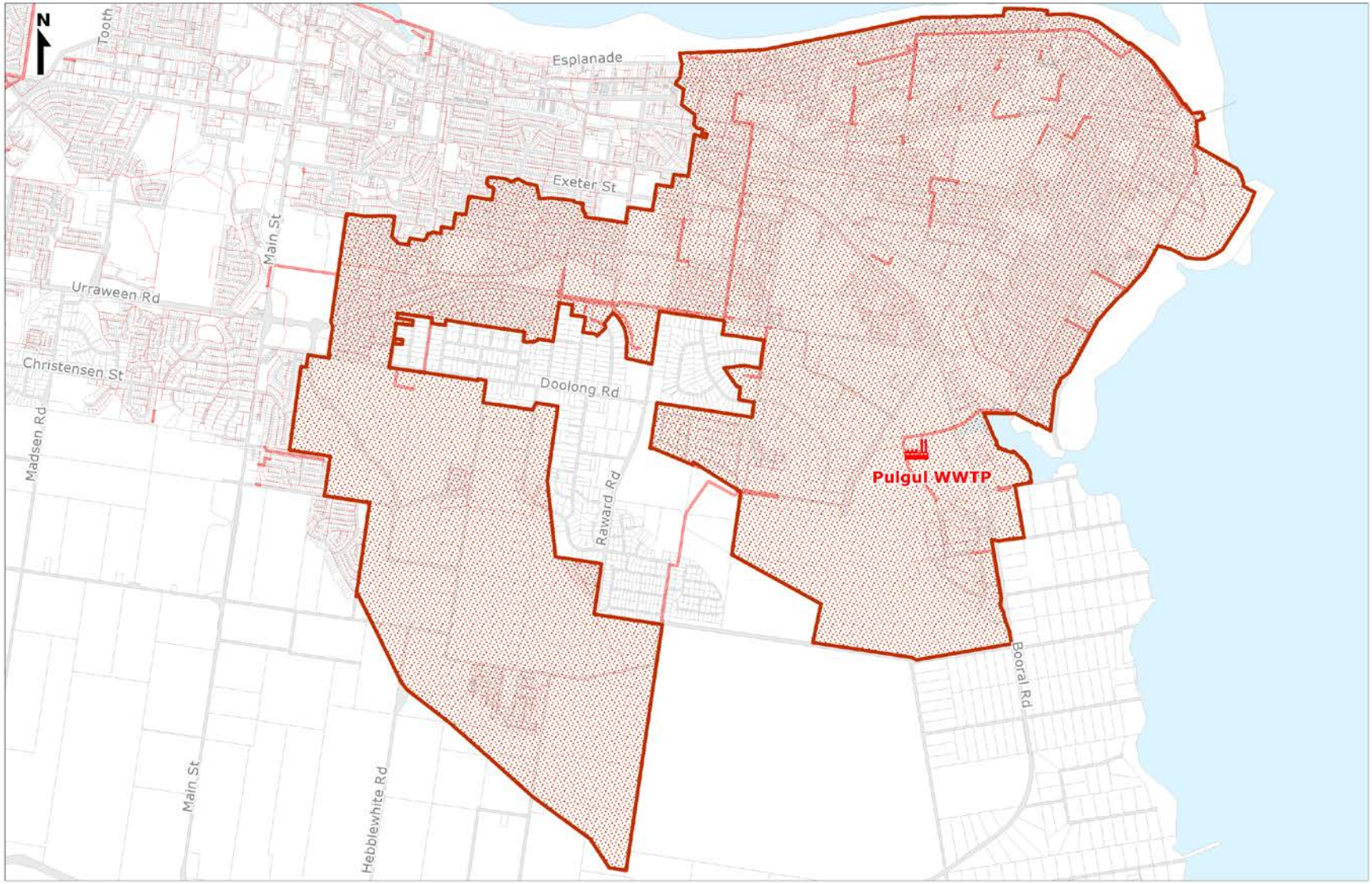
2015 | Fraser Coast Sewerage Strategy

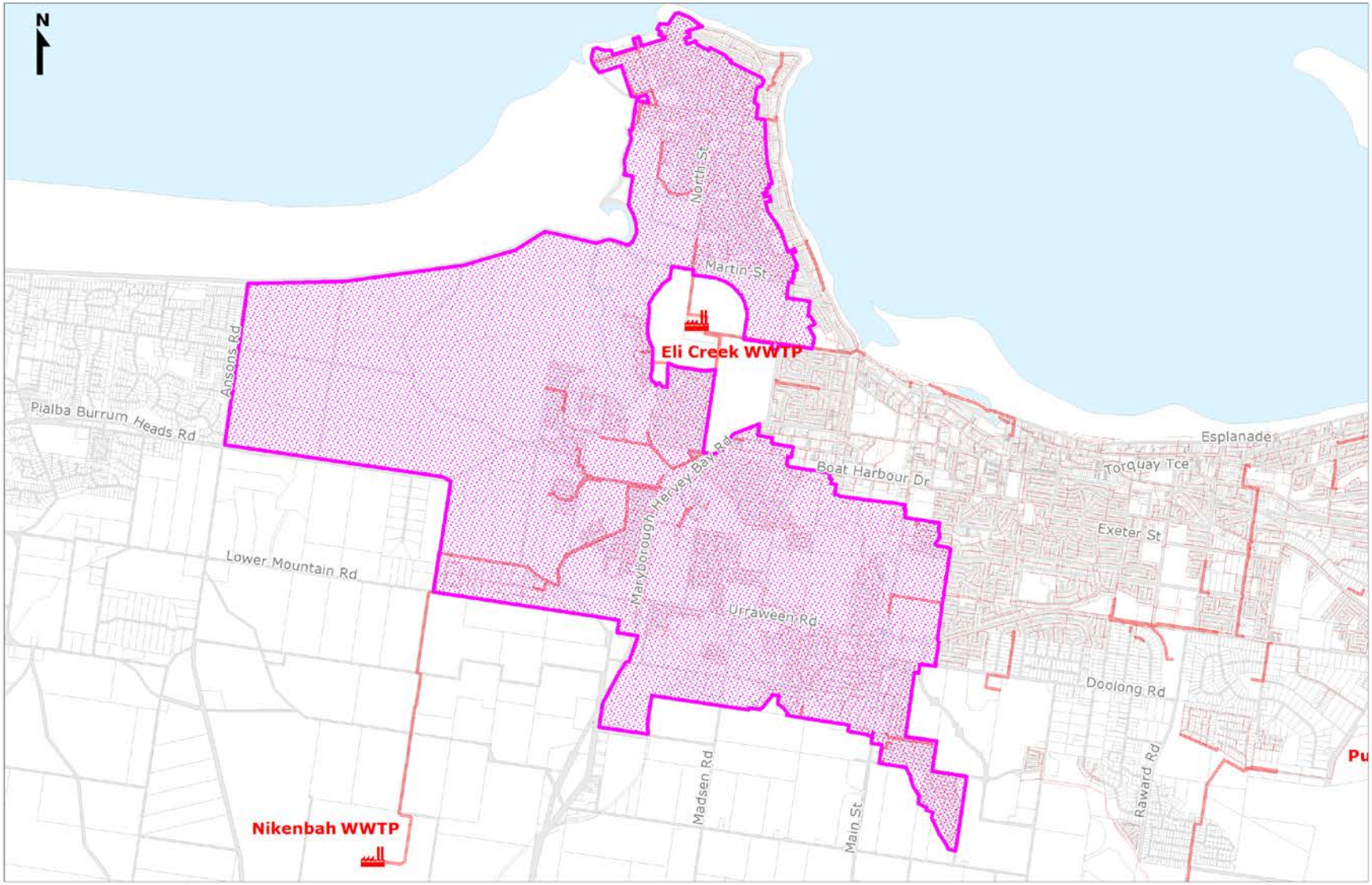
November 2015

Appendices Volume 2

APPENDIX 4 – COLLECTION


N
North St
Martin St
Eli Creek WWTP
Tooth St
Esplanade
Torquay Tce
Boat Harbour Dr
Maryborough Hervey Bay Rd
Exeter St
WIDE BAY water
CORPORATION
0
500
1000
Meters
Scale: 1:32,000
Eli Creek WWTP


N
Tooth
Esplanade
Exeter St
Main St
Urraween Rd
Christensen St
Madsen Rd
Doolong Rd
Raward Rd
Pulgul WWTP
Booral Rd
Main St
Hebblewhite Rd
WIDE BAY water CORPORATION
0 500 1000
Meters
Scale: 1:38,000
Pulgul WWTP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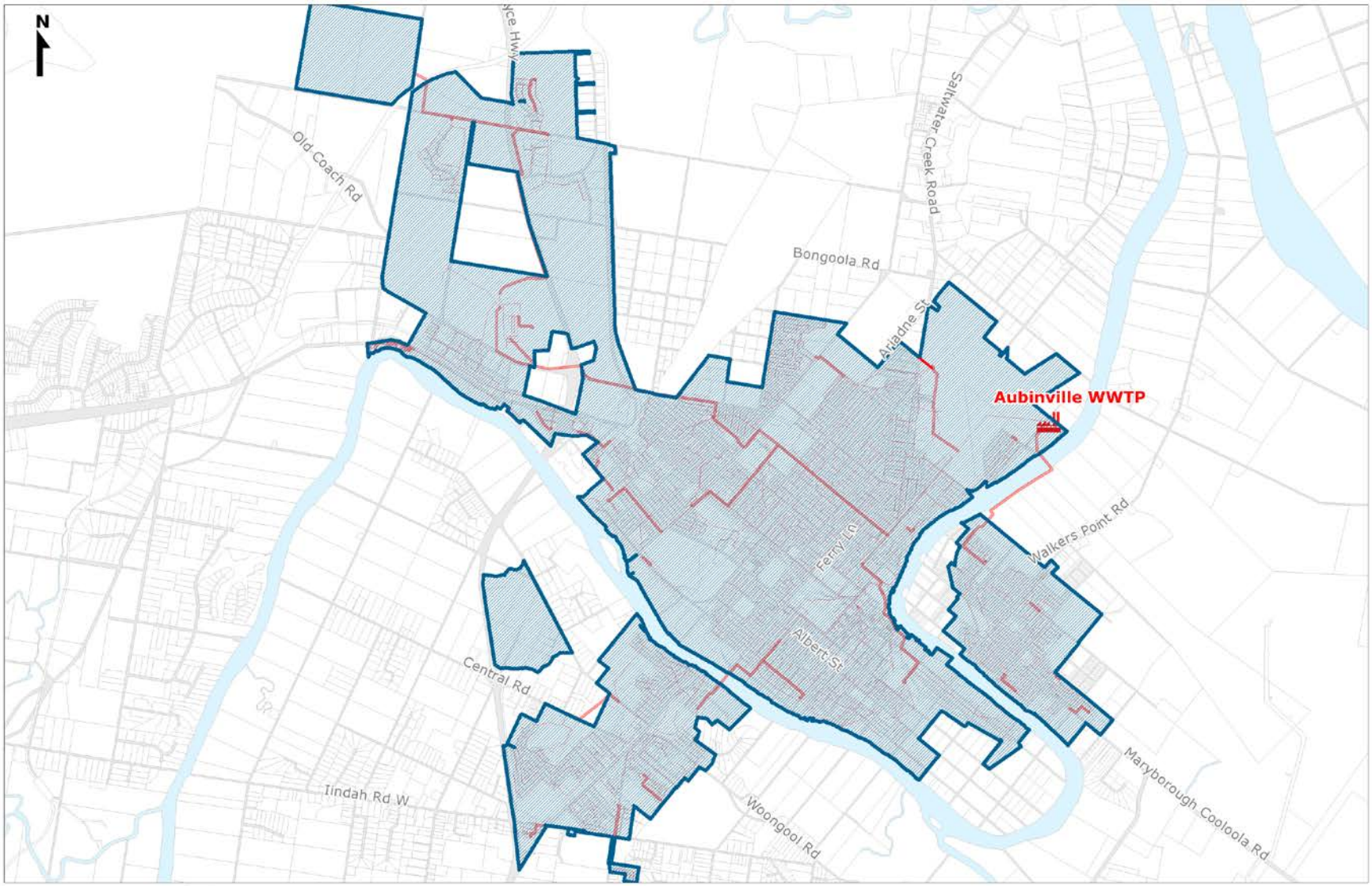
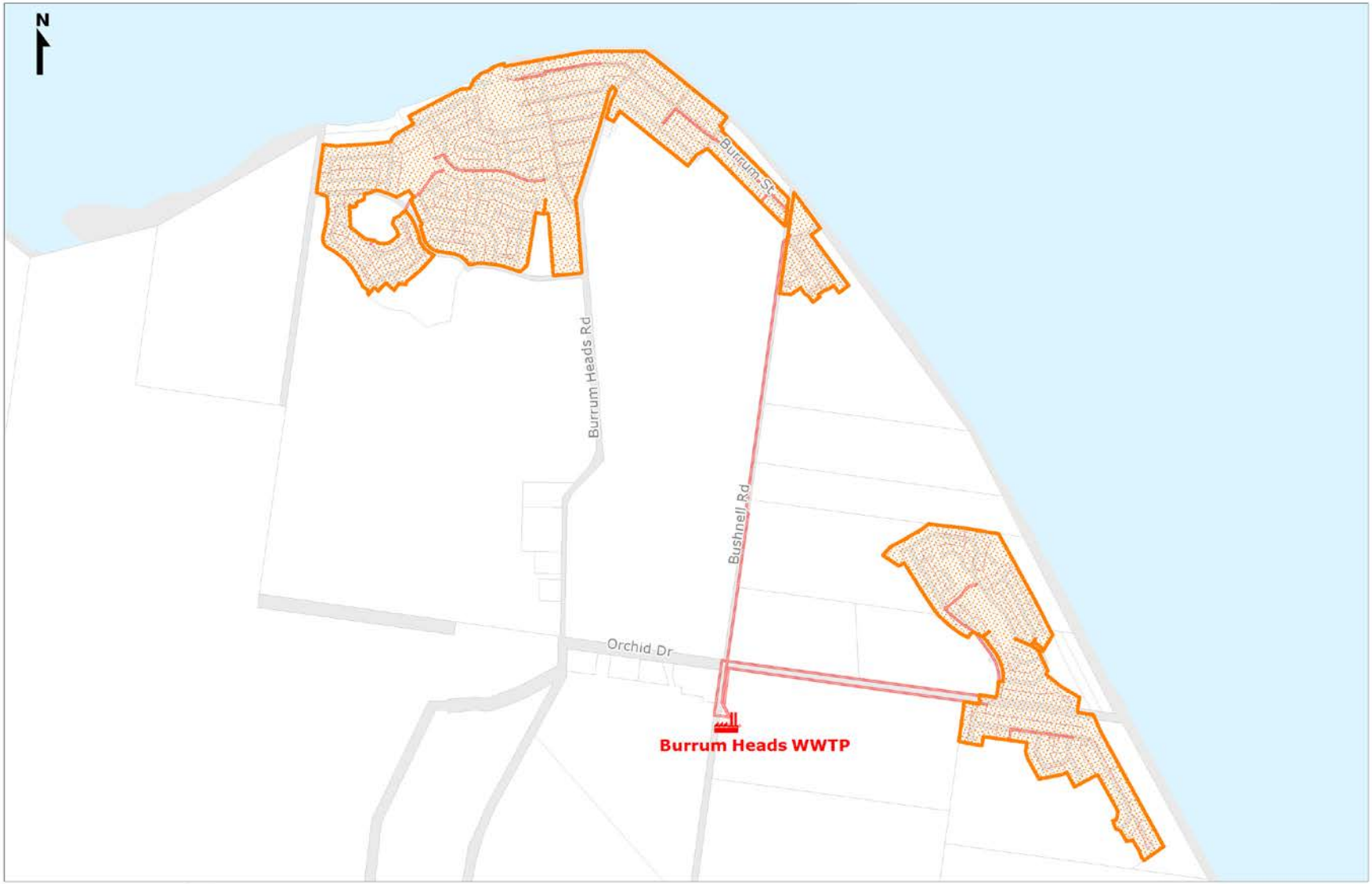
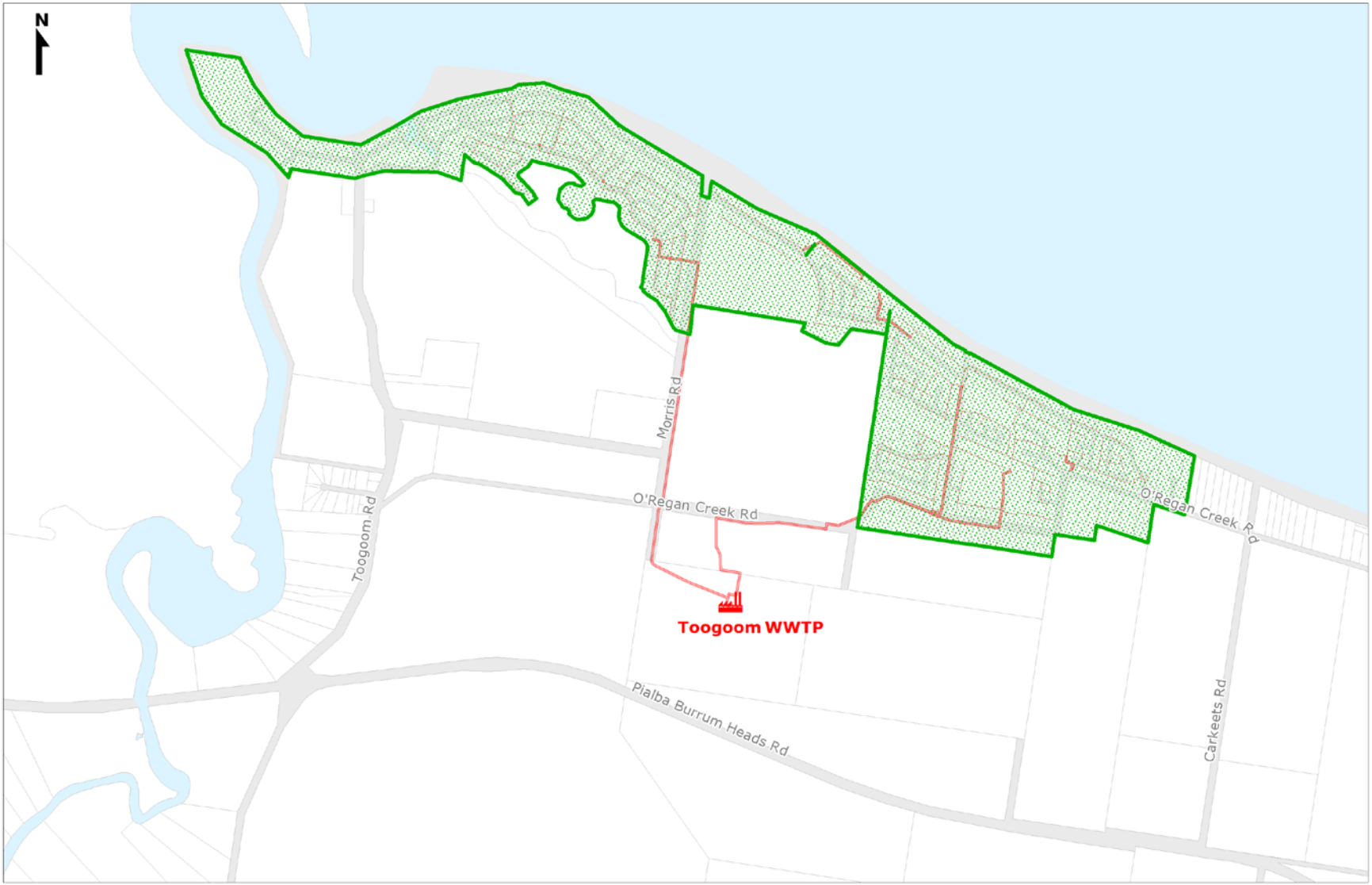
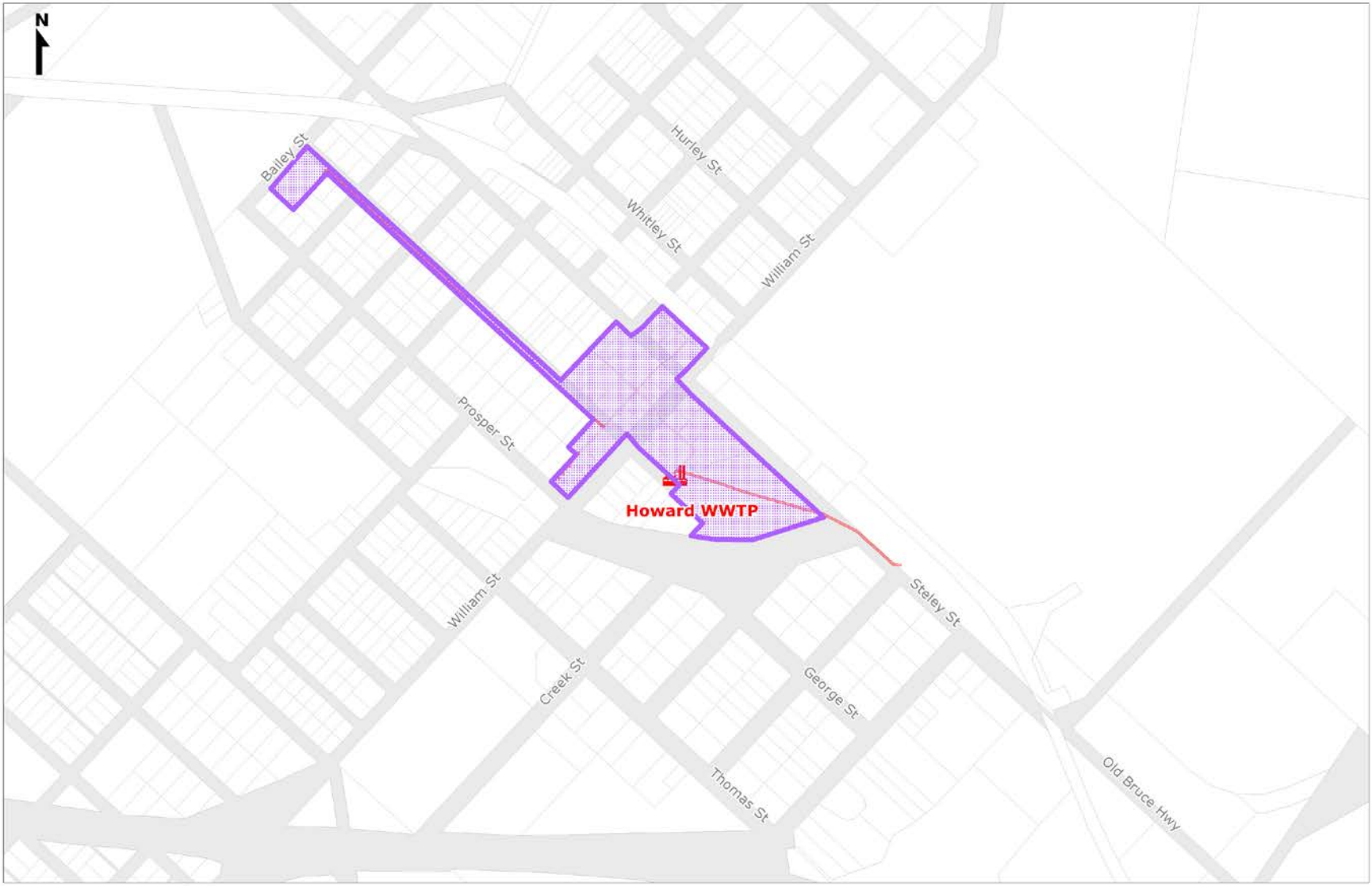
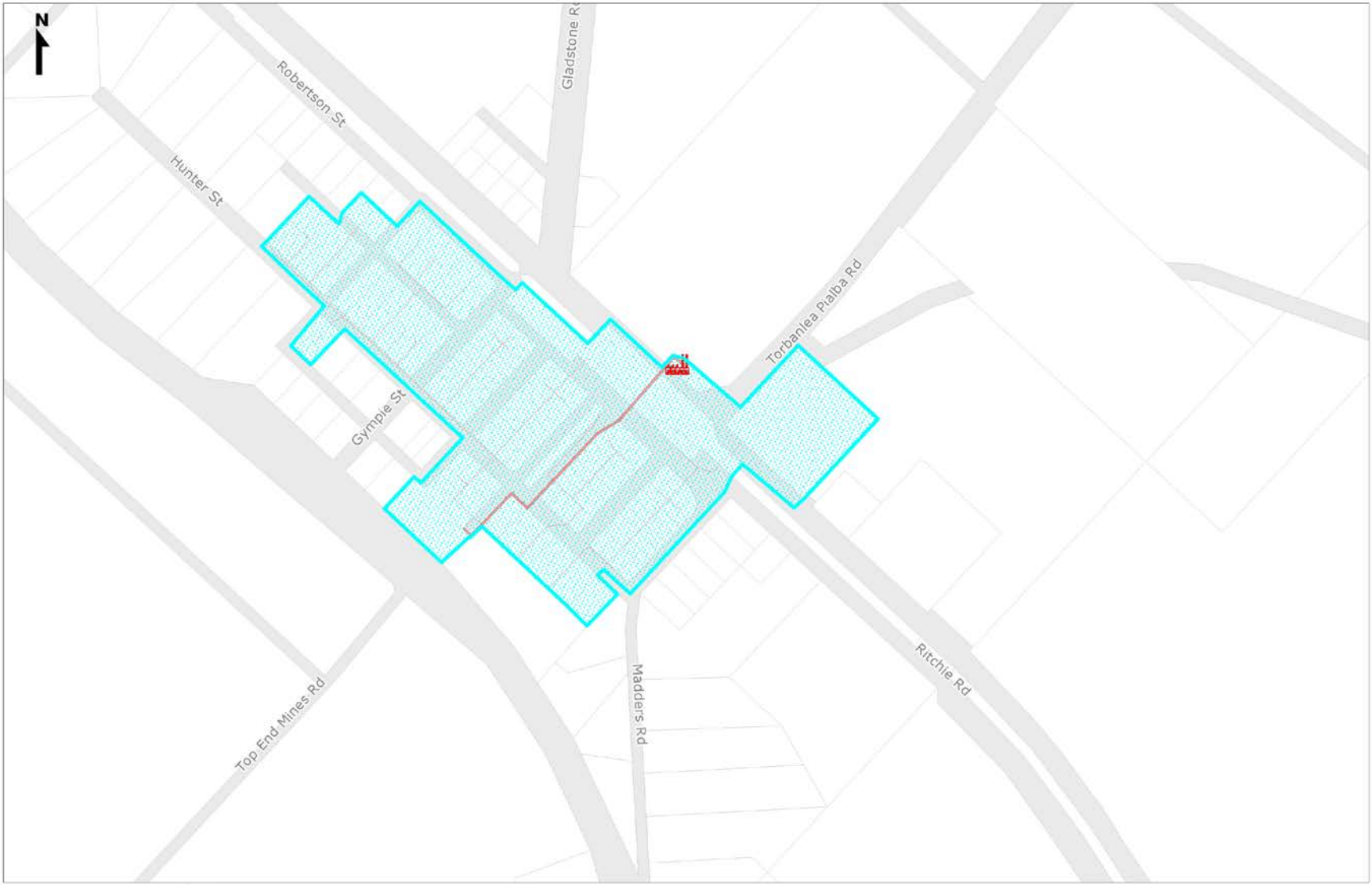
Eli Creek WWTP
Nikenbah WWTP
Martin St
North St
Ansons Rd
Pialba Burrum Heads Rd
Lower Mountain Rd
Maryborough-Hervey Bay Rd
Urraween Rd
Boat Harbour Dr
Esplanade
Torquay Tce
Exeter St
Doolong Rd
Raward Rd
Madsen Rd
Main St
0 500 1000
Meters
Scale: 1:50,000
Nikenbah WWTP


N
Old Coach Rd
Bongoola Rd
Ariadne St
Aubinville WWTP
Walkers Point Rd
Ferry Ln
Albert St
Central Rd
Tindah Rd W
Woongool Rd
Maryborough Cooloola Rd
0
1000
2000
Meters
Scale: 1:55,000
Aubinville WWTP

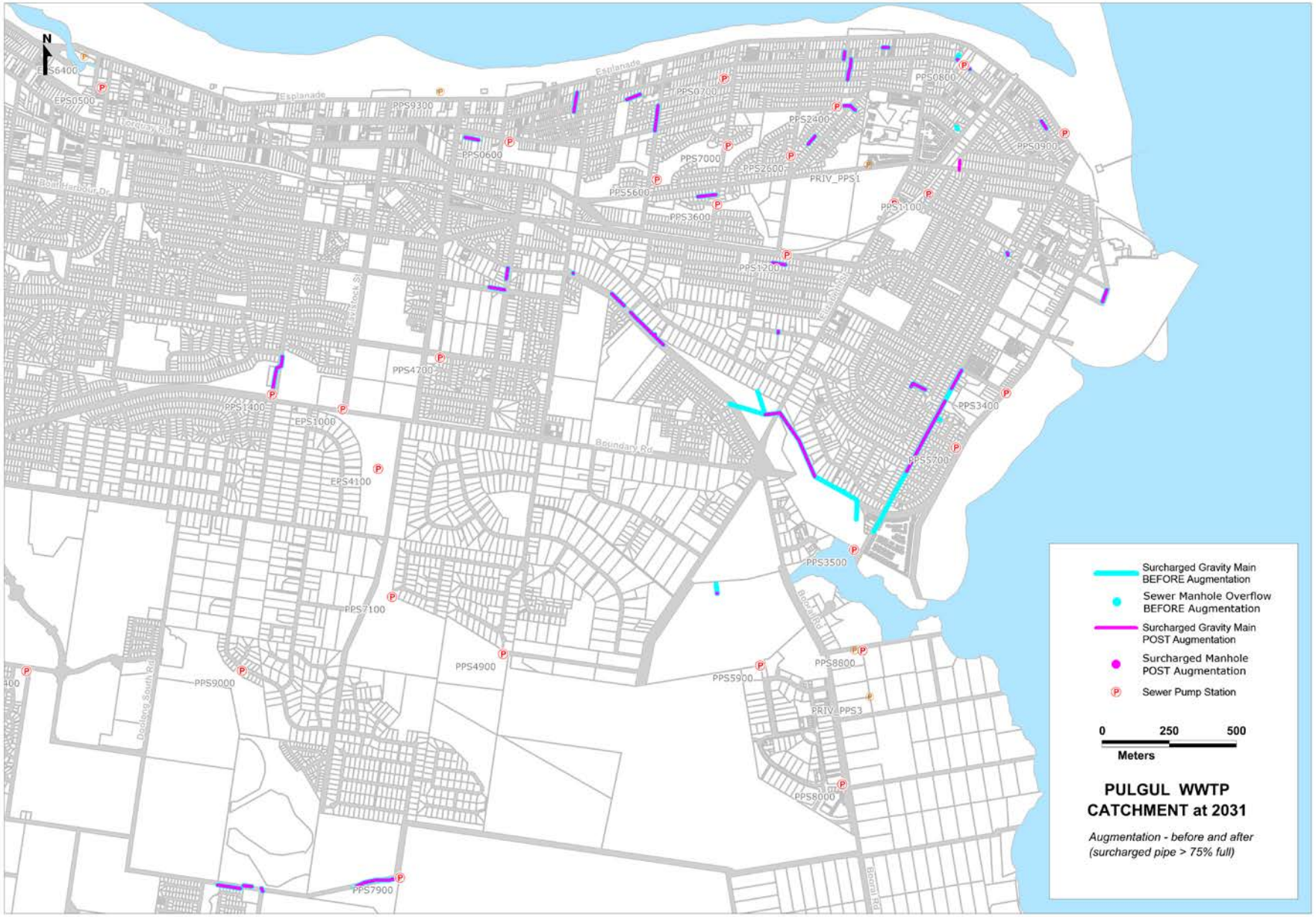

N
Burrum St
Burrum Heads Rd
Bushnell Rd
Orchid Dr
Burrum Heads WWTP
WIDE BAY water
CORPORATION
0
500
1000
Meters
Scale: 1:22,000
Burrum Heads WWTP

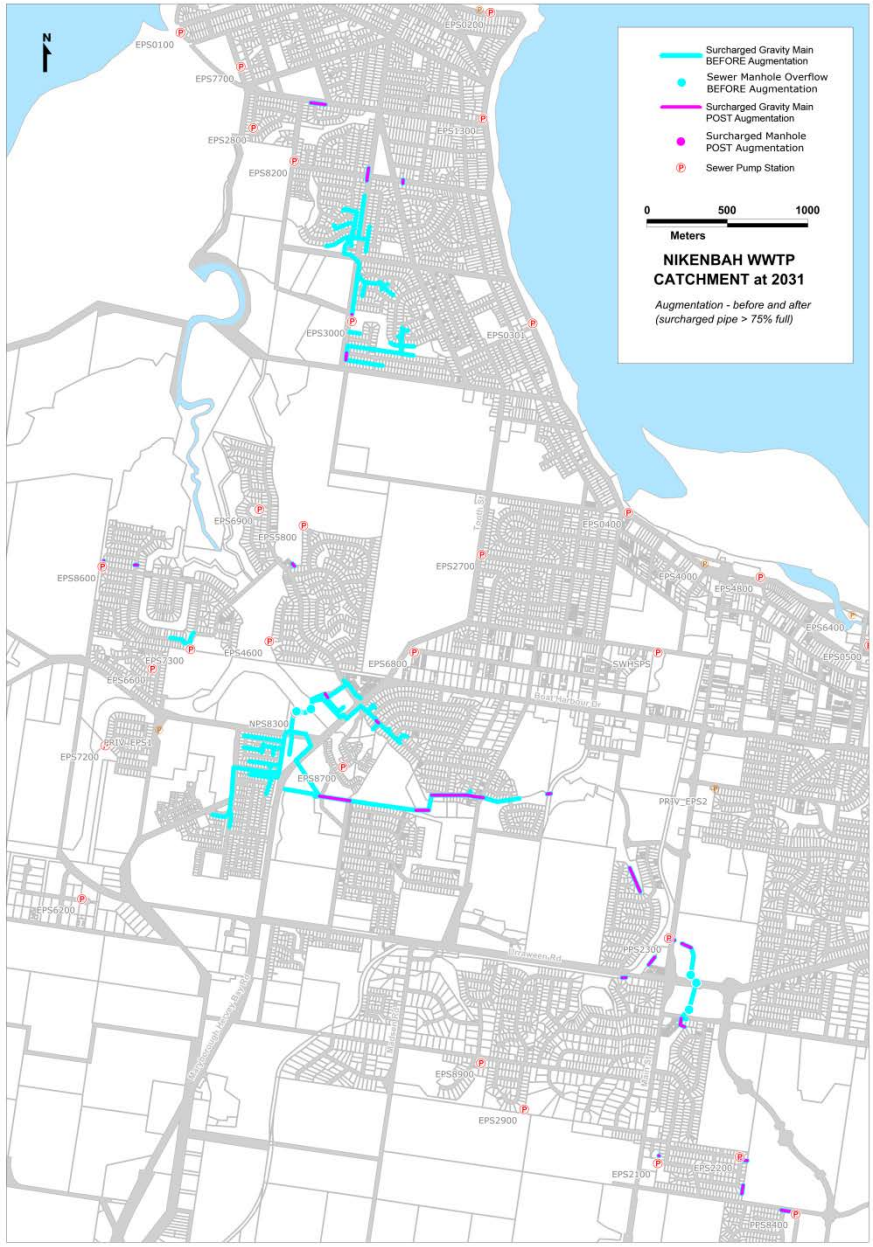

N
Morris Rd
O'Regan Creek Rd
Toogoom Rd
Toogoom WWTP
Pialba Burrum Heads Rd
Carkeets Rd
WIDE BAY water CORPORATION
0
500
1000
Meters
Scale: 1:20,000
Toogoom WWTP

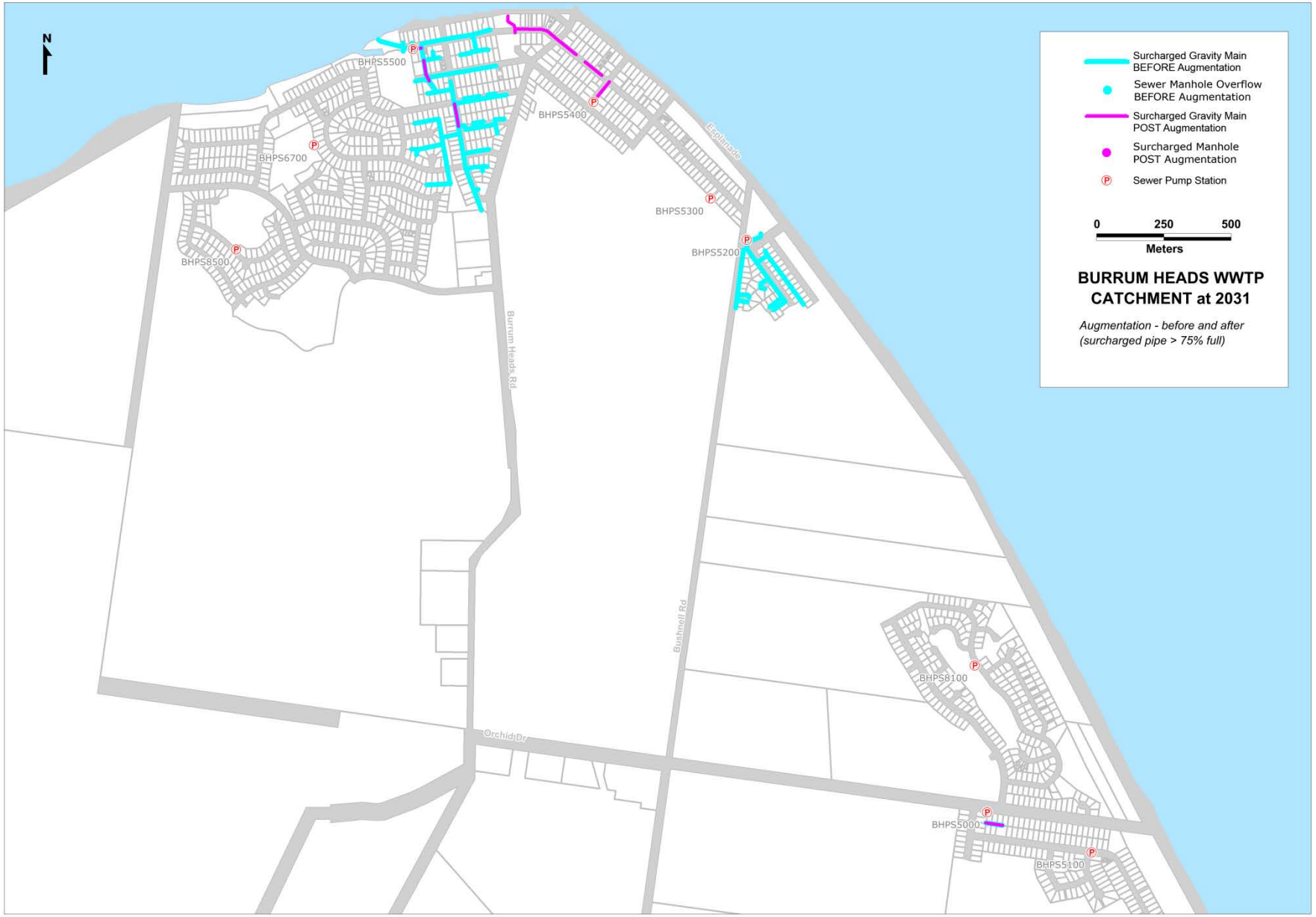

N
Bailey St
Hurley St
Whitley St
William St
Prosper St
Howard WWTP
William St
Steley St
Creek St
George St
Thomas St
Old Bruce Hwy
WIDE BAY water CORPORATION
0
150
300
Meters
Scale: 1:8,000
Howard WWTP

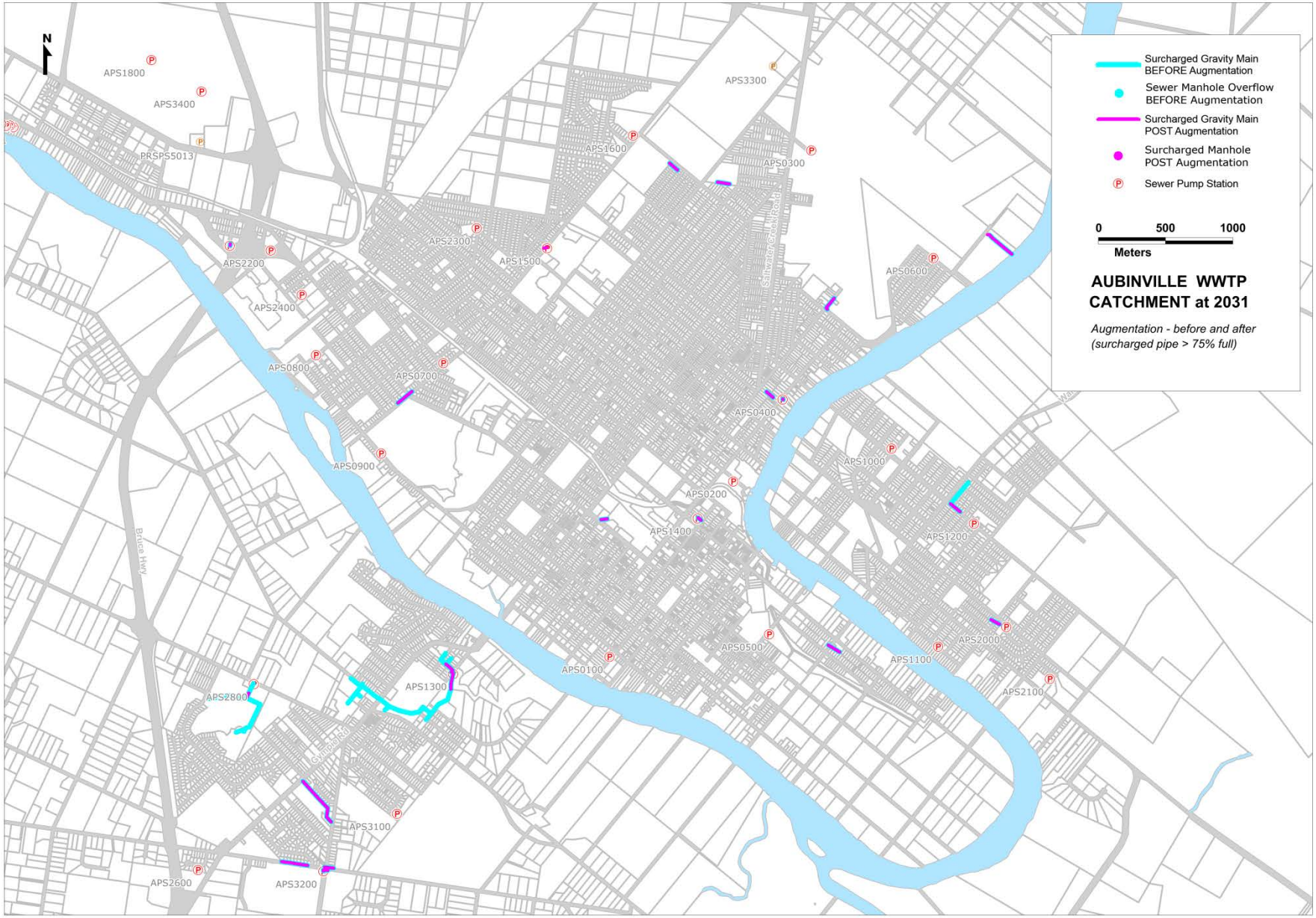

N
Robertson St
Gladstone Rd
Hunter St
Torbanlea Pialba Rd
Gympie St
Ritchie Rd
Madders Rd
Top End Mines Rd
WIDE BAY water
CORPORATION
0
150
300
Meters
Scale: 1:9,000
Torbanlea WWTP


N
Surcharged Gravity Main BEFORE Augmentation
Sewer Manhole Overflow BEFORE Augmentation
Surcharged Gravity Main POST Augmentation
Surcharged Manhole POST Augmentation
Sewer Pump Station
0
250
500
Meters
ELI CREEK WWTP CATCHMENT at 2031
Augmentation - before and after (surcharged pipe > 75% full)
Hythe St
EPS0400
EPS4000
EPS4800
EPS6400
EPS0500
SWHSPS
PRIV_EPS2
PPS9300
Esplanade
Boat Harbour Dr
Main St
Masters St


N
EPS6400
EPS0500
PPS9300
PPS0600
PPS0700
PPS0800
PPS2400
PPS0900
PPS7000
PPS2600
PRIV_PPS1
PPS5600
PPS3600
PPS1100
PPS1200
PPS4700
PPS1400
EPS1000
PPS3400
Boundary Rd
EPS4100
PPS5700
PPS3500
PPS7100
PPS4900
PPS8800
PPS5900
PPS9000
PRIV_PPS3
PPS8000
PPS7900
Surcharged Gravity Main BEFORE Augmentation
Sewer Manhole Overflow BEFORE Augmentation
Surcharged Gravity Main POST Augmentation
Surcharged Manhole POST Augmentation
Sewer Pump Station
0
250
500
Meters
PULGUL WWTP CATCHMENT at 2031
Augmentation - before and after (surcharged pipe > 75% full)


N
Surcharged Gravity Main BEFORE Augmentation
Sewer Manhole Overflow BEFORE Augmentation
Surcharged Gravity Main POST Augmentation
Surcharged Manhole POST Augmentation
Sewer Pump Station
0
500
1000
Meters
NIKENBAH WWTP CATCHMENT at 2031
Augmentation - before and after (surcharged pipe > 75% full)
EPS0100
EPS7700
EPS1300
EPS2800
EPS8200
EPS3000
EPS0300
EPS6900
EPS5800
EPS8600
EPS2700
EPS4000
EPS4800
EPS6400
EPS0500
EPS4600
EPS6800
SWHSPS
NPS8300
PRV_EPS1
EPS7200
EPS8700
PRV_EPS2
EPS6700
EPS2200
EPS8900
EPS2900
EPS2100
EPS8400


N
BHPS5500
BHPS5400
BHPS6700
BHPS5300
BHPS8500
BHPS5200
BHPS8100
BHPS5000
BHPS5100
Burrum Heads Rd
Bushnell Rd
Orchid Dr
Esplanade
Surcharged Gravity Main BEFORE Augmentation
Sewer Manhole Overflow BEFORE Augmentation
Surcharged Gravity Main POST Augmentation
Surcharged Manhole POST Augmentation
Sewer Pump Station
0
250
500
Meters
BURRUM HEADS WWTP CATCHMENT at 2031
Augmentation - before and after (surcharged pipe > 75% full)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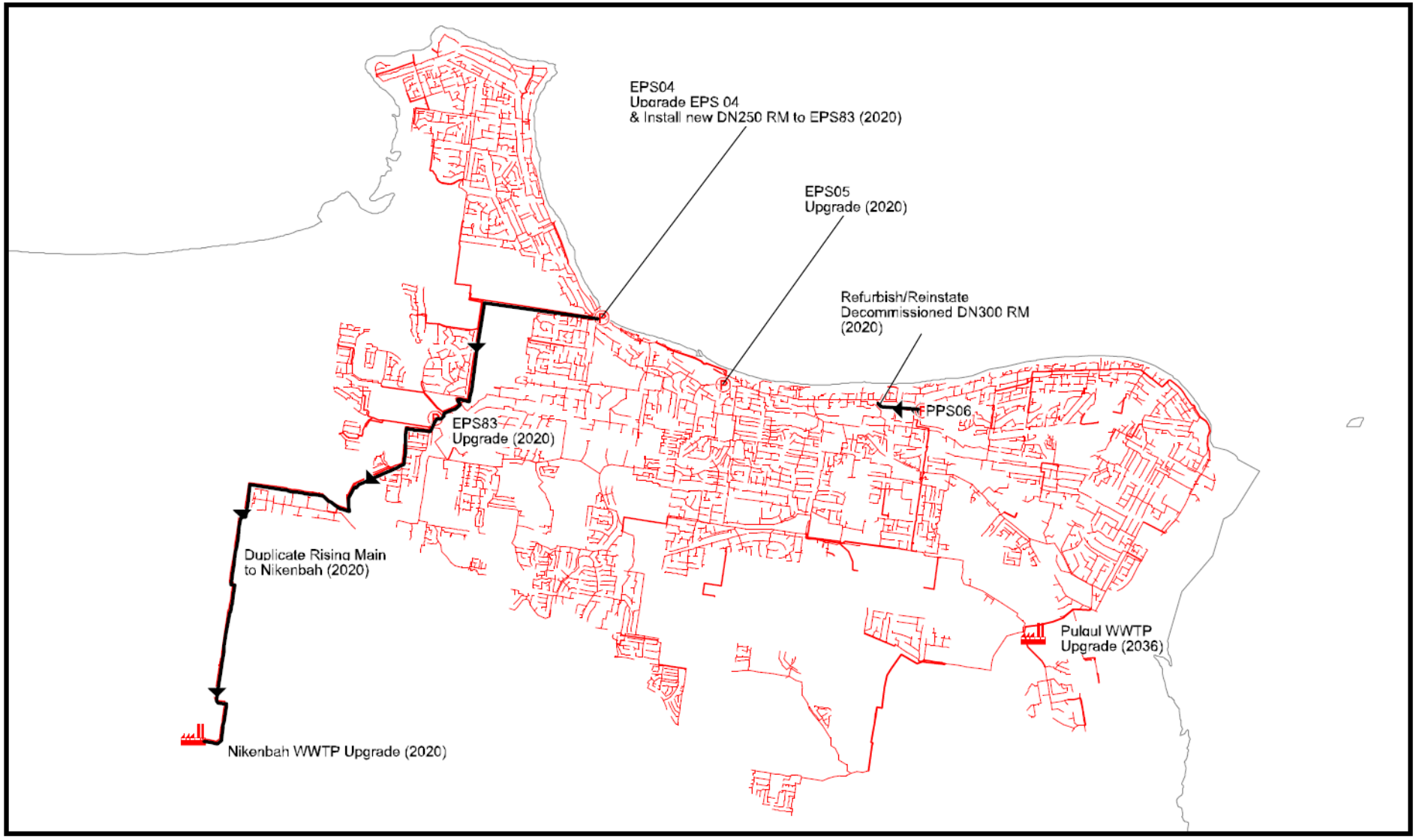
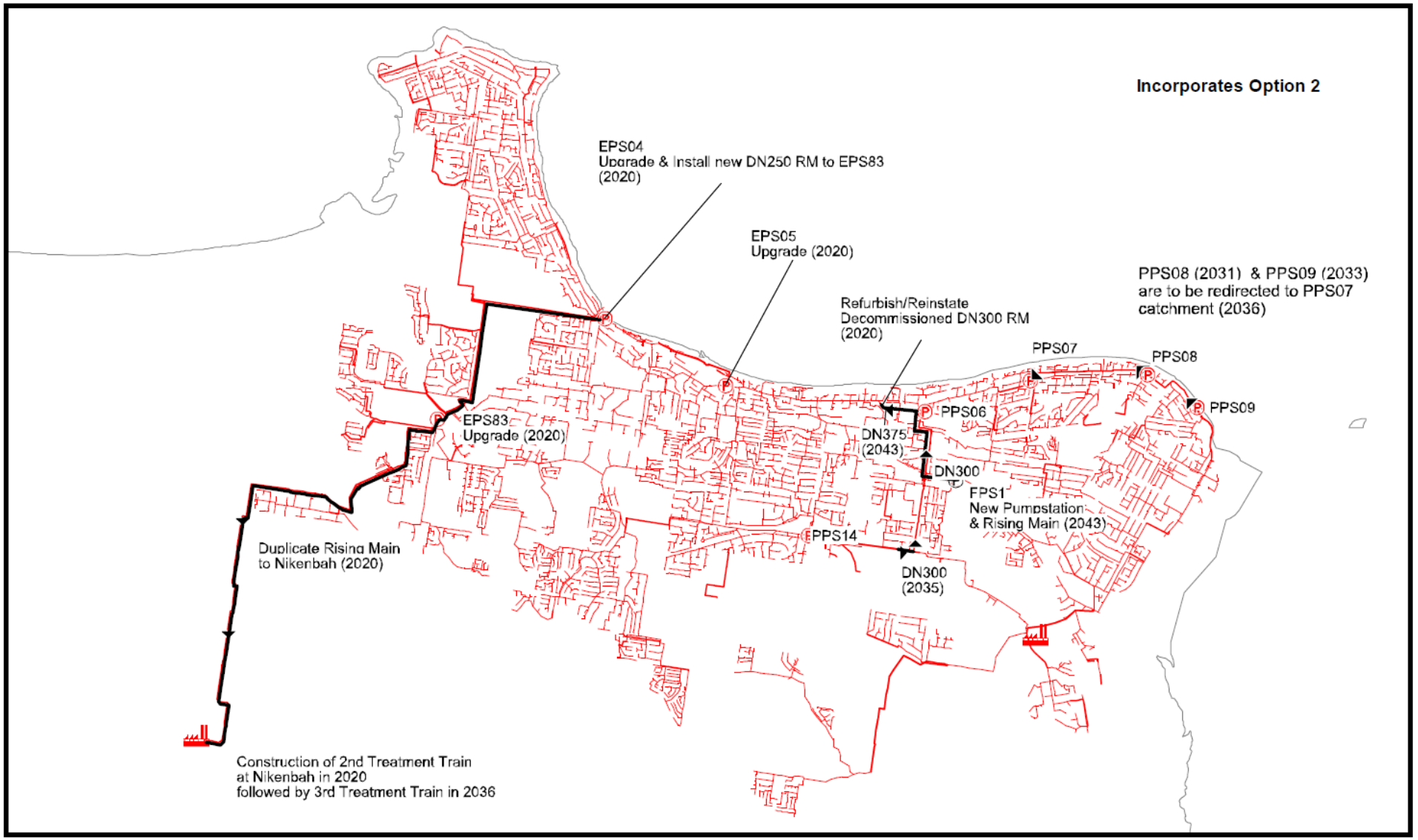
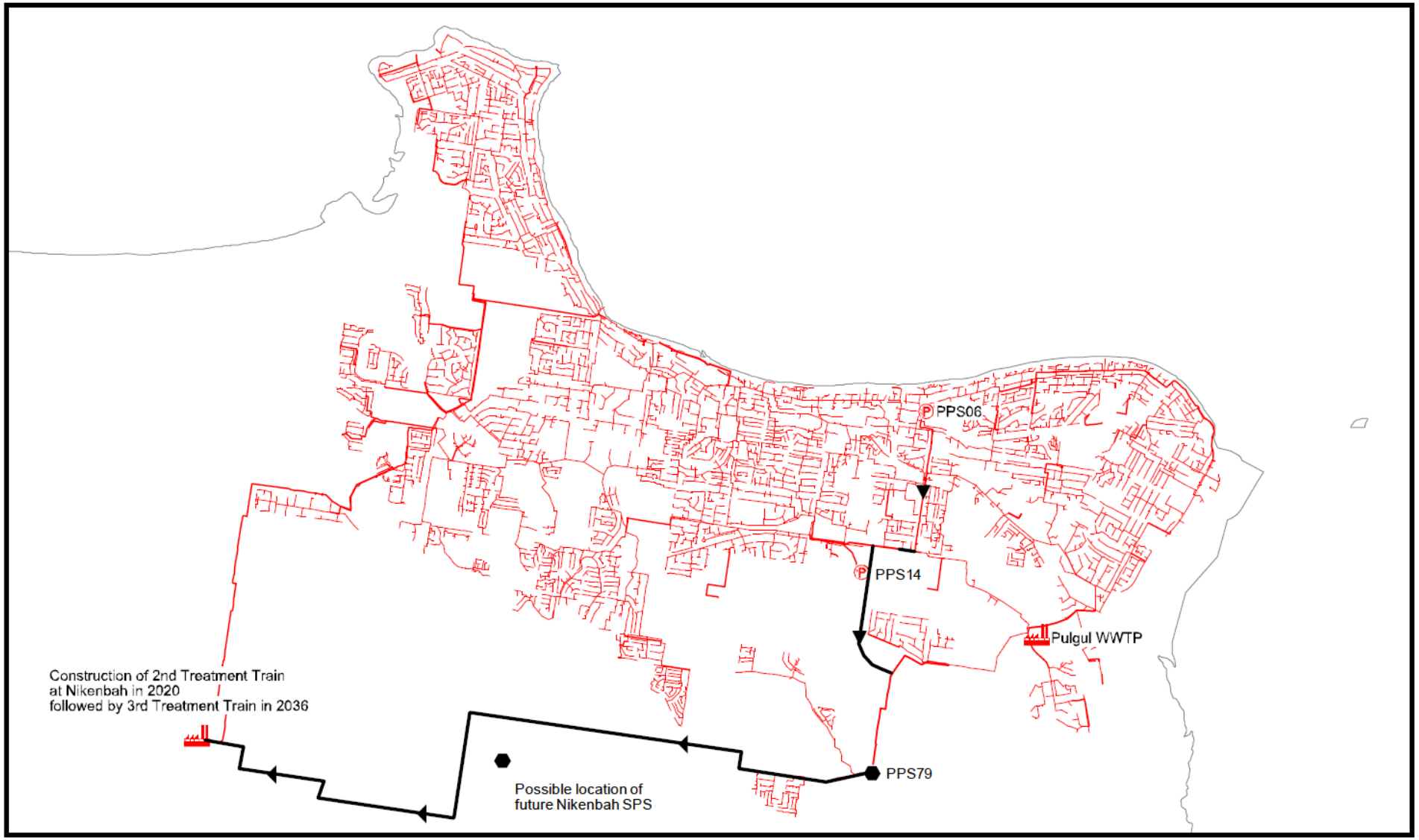
APS3400
PRSPS5013
APS3300
APS1600
APS0300
APS2300
APS1500
APS2200
APS0600
APS2400
APS0800
APS0700
APS0400
APS0900
APS1000
APS0200
APS1400
APS1200
APS0500
APS2000
APS1100
APS0100
APS1300
APS2100
APS2800
APS3100
APS2600
APS3200
Bruce Hwy
Surcharged Gravity Main BEFORE Augmentation
Sewer Manhole Overflow BEFORE Augmentation
Surcharged Gravity Main POST Augmentation
Surcharged Manhole POST Augmentation
Sewer Pump Station
0
500
1000
Meters
AUBINVILLE WWTP CATCHMENT at 2031
Augmentation - before and after (surcharged pipe > 75% full)


EPS04
Upgrade EPS 04
& Install new DN250 RM to EPS83 (2020)
EPS05
Upgrade (2020)
Refurbish/Reinstate
Decommissioned DN300 RM
(2020)
EPPS06
EPS83
Upgrade (2020)
Duplicate Rising Main
to Nikenbah (2020)
Pulgul WWTP
Upgrade (2036)
Nikenbah WWTP Upgrade (2020)
Sewer Gravity Main
Sewer Rising Main
N
Option 2
WIDE BAY water
CORPORATION
Date Compiled: 20/05/2015
G:\Maps\WorkingFiles\2015 Projects\Apr 2015\Sewerage Strategy Doc Maps


Incorporates Option 2
EPS04
Upgrade & Install new DN250 RM to EPS83
(2020)
EPS05
Upgrade (2020)
PPS08 (2031) & PPS09 (2033)
are to be redirected to PPS07
catchment (2036)
Refurbish/Reinstate
Decommissioned DN300 RM
(2020)
PPS07
PPS08
PPS09
PPS06
EPS83
Upgrade (2020)
DN375
(2043)
DN300
FPS1
New Pumpstation
& Rising Main (2043)
EPPS14
DN300
(2035)
Duplicate Rising Main
to Nikenbah (2020)
Construction of 2nd Treatment Train
at Nikenbah in 2020
followed by 3rd Treatment Train in 2036
Sewer Gravity Main
Sewer Rising Main
N
Option 3a
Date Compiled: 20/05/2015
G:\Maps\WorkingFiles\2015 Projects\Apr 2015\Sewerage Strategy Doc Maps



WIDE BAY water CORPORATION

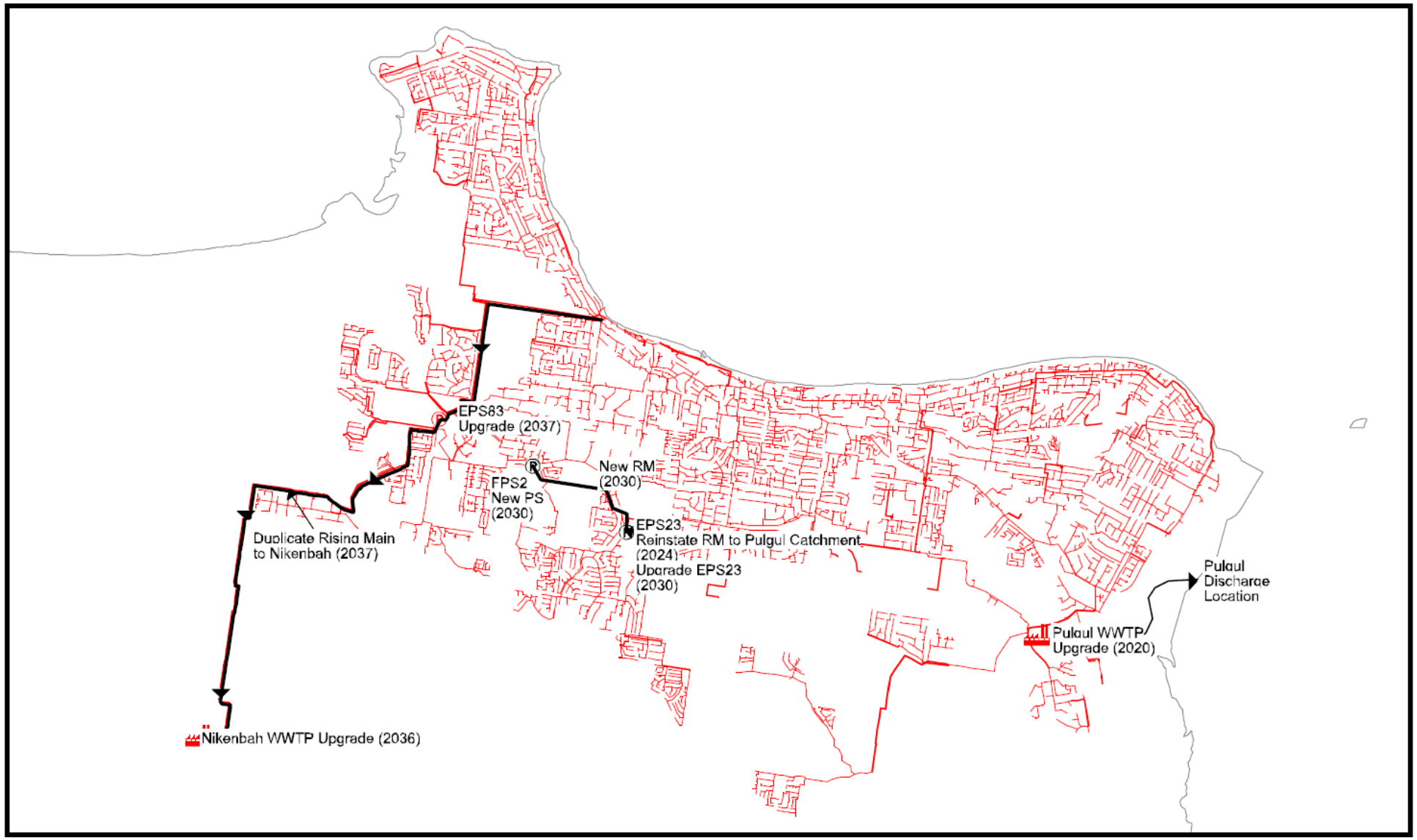
Sewer Gravity Main
Sewer Rising Main

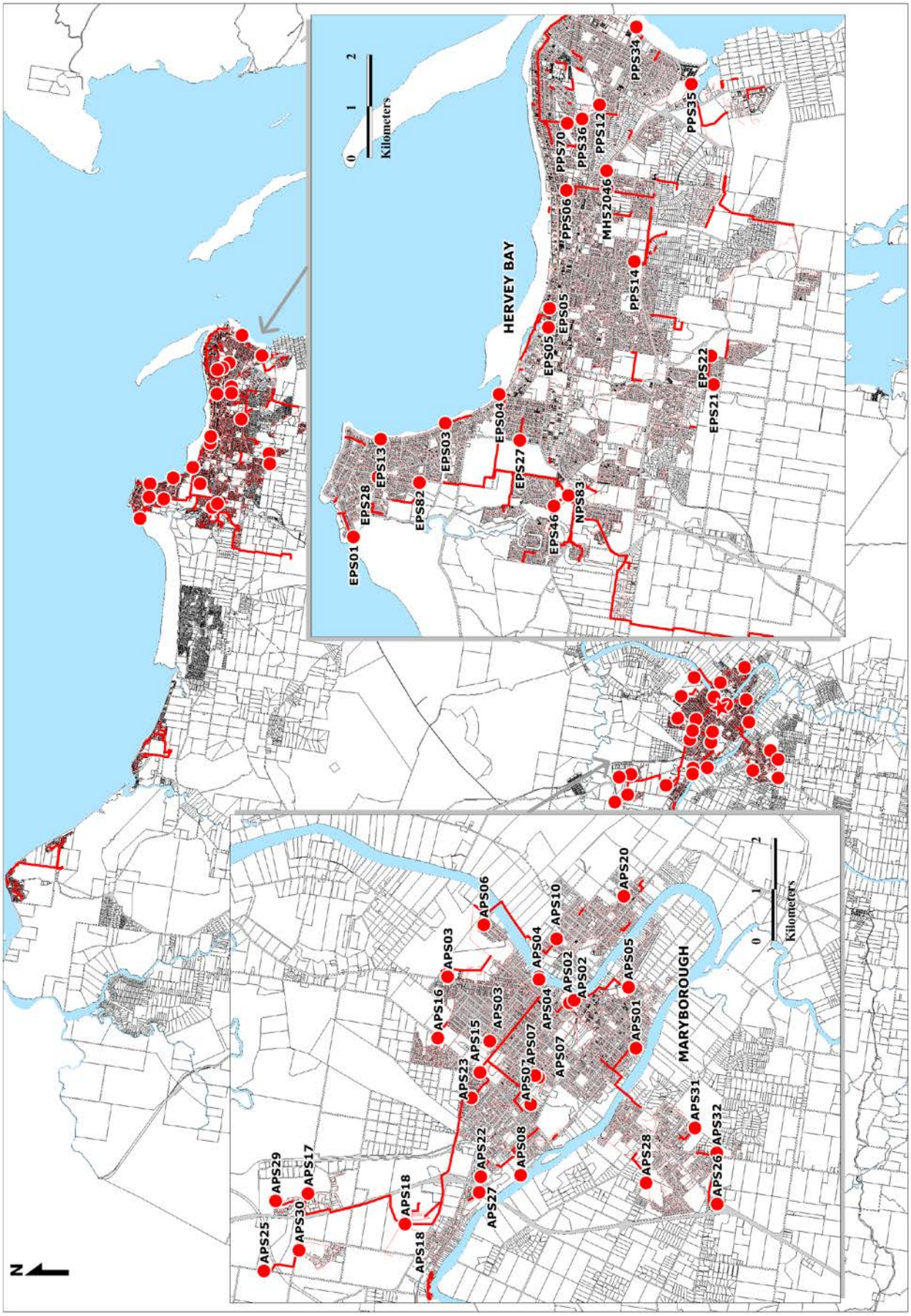
N

Option 3b

Date Compiled: 20/05/2015

G:\Maps\WorkingFiles\2015 Projects\Apr 2015\Sewerage Strategy Doc Maps


EPS83
Upgrade (2037)
New RM
(2030)
FPS2
New PS
(2030)
EPS23
Reinstate RM to Pulgul Catchment
(2024)
Upgrade EPS23
(2030)
Duplicate Rising Main
to Nikenbah (2037)
Nikenbah WWTP Upgrade (2036)
Pulaul WWTP
Upgrade (2020)
Pulaul
Discharge
Location
Sewer Gravity Main
Sewer Rising Main
N
Option 4
Date Compiled: 20/05/2015
G:\Maps\WorkingFiles\2015 Projects\Apr 2015\Sewerage Strategy Doc Maps


HERVEY BAY
0
1
2
Kilometers
PPS34
PPS35
PPS12
PPS36
PPS70
PPS06
MH52046
PPS14
EPS05
EPS22
EPS21
EPS04
EPS27
EPS03
EPS13
EPS28
EPS01
EPS82
EPS46
NPS83
MARYBOROUGH
APS20
APS06
APS10
APS03
APS04
APS02
APS05
APS01
APS16
APS15
APS07
APS23
APS22
APS08
APS27
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APS17
APS30
APS25
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APS32
APS28
APS26
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APPENDIX 5 – PUMP STATIONS AND RISING MAINS

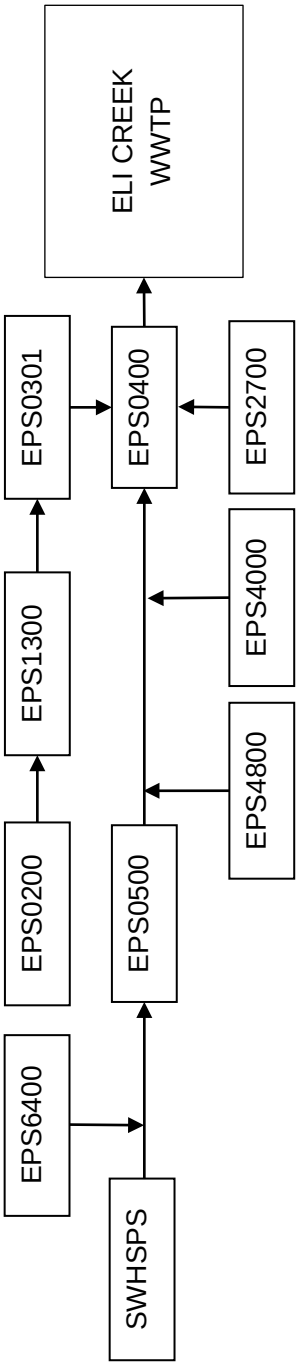


Figure 1 Eli Creek Catchment Pump Station Schematic

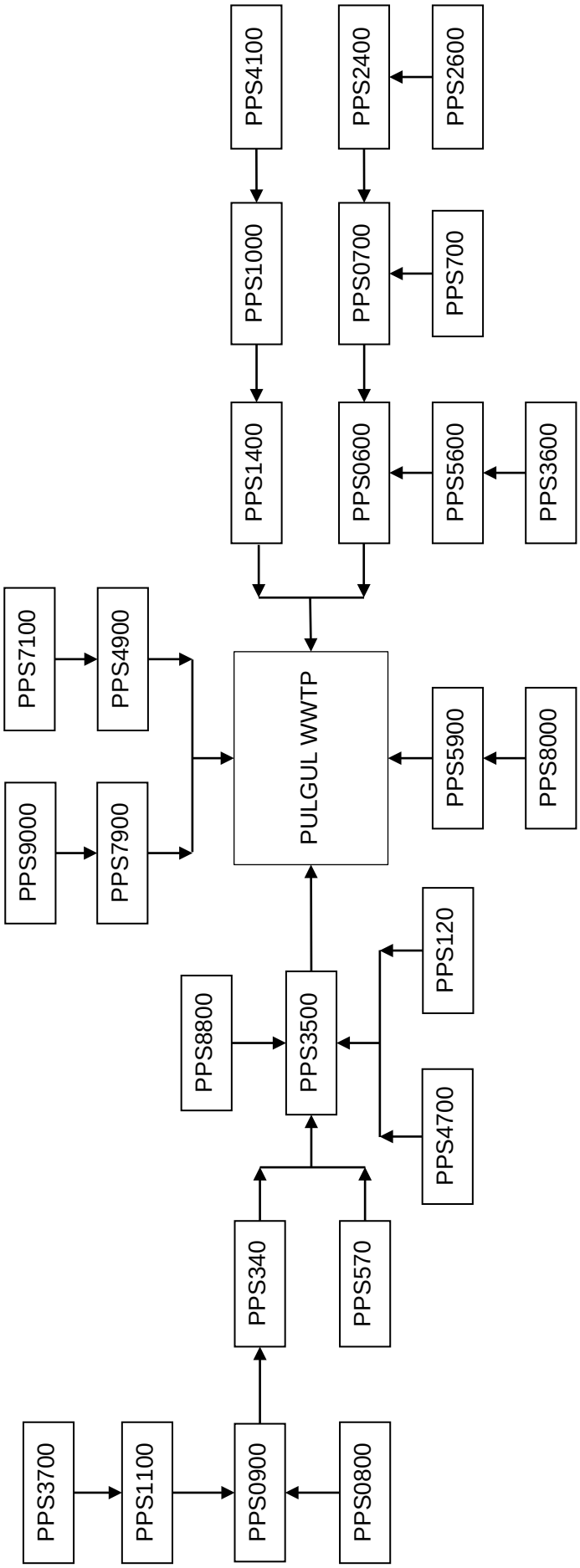


Figure 2 Pulgul Catchment - Pump Station Schematic

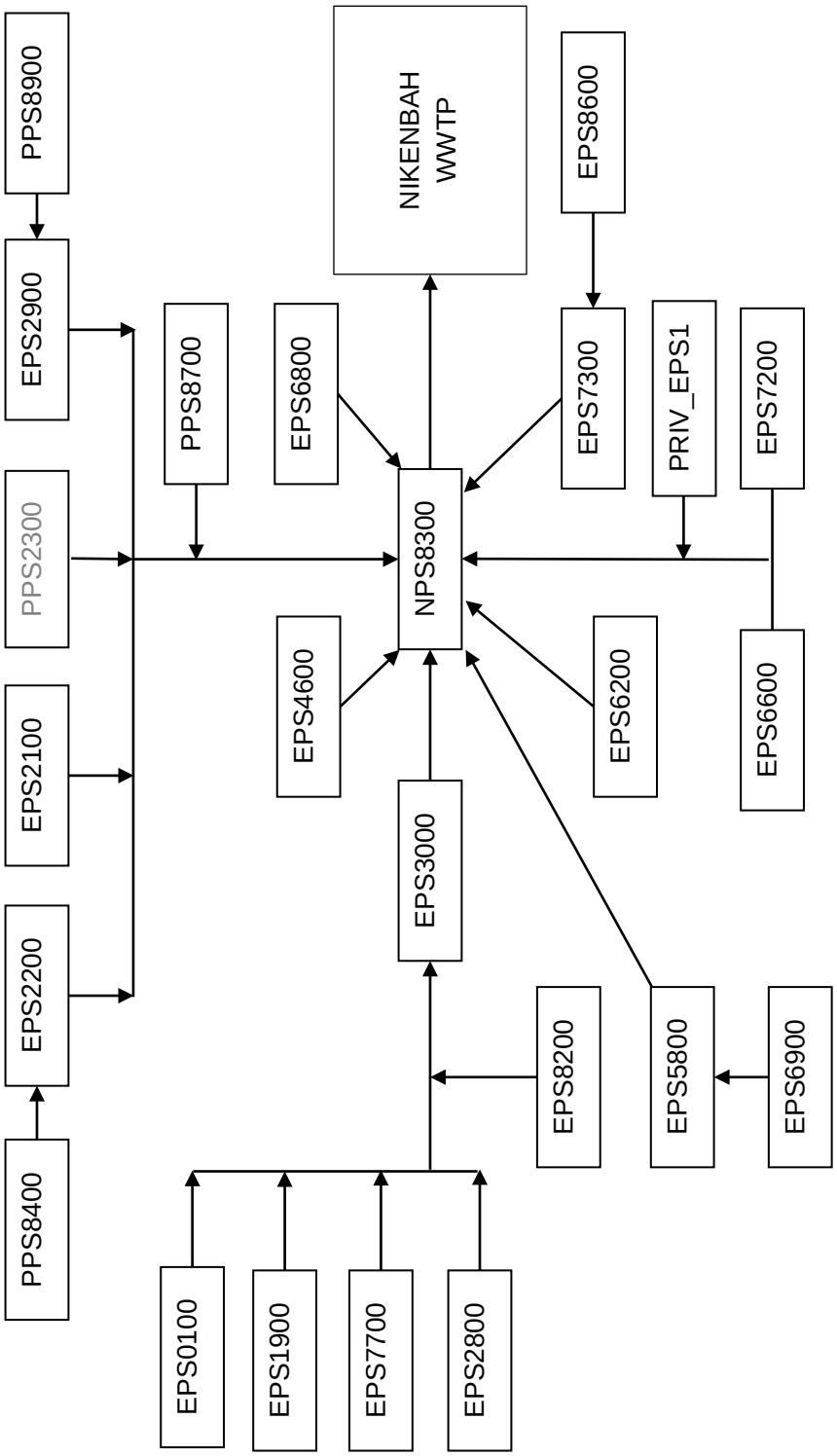


Figure 3 Nikenbah Catchment - Pump Station Schematic

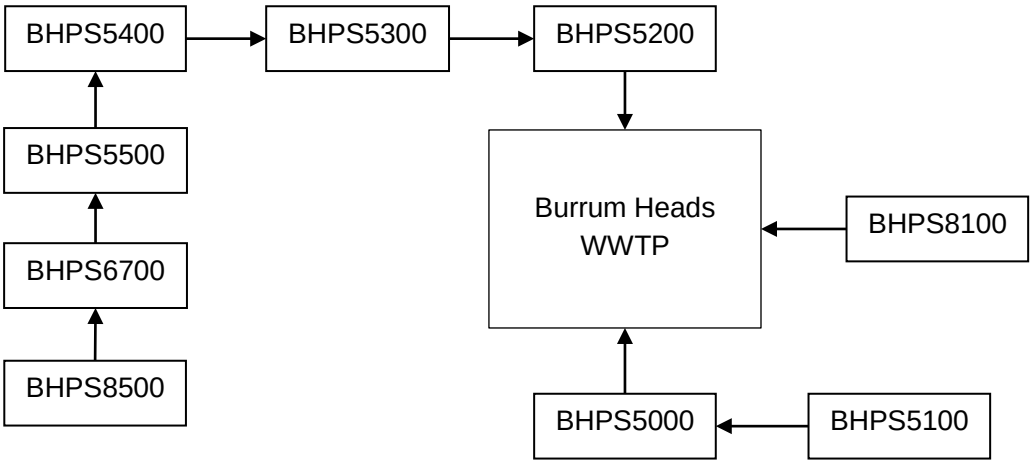


Figure 4: Burrum Heads Catchment - Pump Station Schematic

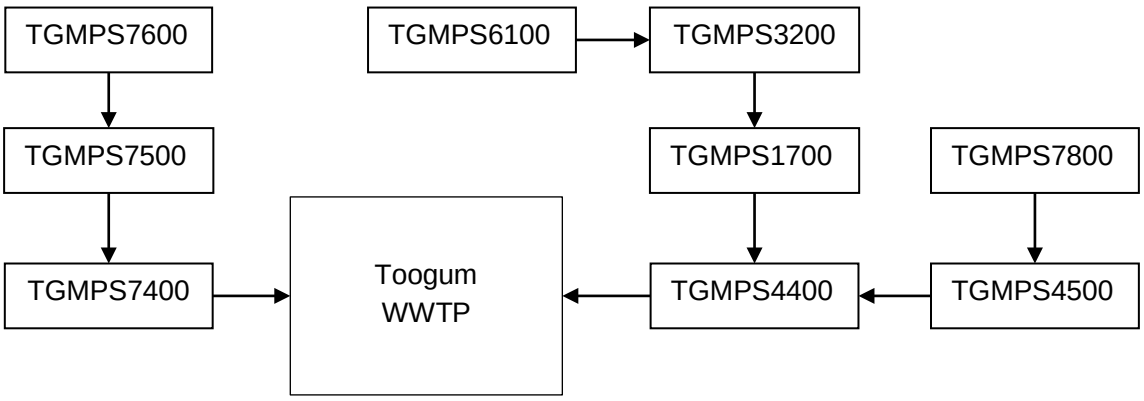


Figure 5: Toogoom Catchment - Pump Station Schematic

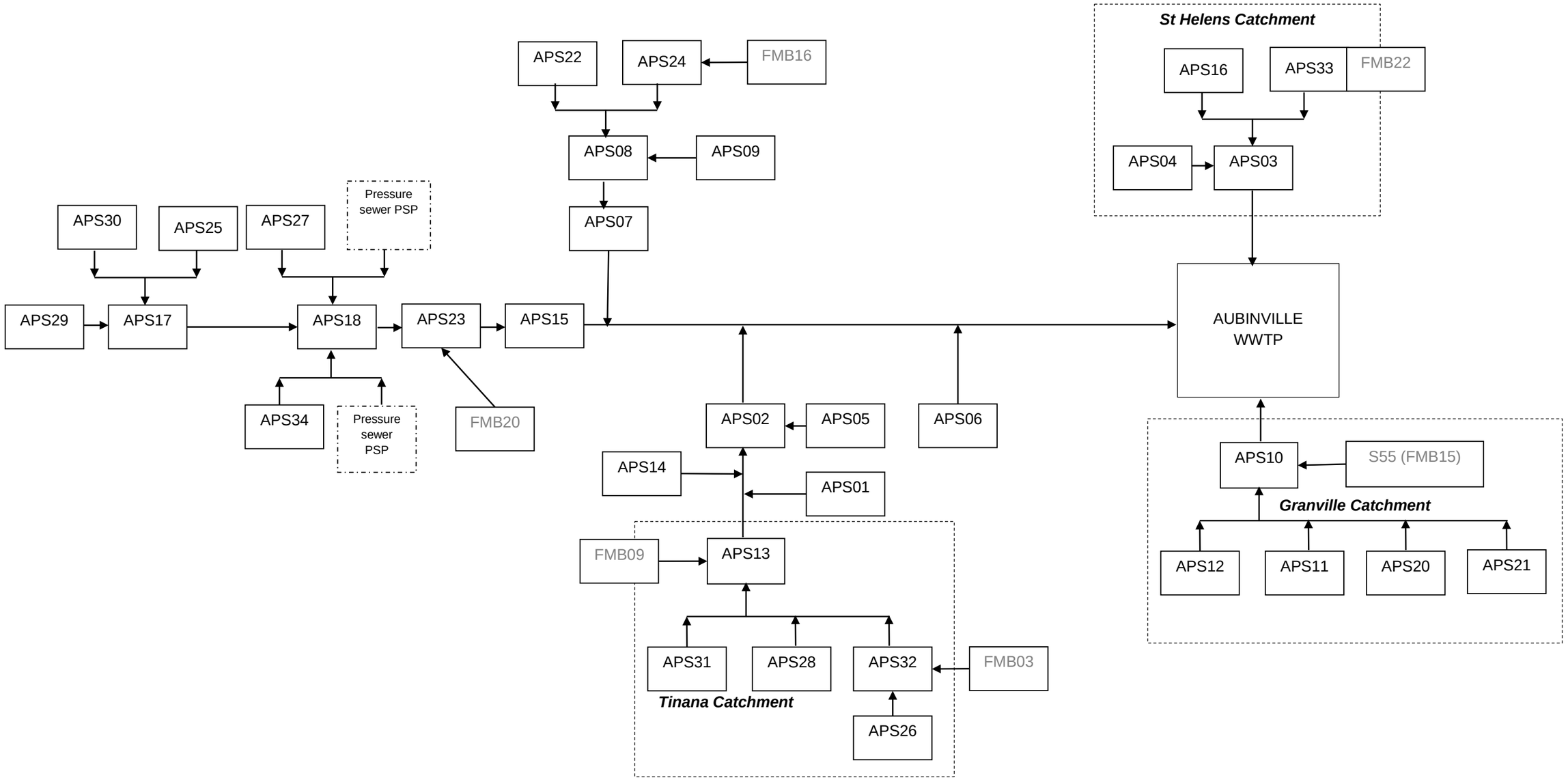


Figure 6: Aubinville Catchment - Pump Station Schematic

Table 1 Existing Pump Station Data

Pump Station	No. OF Pumps	Location	Make	Model	Impellor Diameter (mm)	Power Rating (KW)	RPM	Wet Well Area (m^2)	Well Type (Wet or Dry)	Wet Well Invert Level (mAHD)	Diameter of Rising Main (mm)	Length of Rising Main (m)
Aubinville WWTP												
APS01	2	18 Bazaar St	FORRERS	Submersible Model 4510.3 TLC	-	15	1450	7.07	wet	-1.14	225	959
APS02	2	Walker St in Queens Park	FLYGT	3210 modified model		74	1475	13.09	wet	-2.558	300	303
APS03	2	Booker St (dead end)	IEC Indeng	C2R X 195W				13.09	dry	-1.67	300	1140
APS04	2	309 Lennox Street	FORRERS	Submersible Model 4510.3 TLC		2.6	960	3.14	wet	5.61	100	97
APS05	2	Guava Street	FORRERS	Forrers 4516.3 TLC		12	960	10.46	wet	1.53	200	1419
APS06	2	Brooker St, Aubinville	Broom &Wade	N5 2.4		5.5	1440	3.10		4.23	150	52
APS07	2	Neptune & Carlisle St	Pope			40		7.24	dry	3.54	375	3041
APS08	2	Russel St opps. Katherine St						7.24	dry	4.705	225	907
APS09	2	Queen St, Golk Links	Broom &Wade	1/374987 (N5 Compressor)				3.10	dry	5.859	100	116
APS10	2	54 Banana St	Forrer Paco P/L	4097M - Submersible		22	970	9.05	wet	-3.9	250	2362
APS11	2	Puller St	FLYGT	NP 3085 183 MT		2	1390	2.60	wet	7.29	100	281
APS12	2	122 Banana St	FLYGT	NP 3085 183 MT		2	1390	2.54	wet	5.4	100	131
APS13	2	McGregor St	KSB	KRTF80		12	1450	4.15	wet	2.65	200&225	1101.2+303
APS14	1	247 Kent St - School of Arts	FLYGT	3101.18				3.10	wet	-2.17	150	4
APS15	2	23 Neptune St	FLYGT	NP3153 181 MT		18	960	4.71	wet	13.56	200&375	272+1608
APS16	2	Neptune St - Bell Hill Top	FORRERS	e100.280		7.5	1450	2.54	wet	-0.95	150	460
APS17	2	Quarry Road	FLYGT	3153.181.1832.273		25	2935	4.52	wet	0.55	200	2774
APS18	2	Showgrounds	FLYGT	3171 181 0161 451		25	1450	4.08	wet	13	200	3321
APS20	2	Rotary Jubilee Park, Carmen Close	FLYGT	MF3068.170.0359.214 HT		1.7	2640	0.95	wet	13.31	100	60
APS21	2	Grevillea Drive	FLYGT	MF3068 .170 HT		1.7	2640	0.79	wet	17.74	50	292
APS22	2	Alice St (by Bruce Highway)	FLYGT	CP3085.182 15 MT		2	1390	1.13	wet	20.29	80	441
APS23	2	RW Lupton Park, Jupiter St	FORRERS	4S250.3		5.79	1450	7.07	wet	17.55	200	767
APS24	2	Gregory Court	FLYGT	3085.181.15 and 3085.160.1086002		2		3.30	wet	7.44	100	409

Pump Station	No. OF Pumps	Location	Make	Model	Impellor Diameter (mm)	Power Rating (KW)	RPM	Wet Well Area (m^2)	Well Type (Wet or Dry)	Wet Well Invert Level (mAHD)	Diameter of Rising Main (mm)	Length of Rising Main (m)
APS25	2	Ferguson Road - Correctional Facility	FLYGT	NP3153.181 SH		15	2920	3.46	wet	5.661	150	2140
APS26	2	Jims Pl, Tinana (industrial)	FLYGT	3102.181.0929.255				2.54	wet	19	100	532
APS27	2	Ormond St	FLYGT	3068.18				0.70	wet	26.466	100	261
APS28	2	87 Central Road	FLYGT	3153.181		2	1390	1.34	wet	5.675	100	734
APS29	2	Enterprise Cresent Wide Bay Industrial Estate	FLYGT	3102.181.5215.460		3.1	1445		wet		150	420
APS30	2	Ferguson Road	FLYGT	3153.181.1832.273					wet		100&150	37.4+1096
APS31	2		FLYGT	3102.181				2.54	wet	4.814	150	418
APS32	2		FLYGT	3153.181.1271					wet		150	395
APS34	3		FlYGT and Mono	3102.181.3948.463 and Grif-09301MTR					dry		40+100	276
Burrum Heads WWTP												
BHPS50	2	ORCHID DR B/HEADS	KSB AJAX	FF80-200K150		3.4	1410	2.54	wet	-0.42	150	1411
BHPS51	2	BEACH DR B/HEADS	FLYGT	CP3085.182MT		2	1390	2.54	wet	-1.089	100	332
BHPS52	2	BUSHNELL RD B/HEADS	ITT FLYGT	NP3171 SH		30	1450	4.52	wet	-1.985	150	2241
BHPS53	1	BURRUM ST (EASEMENT)	KSB	E100-280		2.6	950	2.54	wet	-1.602	100	717
BHPS54	2	TORBANLEA ST B/HEADS	KSB	KRTF 80-250/74UG-				3.46	wet	-2.419	100	298
BHPS55	2	BURRUM ST (WEST)	KSB	KRTF100-401-294UG-S - 325		27	1450	2.54	wet	-2.564	100	395
BHPS67	2	SUNRISE CR (BURRUM WOODS)	ABS	CE37-2		3.7	2900		wet	-3.949	150	540
BHPS81	2	ON THE BEACH ESTATE B/HDS	KSB	KRT E80-250/54UGS-225			1450			-2.835	150	2268
BHPS85	2	DOLPHIN WATERS	FLYGT	NP3085.183MT (53-460-00-5406??) 175mm impellor		2	1390			-3.656	150	554
Eli Creek WWTP												
EPS02	2	ESPLANADE	KSB AJAX	E100-280WCD	225	4	1410	6.69	dry	6.299	100	460
EPS03	2	ESPLANADE & KEHLET ST	KSB AJAX	E100-280 100/150	248	7.5	1450	6.69		4.281	200	547
EPS04	2	ESPLANADE & BEACH RD	KSB AJAX	K200-360NCD		40	1470	21.132	dry	-1.78	375	1750
EPS13	1	ESPLANADE & CORSER ST	FLYGT	3085.183 MT	175	2	1390	1.13	wet	7.923	100	115
EPS 27	2	TOOTH & DOVER ST	FLYGT	NP3153.181 HT	161	15	1455		wet	4.425	100	470
EPS40	1	PIALBA CARAVAN PK	FORRERS	3S:180/2		2	960	1.13	wet	0.468	100	43
EPS48	2	SEAFRONT OVAL	FORRERS	SGV-100-75		3	2860	2.54	wet	-2.195	100&300	22.4+167

Pump Station	No. OF Pumps	Location	Make	Model	Impellor Diameter (mm)	Power Rating (KW)	RPM	Wet Well Area (m^2)	Well Type (Wet or Dry)	Wet Well Invert Level (mAHD)	Diameter of Rising Main (mm)	Length of Rising Main (m)
EPS64	1	ESPLANADE (APEX PK)	Sulzer	5106401				0.57	wet		50	102
EPS05	2	ZEPHYR ST	KSB AJAX	K200-360NCD		18	960	17.207	dry	-2.86	300+300	1144
Nikenbah WWTP												
EPS01	1	MANT ST	FLYGT	CP3127.181 HT		5.9	1445	1.13	wet	0.379	100	549
EPS19	1	GATAKERS BAY	FORRERS	4S10.3			1450	1.13	wet	3	63	136
EPS21	1	TROBRIAND CL	FORRERS	4S10/3TLC			1450	1.33	wet	47.355	100	141
EPS22	2	WAIGANI ST	KSB AJAX	KRTF80-315/172 UG-		17	1450	2.54	wet	34.334	100	480
EPS28	2	OCEAN VIEW ST	KSB	NF80-220/034 ULG-		2.5	960	2.54	wet	-1.239	100	372
EPS29	2	COONGUL CT	KSB	NF80-220/044 ULG-		3.7	1450	1.33	wet	44.509	100	88
EPS30	2	NORTH ST	KSB AJAX	K150N-330	327	37	1460		wet	-0.888	200	1085
EPS46	2	BROLGA CT	FLYGT	3102 181		3.1	1445	2.54	wet	-2.033	100	476
EPS58	2	BUTCHERBIRD CL	FLYGT	CP3127.180HT480	265	5.9	1445	2.54	wet	-2.165	150	1062
EPS62	2	LOWER MOUNTAIN RD	KSB	KRT F80-250/74UGS	249	3.5	1450			-0.92	100	929
EPS66	2	WIDE BAY DR (PIALBA DOWNS)		NP3085.183 4239	175	2	1390		wet	-3.52	150	1149
EPS68	1	ISLANDER RD	GRUNDFOS	SEG.40.15.EX.2.50B		1.5	3600		wet	3.7	50	78
EPS69	2	BUSHLARK AVE	FLYGT	NP3102.180MT 462-	182	3.1	1445		wet		150	402
EPS72	2	YARILLEE CCT	KSB AJAX	KRT F80-250/54UGS	237	5.5	1450			-1.337	150&100	635.1+745
EPS73	2	MARINERS COVE	FLYGT	NP3102		3.1	1450			-3.145	150	873
EPS77	2	CORSER ST	KSB AJAX	KRT-F80-250 54UGS	237	5.5	1450			-0.55	100	468
EPS82	2	WATTLE ST	KSB	KRT F80-250/54UGS-210		5.5	1450			-3.656	100	863
EPS83	2	AUGUSTUS ESTATE	ABS	AFP2002		1.2	2850			-2.02	450	6827
PPS84	2	SAMURAI DR	KSB	KRT F80-250/74UG-249		7.5	1440			31.025	100	357
EPS86	2	MARINERS COVE 2	FLYGT	3085.183-8483	152	2	1390			0	150	417
EPS87	2	KINGFISHER LAKES	FLYGT	N3085MT-183.4239	432	2	1390			-0.388	100	255
Pulgul WWTP												
PPS06	2	TRURO & FRASER	FLYGT	NT3315-180-HT457		37	1450	11.452	dry	-2.658	300	2038
PPS07	2	CUNNINGHAM ST	FORRERS	4SW 13/3 NCD		22	1450	11.452	dry	-2.892	200	462
PPS08	2	HIBISCUS ST	FLYGT	NP3127.181MT		5.9	1445	1.19	wet	-2.88	200	852
PPS09	2	ESPLANADE & GUARD ST	KSB AJAX	K150-350NCD	270	33	1460	9.013	dry	-3.757	300	718
EPS10	2	BOUNDARY RD	FLYGT	NP3102.180 460- and NP3104.180M			960	2.54	wet	14.907	100	623

Pump Station	No. OF Pumps	Location	Make	Model	Impellor Diameter (mm)	Power Rating (KW)	RPM	Wet Well Area (m^2)	Well Type (Wet or Dry)	Wet Well Invert Level (mAHD)	Diameter of Rising Main (mm)	Length of Rising Main (m)
PPS11	2	MILLER ST	FLYGT	NP3127.181HT	235	5.9	1450	2.54	wet	-1.652	100	293
PPS12	2	BOAT HARBOUR DR	FORRERS	NEW PUMPS JUST INSTALLED				2.54	wet	0.342	150	641
PPS14	2	DENMAN CAMP RD	FLYGT	3171-181-0161-451		33	1460		wet	12.65	200+300	1173
PPS24	2	TRURO ST EAST	FLYGT	NP3085.180M		3	1445	2.54	wet	-2.137	150	97
PPS26	2	MARGRET ST	FLYGT	3085.181		2.7	1400	2.54	wet	-1.641	100	30
PPS34	2	ESPLANADE & MOOLYIR ST	KSB AJAX	K200-360NCD		45	1450	25.87	dry	-4.232	300	310
PPS36	2	ALEXANDER ST	KSB AJAX	FE80-200TLC		3.4	1410	2.54	wet	-2.439	100	72
PPS37	1	ELIZABETH ST (ELIZA'S)	ABS	AFP002/100/132/1			2850		wet	1.316	100	153
EPS41	1	RAWARD ST AFL CLUB	FLYGT	3067.170-0012		1.2	3000	1.13	wet	15.039	80	452
PPS47	2	COLYTON ST	FLYGT	CP3085-181				2.54	wet	14.031	100	405
PPS49	2	SILKWOOD DR	KSB	F80-220/044ULG-180		3.7	1400	2.54	wet	12.355	100	336
PPS56	2	ANNE ST (ANEMBO LAKES)	FLYGT	CP3152.181.HT454	275	9	1450	2.41	wet	-3.369	150&100	79.7+260.3
PPS57	2	HOOD ST	FLYGT	CP3085.181MT432		2.7	1400	2.54	wet	-2.085	100	194
PPS59	2	ELLEN GOWAN ST	KSB	NF80-220/044ULG-180		3.7	1360	2.54	wet	2.661	100	501
PPS70	2	ALEXANDER LAKES	KSB AJAX	KRT AMAREX S50-160 and NS50-172/0122 ULG-		2.1	2900	2.54		-2.345	100	194
PPS71	2	TORQUAY WOODS	KSB	AMAREX F80-210/034U2G		3.15	1405			11.065	100	429
PPS79	2	DOOLONG SOUTH RD		Forrers E100-340	342	25.5	1455			6.735	150+300	2180
PPS80	2	AIRPORT INDUSTRIAL ESTATE	FLYGT	CP3085.183HT		2.4	2835			4.936	100	493
PPS90												
PPS35	2	PULGUL ST	KSB AJAX	K200.360 NCD	321	45	1460	25.87		-3.98	300+300	927
PPS23	2	MAIN ST	FLYGT	CP3152HT	298	14	1450			14.15	225	784
Toogoom WWTP												
TGMPS17	1	JEPPERSON RD TOOGOOM	KSB AJAX	E100-280TLC		7.5		1.13	wet	-1.121	100	578
TGMPS32	1	MORRIS CT TOOGOOM	FORRERS	4L10-NSC		1.6	960	2.54	wet	-1.542	100	265
TGMPS44	2	O'REAGEN'S CREEK RD	FLYGT	NP3102.181 SH		4.2	2860	2.54	wet	0.091	150	1447
TGMPS45	2	O'REAGEN'S CK RD NURSERY	KSB AJAX	KRT E100-250/54UGS-220		5.5	1440		wet	0.741	100	541
TGMPS61	2	KINGFISHER PDE TOOGOOM	ABS	AF60-4-CB52		7.5	1450	2.54	wet	-2.452	100	310
TGMPS74	2	FRASER WATERS	FLYGT	NP3153.180	250	7.5	1460			-3.25	150	1186
TGMPS75	2	FRASER WATERS	FLYGT	NP3085.182	155	2	1390			-2.815	225	4
TGMPS76	2	FRASER WATERS	FLYGT	NP3085.182	150	2	1390			-2.964	150	2

Pump Station	No. OF Pumps	Location	Make	Model	Impellor Diameter (mm)	Power Rating (KW)	RPM	Wet Well Area (m^2)	Well Type (Wet or Dry)	Wet Well Invert Level (mAHD)	Diameter of Rising Main (mm)	Length of Rising Main (m)
TGMPS78	2	12 MILE BEACH TOOGOOM	FLYGT	NP3085.182MT		2	1390			-1.43	100	86
Torbanlea WWTP												
TORPS60	2	UNION ST TORBANLEA	FORRERS	4SX10-3		7.5	1450	2.54	wet	20.983	100	587
TORPS65	1	TORBANLEA RACECOURSE	GRUNDFOS	9600 1387			2900	1.77				

Table 2 - Pump Station Projected Requirements

								2011				2016				2021				2026				2031			
SPS	**2011**	**2016**	**2021**	**2026**	**2031**	**Contributing SPS's**	**Rising Main Diameter (mm)**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**
Aubinville WWTP	***11085.2***	***11614.8***	***12060.7***	***12521.7***	***13007.3***		225																				
S61 (FMB30)	0.0	0.0	0.0	0.0	0.0	S60	150	0.0				0.0				0.0				0.0				0.0			
S60	0.0	0.0	0.0	0.0	0.0		300	0.0				0.0				0.0				0.0				0.0			
S62	0.0	0.0	0.0	481.0	963.0	S61	100	0.0				0.0				0.0				481.0	0.1772	12.3	12.5	963.0	0.3548	22.0	25.1
APS32a (FMB03)	0.0	61.1	146.7	238.5	299.6		150	0.0				61.1	0.2754	2.2	2.2	146.7	0.5754	4.5	4.5	238.5	0.8660	6.8	6.8	299.6	1.0492	8.2	8.2
S53 (FMB09)	0.0	0.0	0.0	0.0	0.0		150	0.0				0.0				0.0				0.0				0.0			
S51 (FMB09b)	0.0	31.9	70.2	105.3	140.4		150	0.0				31.9	0.0708	1.3	1.3	70.2	0.1376	2.4	2.4	105.3	0.1935	3.4	3.4	140.4	0.2465	4.4	4.4
S63 (FMB09a)	0.0	0.0	0.0	0.0	0.0		150	0.0				0.0				0.0				0.0				0.0			
S55 (FMB15)	0.0	52.9	88.2	177.6	201.5			0.0	0.0000			52.9	0.1084	1.9	1.9	88.2	0.1667	2.9	2.9	177.6	0.3004	5.3	5.3	201.5	0.3340	5.9	5.9
APS01	587.2	587.2	587.2	587.2	587.2		225.0	587.2	0.3846	14.5	15.3	587.2	0.3846	14.5	15.3	587.2	0.3846	14.5	15.3	587.2	0.3846	14.5	15.3	587.2	0.3846	14.5	15.3
APS02	2431.5	2508.1	2528.8	2535.8	2560.6	APS01, APS05, APS13, APS14	300.0	4648.3	1.7379	103.2	122.8	4935.3	1.8845	112.0	133.2	5190.5	2.0157	120.2	142.5	5373.2	2.1157	126.6	149.5	5615.9	2.2402	134.2	158.4
APS03	2124.3	2146.3	2170.4	2173.6	2178.4	APS04, APS16, APS33	300.0	2474.9	0.9295	53.2	65.7	2496.9	0.9376	53.6	66.3	2521.0	0.9465	54.0	66.9	2524.2	0.9477	54.0	67.0	2529.0	0.9494	54.1	67.1
APS04	41.1	41.1	41.1	41.1	41.1		100.0	41.1	0.1973	1.5	1.5	41.1	0.1973	1.5	1.5	41.1	0.1973	1.5	1.5	41.1	0.1973	1.5	1.5	41.1	0.1973	1.5	1.5
APS05	479.9	479.9	479.9	479.9	479.9		200.0	479.9	0.3978	12.2	12.5	479.9	0.3978	12.2	12.5	479.9	0.3978	12.2	12.5	479.9	0.3978	12.2	12.5	479.9	0.3978	12.2	12.5
APS06	130.9	130.9	130.9	130.9	130.9		150.0	130.9	0.2324	4.1	4.1	130.9	0.2324	4.1	4.1	130.9	0.2324	4.1	4.1	130.9	0.2324	4.1	4.1	130.9	0.2324	4.1	4.1
APS07	919.0	922.2	922.2	925.2	927.9	APS08	375.0	1321.7	0.3738	38.5	41.3	1324.9	0.3745	38.6	41.4	1324.9	0.3782	39.0	41.8	1327.9	0.3796	39.1	41.9	1330.6	0.3923	40.5	43.3
APS08	402.7	402.7	402.7	402.7	402.7	APS09, APS22, APS24	225.0	611.3	0.4364	17.4	17.4	611.3	0.4364	17.4	17.4	611.3	0.4465	17.8	17.8	611.3	0.4485	17.8	17.8	611.3	0.4821	19.2	19.2
APS09	175.6	175.6	175.6	175.6	175.6		100.0	175.6	0.6694	5.3	5.3	175.6	0.6694	5.3	5.3	175.6	0.6694	5.3	5.3	175.6	0.6694	5.3	5.3	175.6	0.6694	5.3	5.3
APS10	698.1	701.4	728.4	753.7	786.1	FMB15, APS11, APS12, APS20, APS21	250.0	1061.5	0.6019	28.2	29.5	1133.8	0.6505	30.5	31.9	1205.7	0.6905	32.3	33.9	1324.2	0.7538	35.3	37.0	1424.3	0.8068	37.7	39.6
APS11	92.4	92.4	92.4	92.4	129.1		100.0	92.4	0.3900	3.1	3.1	92.4	0.3900	3.1	3.1	92.4	0.3900	3.1	3.1	92.4	0.3900	3.1	3.1	129.1	0.5168	4.1	4.1
APS12	231.7	247.8	257.4	261.2	268.3		100.0	231.7	0.8452	6.6	6.6	247.8	0.8944	7.0	7.0	257.4	0.9234	7.3	7.3	261.2	0.9349	7.3	7.3	268.3	0.9562	7.5	7.5
APS13	996.5	1106.1	1224.9	1303.5	1425.2	FMB09, APS28, APS31, APS32	200&225	1149.7	1.0102	28.4	31.7	1360.1	1.2765	36.0	40.1	1594.6	1.5546	43.9	48.8	1770.3	1.7737	50.2	55.7	1988.2	2.0334	57.4	63.9
APS15	217.1	217.1	217.1	217.1	217.1	APS23	200&375	492.1	1.1024	34.6	34.6	492.1	1.1671	36.7	36.7	492.1	1.1671	36.7	36.7	492.1	1.2369	38.9	38.9	492.1	1.2369	38.9	38.9
APS16	291.0	291.0	291.0	291.0	291.0		150.0	291.0	0.4550	8.0	8.0	291.0	0.4550	8.0	8.0	291.0	0.4550	8.0	8.0	291.0	0.4550	8.0	8.0	291.0	0.4550	8.0	8.0
APS17	185.9	269.9	269.9	269.9	269.9	APS25, APS29, APS30	200.0	431.8	0.4163	13.1	13.1	515.8	0.4810	15.1	15.1	515.8	0.4810	15.1	15.1	520.5	0.4877	15.3	15.3	520.5	0.4877	15.3	15.3
APS18	234.5	234.5	234.5	234.5	234.5	APS17, APS27	200.0	441.9	0.6583	20.7	20.7	525.9	0.7230	22.7	22.7	525.9	0.7230	22.7	22.7	525.9	0.7297	22.9	22.9	525.9	0.7297	22.9	22.9
APS20	16.7	16.7	16.7	16.7	16.7		100.0	16.7	0.0925	0.7	0.7	16.7	0.0925	0.7	0.7	16.7	0.0925	0.7	0.7	16.7	0.0925	0.7	0.7	16.7	0.0925	0.7	0.7
APS21	22.6	22.6	22.6	22.6	22.6		50.0	22.6	0.4771	0.9	0.9	22.6	0.4771	0.9	0.9	22.6	0.4771	0.9	0.9	22.6	0.4771	0.9	0.9	22.6	0.4771	0.9	0.9
APS22	13.2	13.2	13.2	13.2	13.2		80.0	13.2	0.1186	0.6	0.6	13.2	0.1186	0.6	0.6	13.2	0.1186	0.6	0.6	13.2	0.1186	0.6	0.6	13.2	0.1186	0.6	0.6
APS23	275.0	275.0	275.0	275.0	275.0	APS18	200.0	509.5	0.9024	28.3	28.3	509.5	0.9671	30.4	30.4	509.5	0.9671	30.4	30.4	564.5	1.0368	32.6	32.6	564.5	1.0368	32.6	32.6
APS24	19.8	19.8	19.8	19.8	19.8	FMB16	100.0	21.2	0.1182	0.9	0.9	21.2	0.1182	0.9	0.9	30.3	0.1693	1.3	1.3	32.4	0.1797	1.4	1.4	72.4	0.3495	2.7	2.7

								2011				2016				2021				2026				2031			
SPS	**2011**	**2016**	**2021**	**2026**	**2031**	**Contributing SPS's**	**Rising Main Diameter (mm)**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**
APS25	209.5	209.5	209.5	209.5	209.5		150.0	209.5	0.3451	6.1	6.1	209.5	0.3451	6.1	6.1	209.5	0.3451	6.1	6.1	209.5	0.3451	6.1	6.1	209.5	0.3451	6.1	6.1
APS26	7.3	7.3	7.3	7.3	39.3		100.0	7.3	0.0461	0.4	0.4	7.3	0.0461	0.4	0.4	7.3	0.0461	0.4	0.4	7.3	0.0461	0.4	0.4	39.3	0.1900	1.5	1.5
APS27	21.5	21.5	21.5	21.5	21.5		100.0	21.5	0.1144	0.9	0.9	21.5	0.1144	0.9	0.9	21.5	0.1144	0.9	0.9	21.5	0.1144	0.9	0.9	21.5	0.1144	0.9	0.9
APS28	51.7	102.0	161.3	219.8	276.8		100.0	51.7	0.2393	1.9	1.9	102.0	0.4238	3.3	3.3	161.3	0.6232	4.9	4.9	219.8	0.8086	6.4	6.4	276.8	0.9816	7.7	7.7
APS29	2.4	2.4	2.4	7.1	7.1		150.0	2.4	0.0080	0.1	0.1	2.4	0.0080	0.1	0.1	2.4	0.0080	0.1	0.1	7.1	0.0200	0.4	0.4	7.1	0.0200	0.4	0.4
APS30	34.0	34.0	34.0	34.0	34.0		100&150	34.0	0.0748	1.3	1.3	34.0	0.0748	1.3	1.3	34.0	0.0748	1.3	1.3	34.0	0.0748	1.3	1.3	34.0	0.0748	1.3	1.3
APS31	13.3	30.7	38.7	42.2	45.2		150.0	13.3	0.0339	0.6	0.6	30.7	0.0686	1.2	1.2	38.7	0.0834	1.5	1.5	42.2	0.0897	1.6	1.6	45.2	0.0950	1.7	1.7
APS32	88.2	89.4	99.5	99.5	100.6	APS26	150.0	95.5	0.1872	3.3	3.3	157.8	0.3115	5.5	5.5	253.5	0.4607	8.1	8.1	345.3	0.5899	10.4	10.4	439.5	0.7370	13.0	13.0
Burrum Heads WWTP	***950.7***	***1079.0***	***1201.1***	***1336.7***	***1357.5***																						
BHPS50	68.4	74.4	80.0	95.0	96.0	BHPS51	150.0	138.6	0.2722	4.8	4.8	164.6	0.3143	5.6	5.6	197.2	0.3653	6.5	6.5	222.2	0.4043	7.1	7.1	223.2	0.4058	7.2	7.2
BHPS51	70.2	90.2	117.2	127.2	127.2		100.0	70.2	0.3095	2.4	2.4	90.2	0.3822	3.0	3.0	117.2	0.4764	3.7	3.7	127.2	0.5103	4.0	4.0	127.2	0.5103	4.0	4.0
BHPS52	49.0	51.0	53.0	54.0	55.2	BHPS53	150.0	95.2	1.3353	23.6	23.6	99.2	1.4456	25.5	25.5	104.2	1.5466	27.3	27.3	106.2	1.6509	29.2	29.2	107.4	1.6801	29.7	29.7
BHPS53	46.2	48.2	51.2	52.2	52.2	BHPS54	100.0	229.3	0.5483	21.8	21.8	232.7	0.5958	23.7	23.7	237.6	0.6391	25.4	25.4	239.9	0.6847	27.2	27.2	242.3	0.6967	27.7	27.7
BHPS54	183.1	184.5	186.4	187.7	190.1	BHPS55	100.0	474.6	0.5053	20.1	20.1	484.2	0.5512	21.9	21.9	497.6	0.5922	23.5	23.5	511.3	0.6371	25.3	25.3	520.9	0.6491	25.8	25.8
BHPS55	291.5	299.7	311.2	323.6	330.8	BHPS56	100.0	472.9	1.8646	14.6	14.6	520.1	2.0926	16.4	16.4	561.6	2.2943	18.0	18.0	612.0	2.5171	19.8	19.8	618.2	2.5704	20.2	20.2
BHPS67	181.4	220.4	250.4	288.4	287.4	BHPS85	150.0	211.4	0.3730	6.6	6.6	270.4	0.4636	8.2	8.2	320.4	0.5382	9.5	9.5	378.4	0.6212	11.0	11.0	387.4	0.6356	11.2	11.2
BHPS81	30.9	60.6	81.7	118.6	118.6		150.0	30.9	0.0690	1.2	1.2	60.6	0.1216	2.1	2.1	81.7	0.1563	2.8	2.8	118.6	0.2138	3.8	3.8	118.6	0.2138	3.8	3.8
BHPS85	30.0	50.0	70.0	90.0	100.0		150.0	30.0	0.0673	1.2	1.2	50.0	0.1034	1.8	1.8	70.0	0.1372	2.4	2.4	90.0	0.1695	3.0	3.0	100.0	0.1853	3.3	3.3
Eli Creek WWTP	***6588.4***	***6959.3***	***7517.7***	***8097.4***	***8794.0***																						
EPS02	182.5	189.8	197.0	198.6	199.8		100.0	182.5	0.6915	5.4	5.4	189.8	0.7146	5.6	5.6	197.0	0.7374	5.8	5.8	198.6	0.7424	5.8	5.8	199.8	0.7462	5.9	5.9
EPS0301	298.9	307.5	313.4	314.0	314.0	EPS13	200.0	330.8	0.4745	14.9	14.9	340.6	0.4879	15.3	15.3	353.0	0.5046	15.9	15.9	354.2	0.5069	15.9	15.9	354.2	0.5078	16.0	16.0
EPS04	608.3	558.3	570.2	578.7	583.9	EPS0301, EPS05, EPS27, EPS48	375.0	2751.8	1.5620	132.3	172.5	2828.1	1.6620	139.2	183.6	2995.9	1.7946	149.9	198.2	3153.6	1.9314	160.6	213.3	3283.8	2.0956	173.3	231.4
EPS13	31.9	33.1	39.6	40.2	40.2	EPS02	100.0	214.4	0.8509	6.7	6.7	222.9	0.8791	6.9	6.9	236.6	0.9286	7.3	7.3	238.8	0.9361	7.4	7.4	240.0	0.9398	7.4	7.4
EPS27	255.4	260.6	277.6	290.2	291.1		100.0	255.4	0.9174	7.2	7.2	260.6	0.9331	7.3	7.3	277.6	0.9840	7.7	7.7	290.2	1.0215	8.0	8.0	291.1	1.0241	8.0	8.0
EPS48	0.7	5.7	15.6	19.9	19.9		100&300	0.7	0.0064	0.1	0.1	5.7	0.0374	0.3	0.3	15.6	0.0873	0.7	0.7	19.9	0.1072	0.8	0.8	19.9	0.1072	0.8	0.8
EPS64	4.6	4.6	4.6	4.6	4.6		50.0	4.6	0.1250	0.2	0.2	4.6	0.1250	0.2	0.2	4.6	0.1250	0.2	0.2	4.6	0.1250	0.2	0.2	4.6	0.1250	0.2	0.2
EPS5A	1588.5	1696.0	1819.1	1950.8	2074.9	EPS64	300+300	1593.1	0.9803	95.1	135.8	1700.6	1.0543	102.3	146.1	1823.7	1.1483	111.4	159.1	1955.4	1.2520	121.5	173.5	2079.5	1.3815	134.1	191.4
Nikenbah WWTP	***6974.6***	***7638.3***	***8327.0***	***9264.2***	***10406.6***																	0.0	0.0				
S49	0.0	0.0	634.0	634.0	634.0	S160,S162 S167	450	0.0				0.0	0.1038	15.5	16.5	883.0	0.1038	15.5	16.5	1367.0	0.1038	15.5	16.5	2727.0	0.1038	15.5	16.5
S160	0.0	0.0	0.0	0.0	157.0		225	0.0				0.0				0.0				0.0				157.0	0.1203	4.8	4.8
S162	0.0	0.0	41.0	525.0	1728.0		150	0.0				0.0	0.0875	1.5	1.5	41.0	2.5465	36.0	45.0	525.0	0.7737	13.2	13.7	1728.0	2.5465	36.0	45.0
S167	0.0	0.0	208.0	208.0	208.0		100	0.0				0.0	0.7719	6.1	6.1	208.0	0.7719	6.1	6.1	208.0	0.7719	6.1	6.1	208.0	0.7719	6.1	6.1
S130a	0.0	0.0	0.0	0.0	0.0	S85	150	0.0				0.0				0.0				0.0				0.0			

								2011				2016				2021				2026				2031			
SPS	**2011**	**2016**	**2021**	**2026**	**2031**	**Contributing SPS's**	**Rising Main Diameter (mm)**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**
S84	0.0	0.0	0.0	0.0	233.0	S130, S130a	375	0.0				0.0				0.0				0.0				233.0	0.0604	6.7	6.7
S85	0.0	0.0	0.0	0.0	0.0		150	0.0				0.0				0.0				0.0				0.0			
S130	0.0	0.0	0.0	0.0	0.0		100	0.0				0.0				0.0				0.0				0.0			
EPS01	70.4	71.4	71.4	72.0	72.0		100.0	70.4	0.3103	2.4	2.4	71.4	0.3140	2.5	2.5	71.4	0.3162	2.5	2.5	72.0	0.3162	2.5	2.5	72.0	0.3162	2.5	2.5
EPS21	36.2	39.2	39.4	39.5	39.7		100.0	36.2	0.1773	1.4	1.4	39.2	0.1896	1.5	1.5	39.4	0.1904	1.5	1.5	39.5	0.1908	1.5	1.5	39.7	0.1916	1.5	1.5
EPS22	112.4	116.6	116.7	116.9	117.1	PPS84	100.0	253.4	1.0165	8.0	8.0	368.7	1.3817	10.9	10.9	387.2	1.4375	11.3	11.3	395.5	1.4624	11.5	11.5	407.3	1.4975	11.8	11.8
EPS28	103.0	108.0	108.0	108.0	108.0		100.0	103.0	0.4273	3.4	3.4	108.0	0.4447	3.5	3.5	108.0	0.4447	3.5	3.5	108.0	0.4447	3.5	3.5	108.0	0.4447	3.5	3.5
EPS29	29.6	49.1	50.3	53.0	53.0		100.0	29.6	0.1497	1.2	1.2	49.1	0.2291	1.8	1.8	50.3	0.2338	1.8	1.8	53.0	0.2443	1.9	1.9	53.0	0.2443	1.9	1.9
EPS30	1794.4	1847.3	1875.0	1899.7	1911.6	EPS01, EPS28, EPS77, EP582	200.0	2084.2	0.8010	47.0	56.6	2161.4	0.8309	48.7	58.7	2193.8	0.8432	49.3	59.6	2219.1	0.8523	49.8	60.2	2231.0	0.8567	50.0	60.6
EPS46	255.0	263.1	263.2	263.3	263.5		100.0	255.0	0.9162	7.2	7.2	263.1	0.9406	7.4	7.4	263.2	0.9409	7.4	7.4	263.3	0.9412	7.4	7.4	263.5	0.9418	7.4	7.4
EPS58	119.0	121.3	121.3	121.3	121.3	EPS69	150.0	271.3	0.4784	8.5	8.5	274.6	0.4833	8.5	8.5	274.7	0.4835	8.5	8.5	274.8	0.4836	8.5	8.5	274.9	0.4838	8.5	8.5
EPS62	75.9	100.7	111.4	124.0	139.3		100.0	75.9	0.3305	2.6	2.6	100.7	0.4193	3.3	3.3	111.4	0.4565	3.6	3.6	124.0	0.4995	3.9	3.9	139.3	0.5509	4.3	4.3
EPS66	124.5	125.5	125.6	125.6	125.7		150.0	124.5	0.2228	3.9	3.9	125.5	0.2243	4.0	4.0	125.6	0.2244	4.0	4.0	125.6	0.2244	4.0	4.0	125.7	0.2246	4.0	4.0
EPS69	152.3	153.3	153.4	153.5	153.6		150.0	152.3	0.2639	4.7	4.7	153.3	0.2654	4.7	4.7	153.4	0.2655	4.7	4.7	153.5	0.2657	4.7	4.7	153.6	0.2658	4.7	4.7
EPS72	68.0	70.2	72.0	73.2	73.2		150&100	68.0	0.1339	2.4	2.4	70.2	0.1376	2.4	2.4	72.0	0.1405	2.5	2.5	73.2	0.1425	2.5	2.5	73.2	0.1425	2.5	2.5
EPS73	337.6	352.6	352.6	352.6	352.6	EPS86	150.0	417.6	0.6692	11.8	11.8	462.6	0.7355	13.0	13.0	532.6	0.8386	14.8	14.8	615.6	0.9527	16.8	16.8	615.6	0.9527	16.8	16.8
EPS77	32.0	46.7	47.0	47.0	47.0		100.0	32.0	0.1598	1.3	1.3	46.7	0.2197	1.7	1.7	47.0	0.2208	1.7	1.7	47.0	0.2208	1.7	1.7	47.0	0.2208	1.7	1.7
EPS82	84.4	88.1	92.4	92.4	92.4		100.0	84.4	0.3614	2.8	2.8	88.1	0.3745	2.9	2.9	92.4	0.3900	3.1	3.1	92.4	0.3900	3.1	3.1	92.4	0.3900	3.1	3.1
NPS83 (+EPS23)	2567.6	2903.5	3453.6	4186.6	5036.6	EPS21, EPS22, EPS29, EPS30, EPS46, EPS58, EPS62, EPS66, EPS72, EPS73, EPS87, PRIV_EPS1	450.0	5631.6	1.2208	160.4	194.2	6103.3	1.3354	174.1	212.4	6732.0	1.4606	188.4	232.3	7575.7	1.6275	208.3	258.8	8453.6	1.8144	229.3	288.6
PPS84	141.0	252.1	270.5	278.6	290.2		100.0	141.0	0.5565	4.4	4.4	252.1	0.9074	7.1	7.1	270.5	0.9628	7.6	7.6	278.6	0.9870	7.8	7.8	290.2	1.0215	8.0	8.0
EPS86	80.0	110.0	180.0	263.0	263.0		150.0	80.0	0.1535	2.7	2.7	110.0	0.2006	3.5	3.5	180.0	0.3038	5.4	5.4	263.0	0.4179	7.4	7.4	263.0	0.4179	7.4	7.4
EPS87	34.4	36.3	65.7	125.3	125.3		100.0	34.4	0.1699	1.3	1.3	36.3	0.1777	1.4	1.4	65.7	0.2927	2.3	2.3	125.3	0.5039	4.0	4.0	125.3	0.5039	4.0	4.0
Pulgul WWTP	***10052.7***	***10862.6***	***12155.6***	***13586.0***	***15532.3***																						
PPS06	1208.7	1283.9	1424.2	1553.9	1670.0	PPS07, PPS56	300.0	2212.0	2.2189	64.1	69.7	2345.4	2.3501	67.4	73.8	2609.6	2.5780	72.7	81.0	2794.6	2.7404	76.4	86.1	2942.6	2.8645	79.2	90.0
PPS07	590.9	641.8	762.1	815.8	845.7	PPS24, PPS70	200.0	818.3	0.7840	23.8	24.6	880.1	0.8381	25.3	26.3	1010.7	0.9465	28.0	29.7	1073.0	0.9989	29.3	31.4	1102.9	1.0237	29.9	32.2
PPS08	710.6	710.5	779.7	803.8	820.4		200.0	710.6	1.0472	17.0	18.5	710.5	1.0470	17.0	18.5	779.7	1.1490	18.4	20.3	803.8	1.1845	18.9	20.9	820.4	1.2090	19.2	21.4
PPS09	458.7	469.5	478.5	500.8	553.3		300.0	458.7	0.1690	11.8	11.9	469.5	0.1730	12.0	12.2	478.5	0.1763	12.2	12.5	500.8	0.1845	12.7	13.0	553.3	0.2038	13.8	14.4
EPS10	57.0	60.0	62.5	63.8	65.5	PPS41	100.0	77.3	0.3687	2.9	2.9	80.7	0.3820	3.0	3.0	84.2	0.3960	3.1	3.1	86.8	0.4067	3.2	3.2	90.0	0.4197	3.3	3.3
PPS11	330.7	341.4	353.5	384.8	433.9	PPS37	100.0	338.2	1.1873	9.3	9.3	349.0	1.2188	9.6	9.6	361.8	1.2573	9.9	9.9	394.0	1.3511	10.6	10.6	443.6	1.4972	11.7	11.8
PPS12	447.8	454.6	461.8	467.6	473.0		150.0	447.8	0.6599	11.6	11.7	454.6	0.6699	11.7	11.8	461.8	0.6805	11.9	12.0	467.6	0.6891	12.0	12.2	473.0	0.6970	12.1	12.3
PPS14	1386.9	1416.0	1446.1	1480.8	1518.9	PPS10	200+300	1443.9	0.5519	32.8	39.0	1476.0	0.5641	33.4	39.9	1508.6	0.5768	34.1	40.8	1544.6	0.5907	34.8	41.8	1584.4	0.6062	35.6	42.9
PPS24	174.4	177.4	184.5	185.4	185.4	PPS26	150.0	233.3	0.4145	7.3	7.3	238.3	0.4221	7.5	7.5	245.4	0.4322	7.6	7.6	246.3	0.4335	7.7	7.7	246.3	0.4335	7.7	7.7
PPS26	58.9	60.9	60.9	60.9	60.9		100.0	58.9	0.2670	2.1	2.1	60.9	0.2746	2.2	2.2	60.9	0.2746	2.2	2.2	60.9	0.2746	2.2	2.2	60.9	0.2746	2.2	2.2

								2011				2016				2021				2026				2031			
SPS	**2011**	**2016**	**2021**	**2026**	**2031**	**Contributing SPS's**	**Rising Main Diameter (mm)**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**	**ED**	**Velocity in RM (m/s)**	**1P**	**2P**
PPS34	1300.3	1445.8	1589.8	1809.7	2076.6	PPS09	300.0	1759.0	0.6480	40.1	45.8	1915.3	0.7056	43.0	49.9	2068.3	0.7620	45.8	53.9	2310.5	0.8512	50.1	60.2	2629.9	0.9689	55.8	68.5
PPS36	83.7	94.5	95.3	96.6	98.2		100.0	83.7	0.3589	2.8	2.8	94.5	0.3975	3.1	3.1	95.3	0.4003	3.1	3.1	96.6	0.4049	3.2	3.2	98.2	0.4105	3.2	3.2
PPS37	7.5	7.6	8.3	9.2	9.7		100.0	7.5	0.0472	0.4	0.4	7.6	0.0477	0.4	0.4	8.3	0.0514	0.4	0.4	9.2	0.0560	0.4	0.4	9.7	0.0586	0.5	0.5
EPS41	20.3	20.7	21.7	23.0	24.5		80.0	20.3	0.1703	0.9	0.9	20.7	0.1731	0.9	0.9	21.7	0.1801	0.9	0.9	23.0	0.1891	1.0	1.0	24.5	0.1995	1.0	1.0
PPS47	158.9	159.1	161.0	161.0	161.0		100.0	158.9	0.6154	4.8	4.8	159.1	0.6161	4.8	4.8	161.0	0.6222	4.9	4.9	161.0	0.6222	4.9	4.9	161.0	0.6222	4.9	4.9
PPS49	73.0	78.0	96.0	112.0	130.2	PPS71	100.0	123.0	0.5525	4.3	4.3	132.0	0.5864	4.6	4.6	153.0	0.6625	5.2	5.2	169.0	0.7183	5.6	5.6	187.2	0.7802	6.1	6.1
PPS56	412.4	419.7	423.3	424.9	426.9	PPS36	150&100	496.1	0.7697	13.6	13.6	514.2	0.7959	14.1	14.1	518.6	0.8017	14.2	14.2	521.5	0.8061	14.2	14.2	525.1	0.8116	14.3	14.3
PPS57	82.6	96.7	99.0	106.0	106.0		100.0	82.6	0.3549	2.8	2.8	96.7	0.4052	3.2	3.2	99.0	0.4133	3.2	3.2	106.0	0.4378	3.4	3.4	106.0	0.4378	3.4	3.4
PPS59	81.7	102.7	115.9	123.0	130.6	PPS80	100.0	84.6	0.3729	2.9	2.9	112.0	0.4828	3.8	3.8	129.7	0.5507	4.3	4.3	142.0	0.5992	4.7	4.7	156.0	0.6534	5.1	5.1
PPS70	53.0	60.9	64.1	71.8	71.8		100.0	53.0	0.6156	1.9	1.9	60.9	0.6920	2.2	2.2	64.1	0.7224	2.3	2.3	71.8	0.7948	2.5	2.5	71.8	0.7948	2.5	2.5
PPS71	50.0	54.0	57.0	57.0	57.0		100.0	50.0	0.2327	1.8	1.8	54.0	0.2482	1.9	1.9	57.0	0.2598	2.0	2.0	57.0	0.2598	2.0	2.0	57.0	0.2598	2.0	2.0
PPS79	177.7	463.6	806.7	1373.5	2523.4	PPS90	150+300	191.5	0.3355	5.9	5.9	482.4	0.7286	12.7	12.9	845.4	1.2722	20.4	22.5	1468.4	2.2013	32.8	38.9	2699.4	4.0167	54.8	71.0
PPS80	2.9	9.3	13.8	19.0	25.4		100.0	2.9	0.0212	0.2	0.2	9.3	0.0565	0.4	0.4	13.8	0.0788	0.6	0.6	19.0	0.1031	0.8	0.8	25.4	0.1316	1.0	1.0
PPS35A	915.6	969.0	1142.4	1289.0	1357.9		300+300		0.0000				0.0000				0.0000				0.0000				0.0000		
Toogoom WWTP	***588.4***	***679.1***	***804.2***	***836.6***	***842.0***																						
TGMPS17	141.3	145.5	153.8	158.8	160.8	TGMPS32	100.0	167.3	0.8490	6.7	6.7	182.7	0.9227	7.2	7.2	203.0	1.0064	7.9	7.9	211.8	1.0375	8.1	8.1	213.8	1.0441	8.2	8.2
TGMPS32	26.0	37.2	49.2	53.0	53.0	TGMPS61	100.0	57.4	0.2915	2.3	2.3	71.6	0.3513	2.8	2.8	85.6	0.4076	3.2	3.2	89.4	0.4225	3.3	3.3	89.4	0.4225	3.3	3.3
TGMPS44	46.0	48.0	50.0	50.0	50.0	TGMPS17, TGMPS45	150.0	276.8	0.7597	13.4	13.4	300.3	0.8529	15.1	15.1	351.4	0.9773	17.3	17.3	374.0	1.0167	18.0	18.0	376.4	1.0202	18.0	18.0
TGMPS45	89.5	106.8	147.6	165.2	165.6	TGMPS78	100.0	147.5	0.6433	5.1	5.1	182.8	0.7714	6.1	6.1	237.6	0.9599	7.5	7.5	255.2	1.0173	8.0	8.0	255.6	1.0186	8.0	8.0
TGMPS61	31.4	34.4	36.4	36.4	36.4		100.0	31.4	0.1573	1.2	1.2	34.4	0.1699	1.3	1.3	36.4	0.1781	1.4	1.4	36.4	0.1781	1.4	1.4	36.4	0.1781	1.4	1.4
TGMPS74	103.0	117.0	143.0	146.0	148.0	TGMPS75	150	123.0	0.1369	6.7	6.7	148.0	0.1581	7.8	7.8	182.0	0.1843	9.0	9.0	187.0	0.1878	9.2	9.2	189.0	0.1894	9.3	9.3
TGMPS75	20.0	31.0	39.0	41.0	41.0	TGMPS76	225.0	93.2	0.0846	3.4	3.4	114.2	0.1013	4.0	4.0	134.2	0.1163	4.6	4.6	137.2	0.1186	4.7	4.7	138.2	0.1193	4.7	4.7
TGMPS76	73.2	83.2	95.2	96.2	97.2		150.0	73.2	0.1425	2.5	2.5	83.2	0.1587	2.8	2.8	95.2	0.1777	3.1	3.1	96.2	0.1793	3.2	3.2	97.2	0.1809	3.2	3.2
TGMPS78	58.0	76.0	90.0	90.0	90.0		100.0	58.0	0.2636	2.1	2.1	76.0	0.3309	2.6	2.6	90.0	0.3815	3.0	3.0	90.0	0.3815	3.0	3.0	90.0	0.3815	3.0	3.0
Torbanlea WWTP	***136.1***	***139.9***	***143.1***	***143.1***	***143.1***																						
TORPS60	136.1	139.9	143.1	143.1	143.1		100.0	136.1	0.3773	3.0	3.0	139.9	0.3862	3.0	3.0	143.1	0.3936	3.1	3.1	143.1	0.3936	3.1	3.1	143.1	0.3936	3.1	3.1

APPENDIX 6 - TREATMENT

Table 1 Eli Creek WWTP Release Limits to Waterways

		Release limits - Water				Monitoring frequency required	Monitoring frequency (actual)
Monitoring points	**Quality Characteristics**	**Min**	**50th percentile**	**80th percentile**	**Max**		
M2 Outlet of the chlorination tank at the sewage treatment plant	5-day BOD (mg/L)	NA*	12	15	35	Weekly	Weekly
	Suspended Solids (mg/L)	NA*	15	25	45	Weekly	Weekly
	Dissolved Oxygen (mg/L)	2	NS*	NS*	NS*	Weekly	Weekly
	pH (pH units)	6.5	NS*	NS*	8.5	Weekly	Weekly
	E. Coli (CFU/100mL)	NA*	150	600	NS*	Weekly	Weekly
	Total Phosphorus (mg/L)	NA*	NS*	NS*	NS*	Monthly	Weekly
	Total Nitrogen (mg/L)	NA*	NS*	NS*	NS*	Monthly	Weekly

Table 2 Eli Creek WWTP Release Limits to Land

		Release limits - Land				Monitoring frequency required	Monitoring frequency (actual)
Monitoring points	**Quality Characteristics**	**Min**	**50th percentile**	**80th percentile**	**Max**		
M2 Outlet of the chlorination tank at the sewage treatment plant	5-day BOD (mg/L)	NA*	12	15	35	Monthly	Weekly
	E. Coli (CFU/100mL)	NA*	150	600	NS*	Monthly	Weekly
M6 Outlet of the final effluent storage area to the irrigation system	pH (pH units)	6.5	NS*	9.5	NS*	Monthly	Monthly
	Total Dissolved Salts (mg/L)	NA*	NS*	NS*	1560	Monthly	Monthly
	Sodium Absorption Ratio (SAR)	NA*	NS*	NS*	NS*	Monthly	Monthly
	Total Nitrogen (mg/L)	NA*	NS*	NS*	NS*	Monthly	Monthly
	Total Phosphorus (mg/L)	NA*	NS*	NS*	NS*	Monthly	Monthly

Table 3 Pulgul WWTP Release Limits to Waterways

		Release limits - Water				Monitoring frequency required	Monitoring frequency (actual)
Monitoring points	**Quality Characteristics**	**Min**	**50th percentile**	**80th percentile**	**Max**		
M1 & M2 **M1 - IDEA sewage treatment system outlet of the chlorination tank.** **M2 - oxidation ditch sewage treatment system outlet of the chlorination tank**	5-day BOD (mg/L)	NA*	12	15	35	Weekly	Weekly
	Suspended Solids (mg/L)	NA*	15	25	45	Weekly	Weekly
	Dissolved Oxygen (mg/L)	2	NS*	NS*	NS*	Weekly	Weekly
	pH (pH units)	6.5	NS*	NS*	8.5	Weekly	Weekly
	E. Coli (CFU/100mL)	NA*	150	600	NS*	Weekly	Weekly
	Total Phosphorus (mg/L)	NA*	7	NS*	10	Monthly	Weekly
	Total Nitrogen (mg/L)	NA*	10	NS*	15	Monthly	Weekly

Table 4 Pulgul WWTP Release Limits to Land

		Release limits - Land				Monitoring frequency required	Monitoring frequency (actual)
Monitoring points	**Quality Characteristics**	**Min**	**50th percentile**	**80th percentile**	**Max**		
M1 & M2 Outlet of the CCT at the sewage treatment plant	5-day BOD (mg/L)	NA*	12	15	35	Monthly	Weekly
	E. Coli (CFU/100mL)	NA*	150	600	NS*	Monthly	Weekly
M5 Outlet of the final effluent storage area to the irrigation system	pH (pH units)	6.5	NS*	9.5	NS*	Monthly	Monthly
	Total Dissolved Salts (mg/L)	NA*	NS*	NS*	1560	Monthly	Monthly
	Sodium Absorption Ratio (SAR)	NA*	NS*	NS*	NS*	Monthly	Monthly
	Total Nitrogen (mg/L)	NA*	NS*	NS*	NS*	Monthly	Monthly
	Total Phosphorus (mg/L)	NA*	NS*	NS*	NS*	Monthly	Monthly

Table 5 Nikenbah WWTP Release Limits to Land

		Release Limits - Land			Monitoring frequency required
Monitoring Point	**Quality Characteristics**	**Minimum**	**Median**	**Maximum**	
M1 Effluent discharge line downstream of MBR plant prior to storage in Lagoon	BOD(mg/L)	NS	10	20	Weekly
	Suspended Solids (mg/L)	NS	5	10	Weekly
	E Coli (organisms per 100mL)	NS	NS	10	Weekly
	pH (pH units)	6.5	NS	8.5	Weekly
	Electrical Conductivity (µS/cm)	NS	NS	1560	Weekly
M2 Outlet of Nikenbah Storage Lagoon to Irrigation	Sodium Absorption Ratio	NS	NS	NS	Monthly
	Total Nitrogen (mg/L)	NS	NS	NS	Monthly
	Total Phosphorus (mg/L)	NS	NS	NS	Monthly
M3 Outlet of CCT prior to discharge to discharge to Lagoon	E Coli (organisms per 100mL)	NS	NS	NS	Every 4 hours during a wet weather bypass event

Table 6 Aubinville WWTP Licence Release Limits to Mary River

Monitoring points	Discharge Point	Quality Characteristics	Release limits - Water			Monitoring frequency required
			Min	80th percentile	Max	
M1 Outlet of Chlorination tank at the sewage Treatment Plant	W1	BOD(mg/L)	NA	15	20	Weekly
	W1	Suspended Solids (mg/L)	NA	25	30	Weekly
	W1	pH (pH units)	6.5	NA	8.5	Weekly
	W1	Dissolved Oxygen (mg/L)	2	NA	NA	Weekly
	W1	Residual Chlorine (mg/L)	0.3	NA	0.7	Daily
	W1	Faecal Coliforms (faecal coliforms organisms per 100mL)	NA	NA	1000	Monthly
	W1	Total Nitrogen (mg/L)	NA	5	10	Monthly
	W1	Total Phosphorus (mg/L)	NA	1	2	Monthly

Table 7 Aubinville WWTP Licence Release Limits to Land

Monitoring Point	Discharge Location	Quality Characteristics	Release Limits - Land			Monitoring frequency required
			Minimum	80th percentile	Maximum	
M1 Outlet of Chlorination tank at the sewage Treatment Plant	W2	BOD(mg/L)	NA	15	20	Weekly
	W2	Suspended Solids (mg/L)	NA	25	30	Weekly
M1 Outlet of Chlorination tank at the sewage Treatment Plant, M2 Outlet of Effluent Storage Lagoon to the Irrigation System	W2	pH (pH units)	6.5	NA		Weekly
	W2	Dissolved Oxygen (mg/L)	2	NA	9	Weekly
M1 Outlet of Chlorination tank at the sewage Treatment Plant	W2	Residual Chlorine (mg/L)	3	NA	NA	Weekly
	W2	Faecal Coliforms (feacal coliforms organisms per 100mL)	NA	NA	0.7	Weekly
M1 Outlet of Chlorination tank at the sewage Treatment Plant, M2 Outlet of Effluent Storage Lagoon to the Irrigation System	W2	Dissolved Solids Salts (mg/L)	NA	NA	1000	Weekly
	W2	Sodium Absorption Ratio	NA	NA	1560	Monthly
	W2	Total Nitrogen (mg/L)	NA	NA	NA	Monthly
	W2	Total Phosphorus (mg/L)	NA	NA	NA	Monthly

Table 8 Burrum Heads Effluent Release Limits to Land

Monitoring points	Quality Characteristics	Release limits - Land				Monitoring frequency required	Monitoring frequency (actual)
		Min	50th percentile	80th percentile	Max		
M1 Outlet of the chlorination tank at the sewage treatment plant	5-day BOD (mg/L)	NS*	12	15	35	Monthly	Monthly
	E. Coli (CFU/100mL)	NS*	150	600	NS*	Monthly	Weekly
	pH (pH units)	6.5	NS*	NS*	8.5	Monthly	Monthly
	Suspended Solids (mg/L)	NS*	15	25	45	Monthly	Monthly
M2 Outlet of the final effluent storage area to the irrigation system	Dissolved Oxygen (mg/L)	2	NS*	NS*	NS*	Monthly	Monthly
	Electrical Conductivity (µS/cm)	NS*	NS*	NS*	2000	Monthly	Monthly
	Sodium Absorption Ratio (SAR)	NS*	NS*	NS*	NS*	Monthly	Monthly
	Total Nitrogen (mg/L)	NS*	10	NS*	20	Monthly	Monthly
	Total Phosphorus (mg/L)	NS*	10	NS*	12	Monthly	Monthly

Table 9 Toogoom WWTP Licence Release Limits to Ground Water

Monitoring points	Quality Characteristics	Release limits - Water				Monitoring frequency required
		Min	50th percentile	80th percentile	Max	
M1Outlet of Chlorination Tank at the Sewage Treatment Plant	BOD(mg/L)	NA	NA	10	20	Fortnightly
	Suspended Solids (mg/L)	NA	NA	10	30	Fortnightly
	pH (pH units)	6.5	NA	NA	8.5	Fortnightly
	Dissolved Oxygen (mg/L)	2	NA	NA	NA	Fortnightly
	Electrical Conductivity(mS/cm)	NA	NA	NA	1300	Fortnightly
	Total Nitrogen (mg/L)	NA	10	NA	20	Fortnightly
	Total Phosphorus (mg/L)	NA	10	NA	12	Fortnightly
	EColi (CFU/100mL)	NA	150	600	N/A	Fortnightly

Table 10 Toogoom WWTP Licence Release Limits to Land

Monitoring Point	Discharge Location	Quality Characteristics	Release Limits - Land				Monitoring frequency required
			Minimum	50th percentile	80th percentile	Maximum	
M1Outlet of Chlorination Tank at the Sewage Treatment Plant	W2	BOD(mg/L)	NA	NA	10	20	Fortnightly
	W2	Suspended Solids (mg/L)	NA	NA	10	30	Fortnightly
M1Outlet of Chlorination Tank at the Sewage Treatment Plant ,M2 at the outlet of the lagoon to Irrigation	W2	pH (pH units)	6.5	NA	NA	8.5	Fortnightly
	W2	Dissolved Oxygen (mg/L)	2	NA	NA	NA	Fortnightly
M1Outlet of Chlorination Tank at the Sewage Treatment Plant	W2	EColi (CFU/100mL)	NA	150	600	NA	Fortnightly
	W2	Electrical Conductivity (mS/cm)	NA	NA	NA	1300	Weekly
M1Outlet of Chlorination Tank at the Sewage Treatment Plant ,M2 at the outlet of the lagoon to Irrigation	W2	Sodium Absorption Ratio	NA	NA	NA	NA	Monthly
	W2	Total Nitrogen (mg/L)	NA	10	NA	20	Monthly
	W2	Total Phosphorus (mg/L)	NA	5	NA	10	Monthly

Table 11 Howard WWTP Licence Release Limits

Monitoring points	Quality Characteristics	Release limits - Water				Monitoring frequency required	Monitoring frequency (actual)
		Min	50th percentile	80th percentile	Max		
M3 **Standpipe that draws water from the effluent storage well**	5-day BOD (mg/L)	NA*	15	20	35	Fortnightly	Fortnightly
	Suspended Solids (mg/L)	NA*	18	25	45	Fortnightly	Fortnightly
	Dissolved Oxygen (mg/L)	2	NS*	NS*	NS*	Fortnightly	Fortnightly
	pH (pH units)	6.5	NS*	NS*	8.5	Fortnightly	Fortnightly
	E. Coli (CFU/100mL)	NA*	150	600	NS*	Fortnightly	Weekly
	Total Phosphorus (mg/L)	NA*	NS*	NS*	NS*	Monthly	Fortnightly
	Total Nitrogen (mg/L)	NA*	NS*	NS*	NS*	Monthly	Fortnightly

Table 12 Howard WWTP Licence Release Limits

		Release limits - Land				Monitoring frequency required	Monitoring frequency (actual)
Monitoring points	**Quality Characteristics**	**Min**	**50th percentile**	**80th percentile**	**Max**		
M3 Standpipe that draws water from the effluent storage well	5-day BOD (mg/L)	NA*	12	15	35	Monthly	Fortnightly
	E. Coli (CFU/100mL)	NA*	150	600	NS*	Monthly	Weekly
M7 Outlet of the final effluent storage area to the irrigation system	pH (pH units)	6.5	NS*	9.5	NS*	Monthly	Monthly
	Total Dissolved Salts (mg/L)	NA*	NS*	NS*	1560	Monthly	Monthly
	Sodium Absorption Ratio (SAR)	NA*	NS*	NS*	NS*	Monthly	Monthly
	Total Nitrogen (mg/L)	NA*	NS*	NS*	NS*	Monthly	Monthly
	Total Phosphorus (mg/L)	NA*	NS*	NS*	NS*	Monthly	Monthly

Table 13 Torbanlea WWTP Licence Release Limits

		Release limits - Land				Monitoring frequency
Monitoring points	**Quality Characteristics**	**Min**	**50th percentile**	**80th percentile**	**Max**	
Final Effluent	5-day BOD (mg/L)	NA*	12	15	35	Fortnightly
	E. Coli (CFU/100mL)	NA*	150	600	NS*	Weekly
Final Effluent Released to Land	pH (pH units)	6.5	NS*	9.5	NS*	Monthly
	Total Dissolved Salts (mg/L)	NA*	NS*	NS*	1560	Monthly
	Sodium Absorption Ratio (SAR)	NA*	NS*	NS*	NS*	Monthly
	Total Nitrogen (mg/L)	NA*	NS*	NS*	NS*	Monthly
	Total Phosphorus (mg/L)	NA*	NS*	NS*	NS*	Monthly

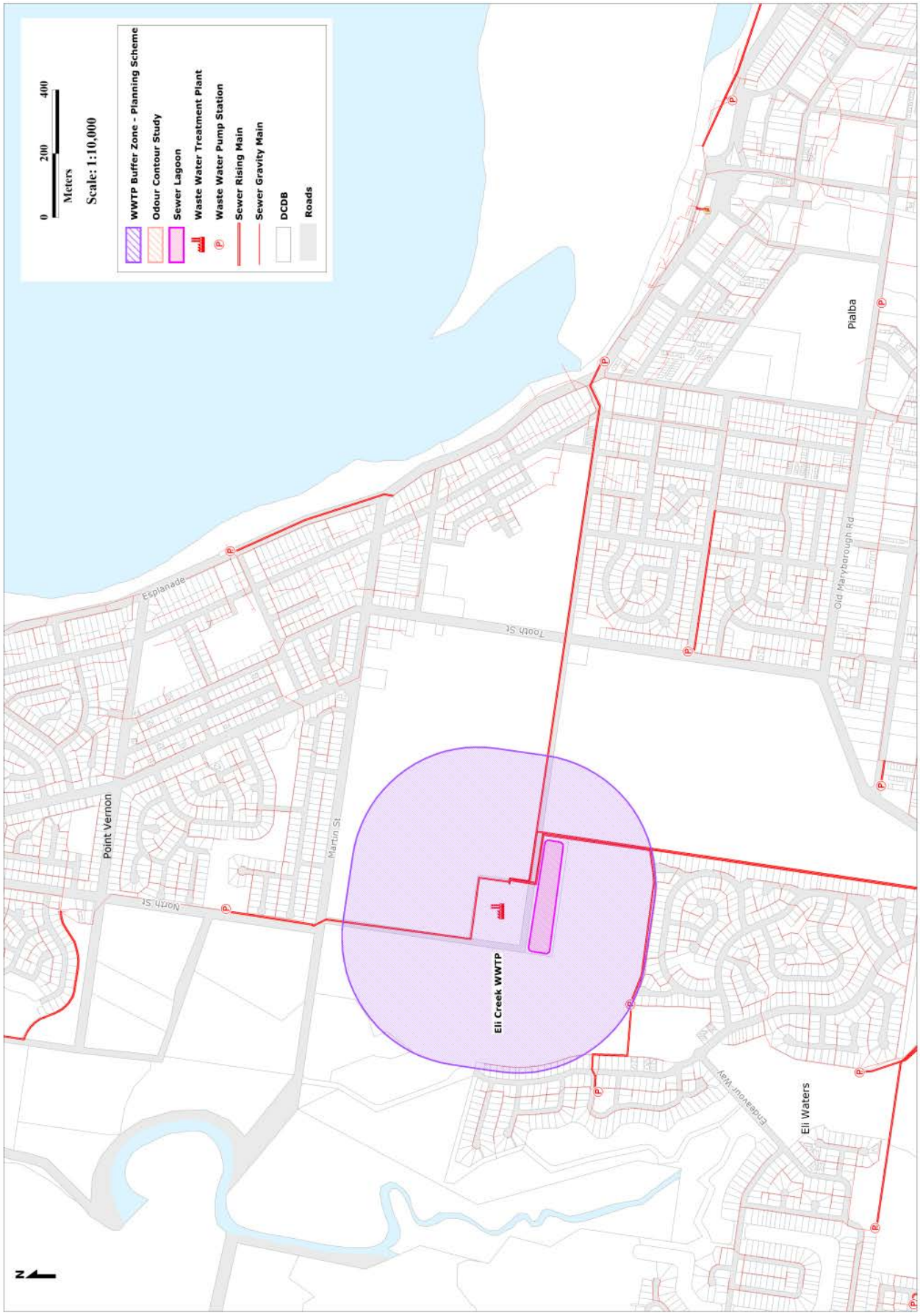


Figure 1 Eli Creek WWTP Odour Buffer

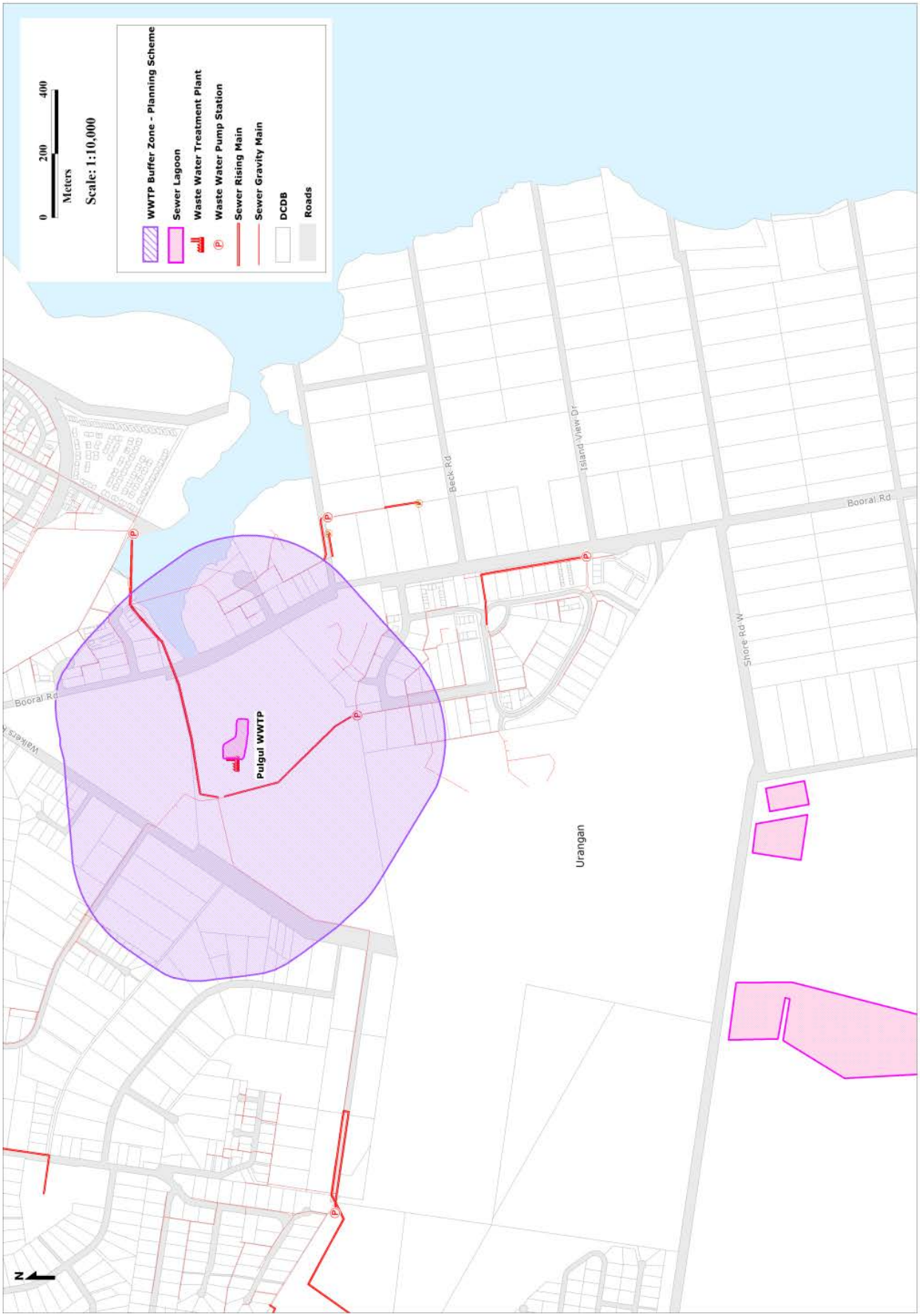


Figure 2 Pulgul WWTP Odour Buffer

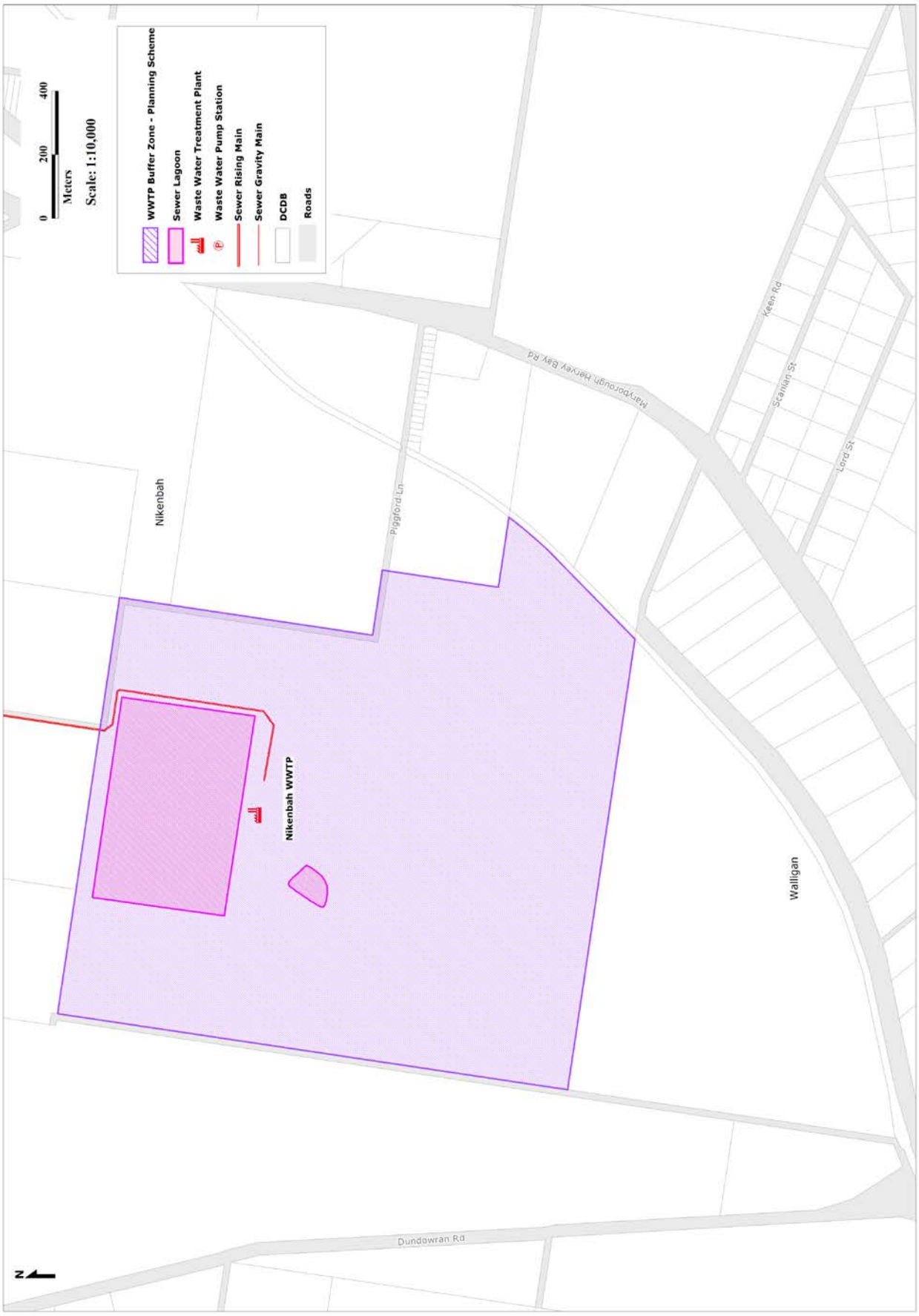


Figure 3 Nikenbah WWTP Odour Buffer

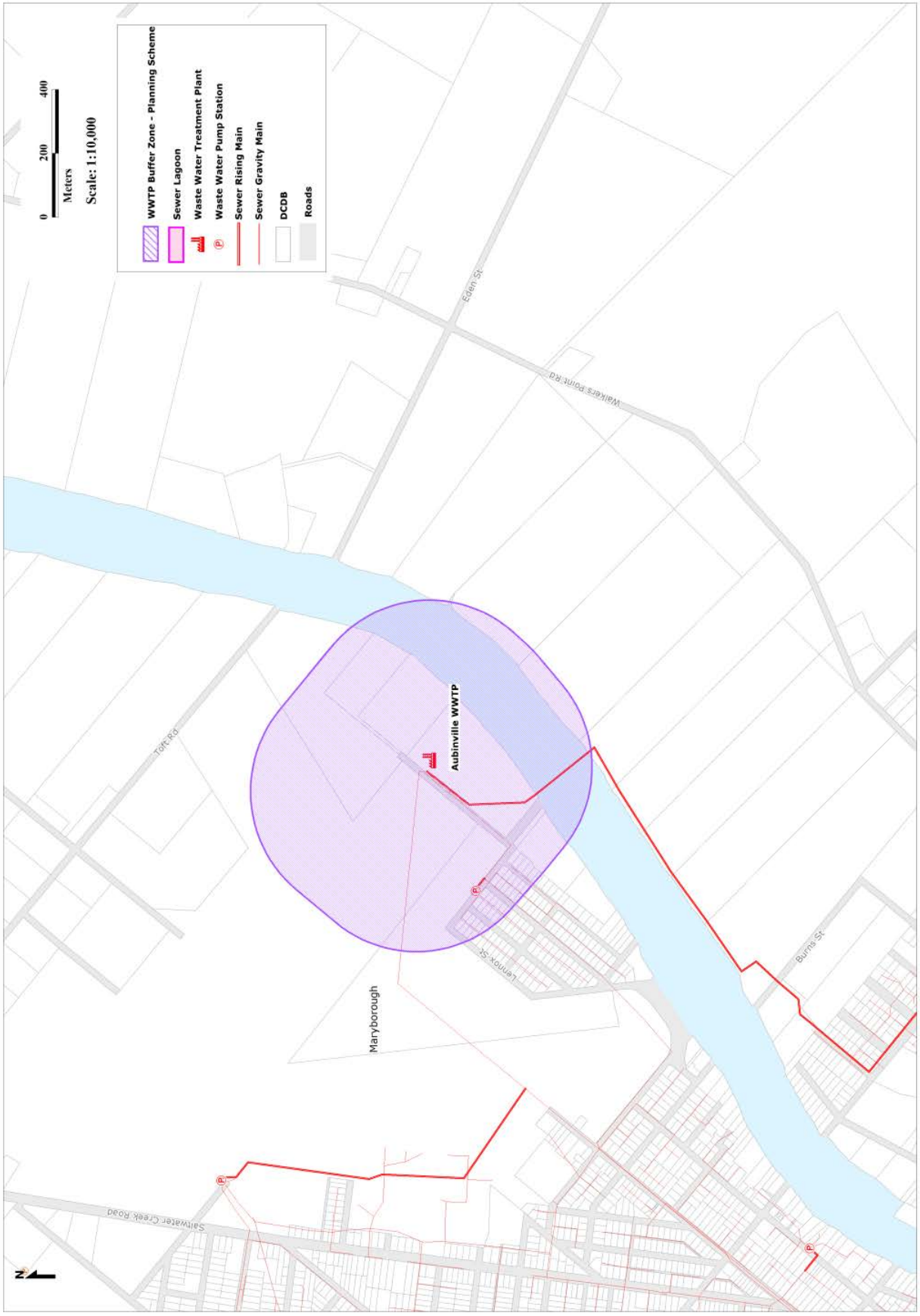


Figure 4 Aubinville WWTP Odour Buffer

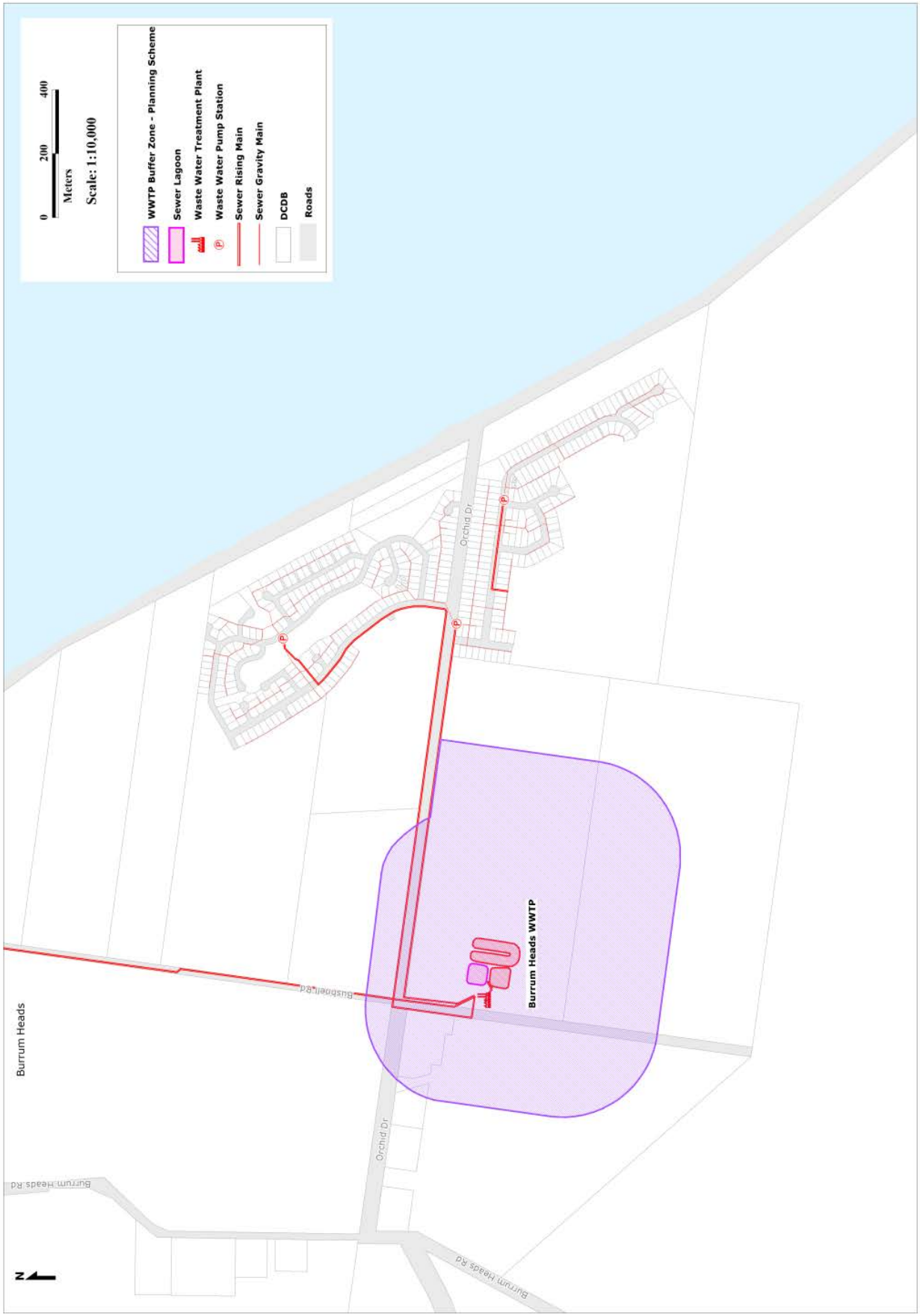


Figure 5 Burrum Heads WWTP Odour Buffer

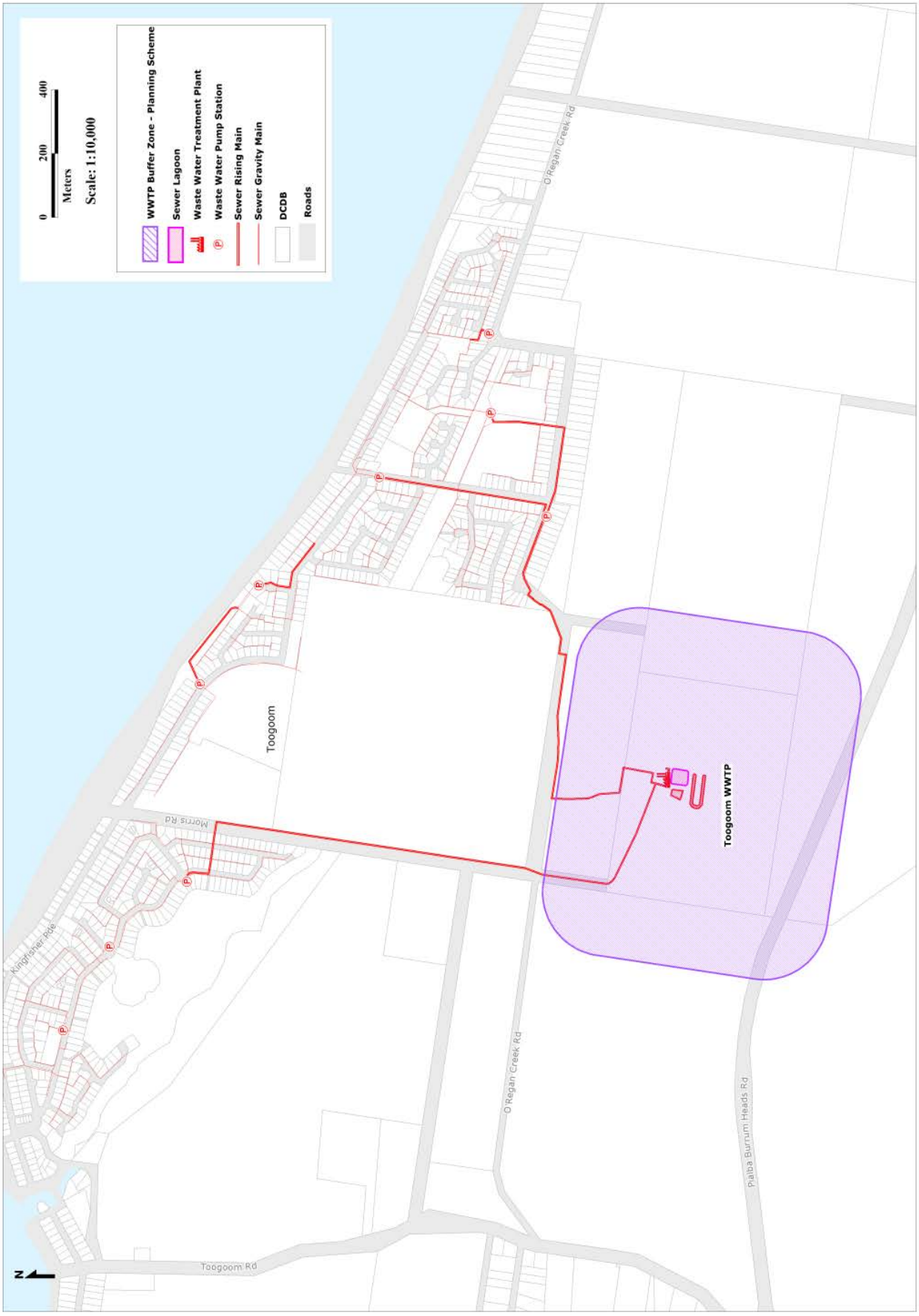


Figure 6 Toogoom WWTP Odour Buffer

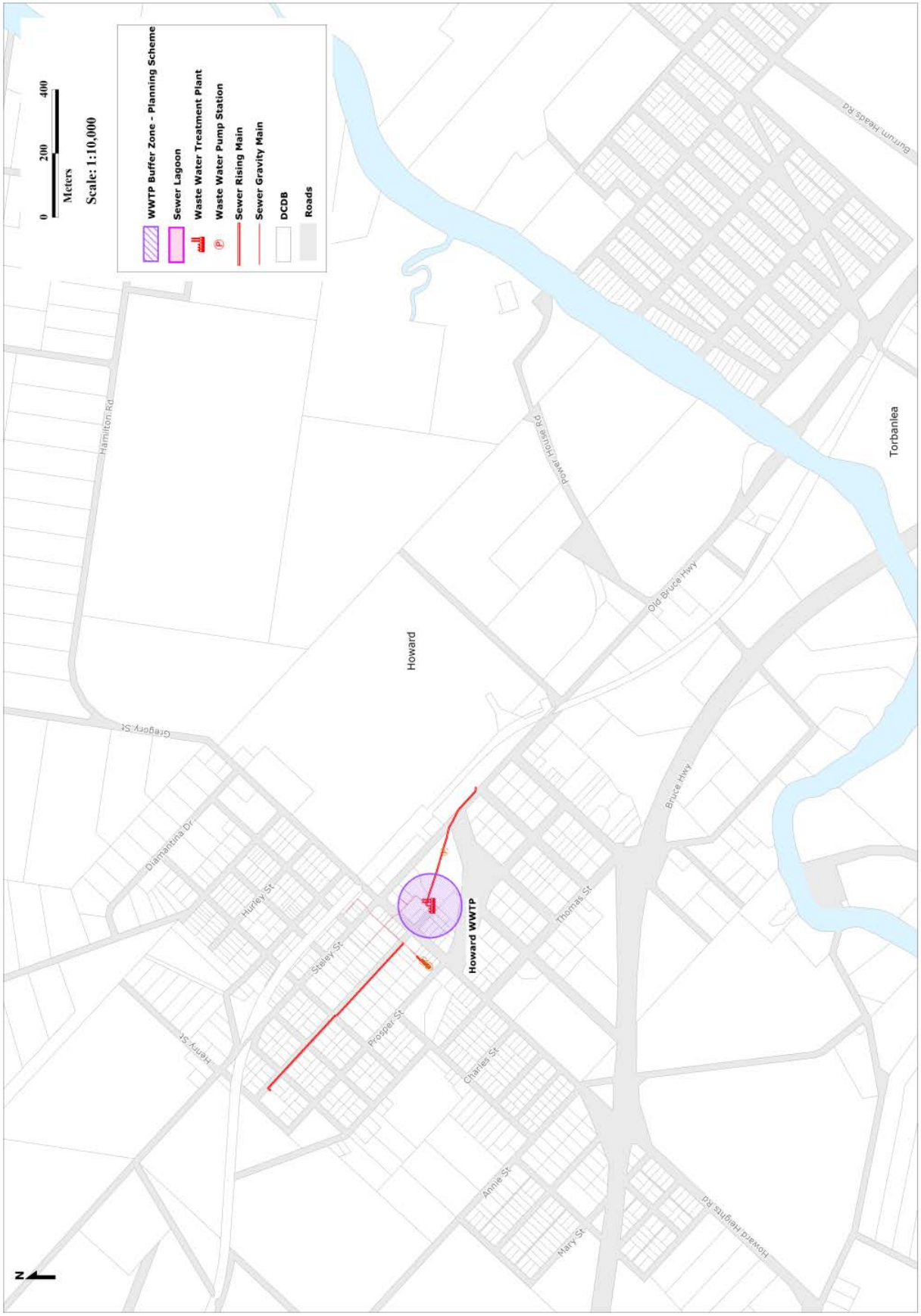


Figure 7 Howard WWTP Odour Buffer

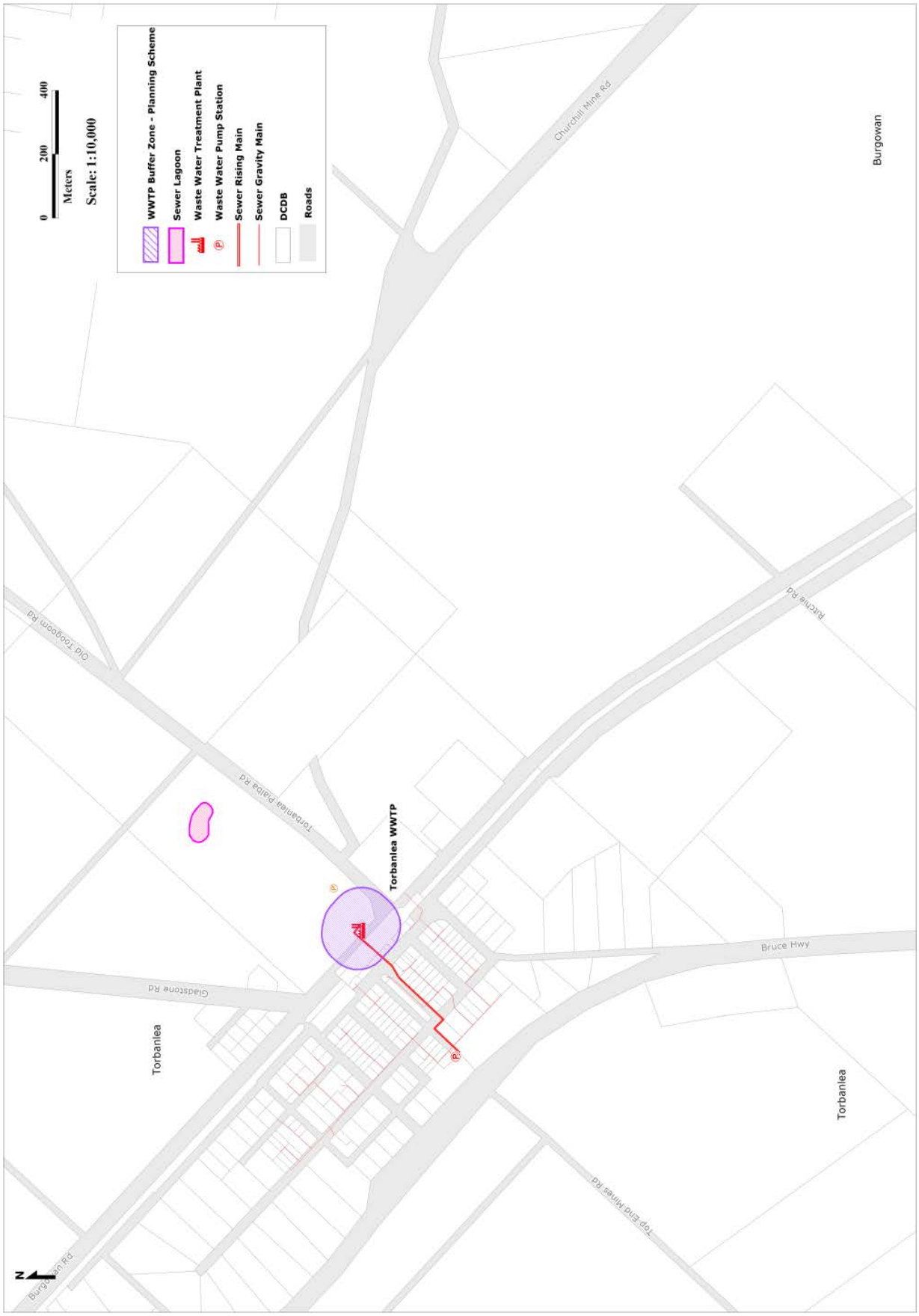


Figure 8 Torbanlea WWTP Odour Buffer

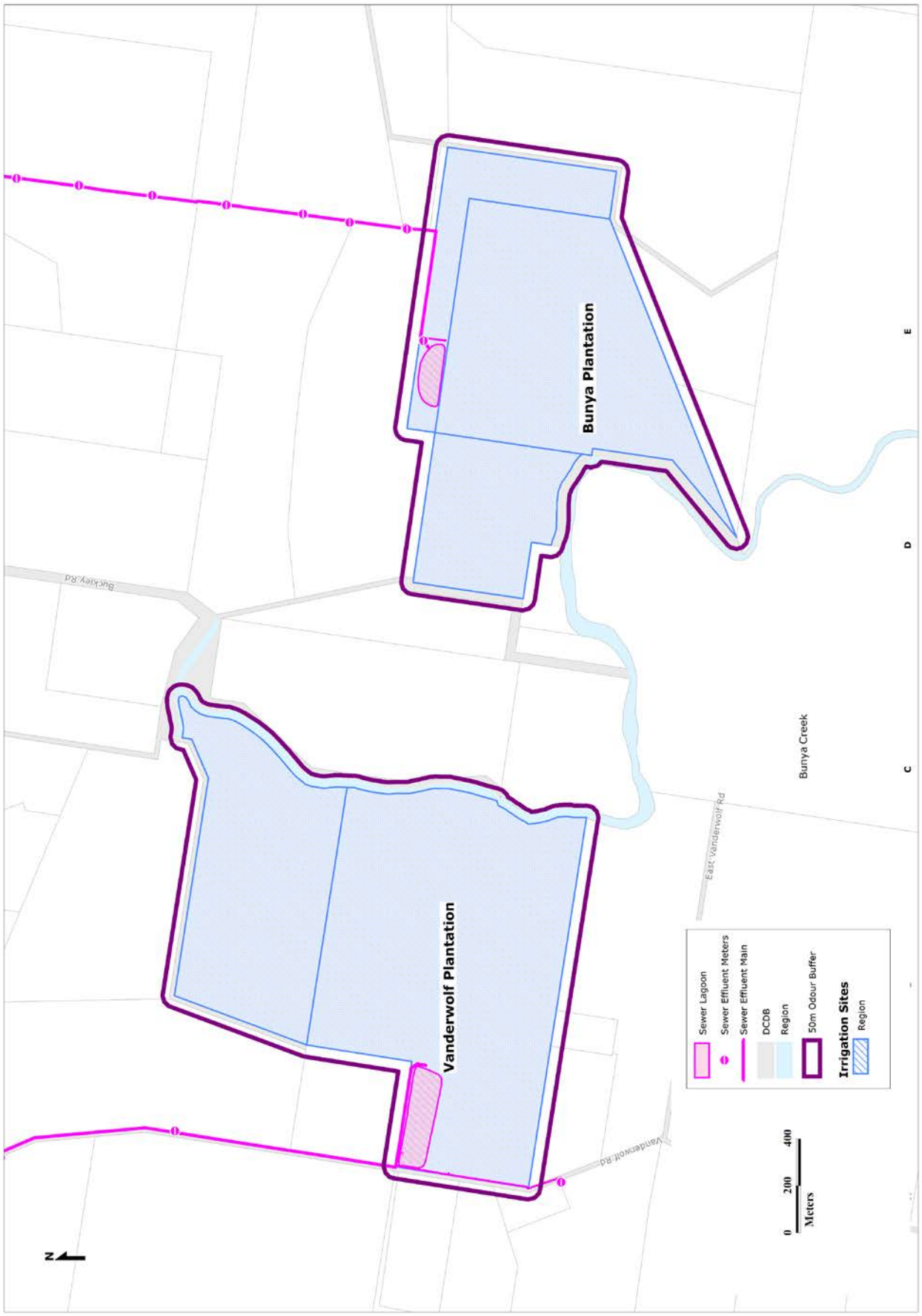


Figure 9 Bunya and Vanderwolf Plantation Buffer Zones

Figure 10 Pulgul Plantation Buffer Zone

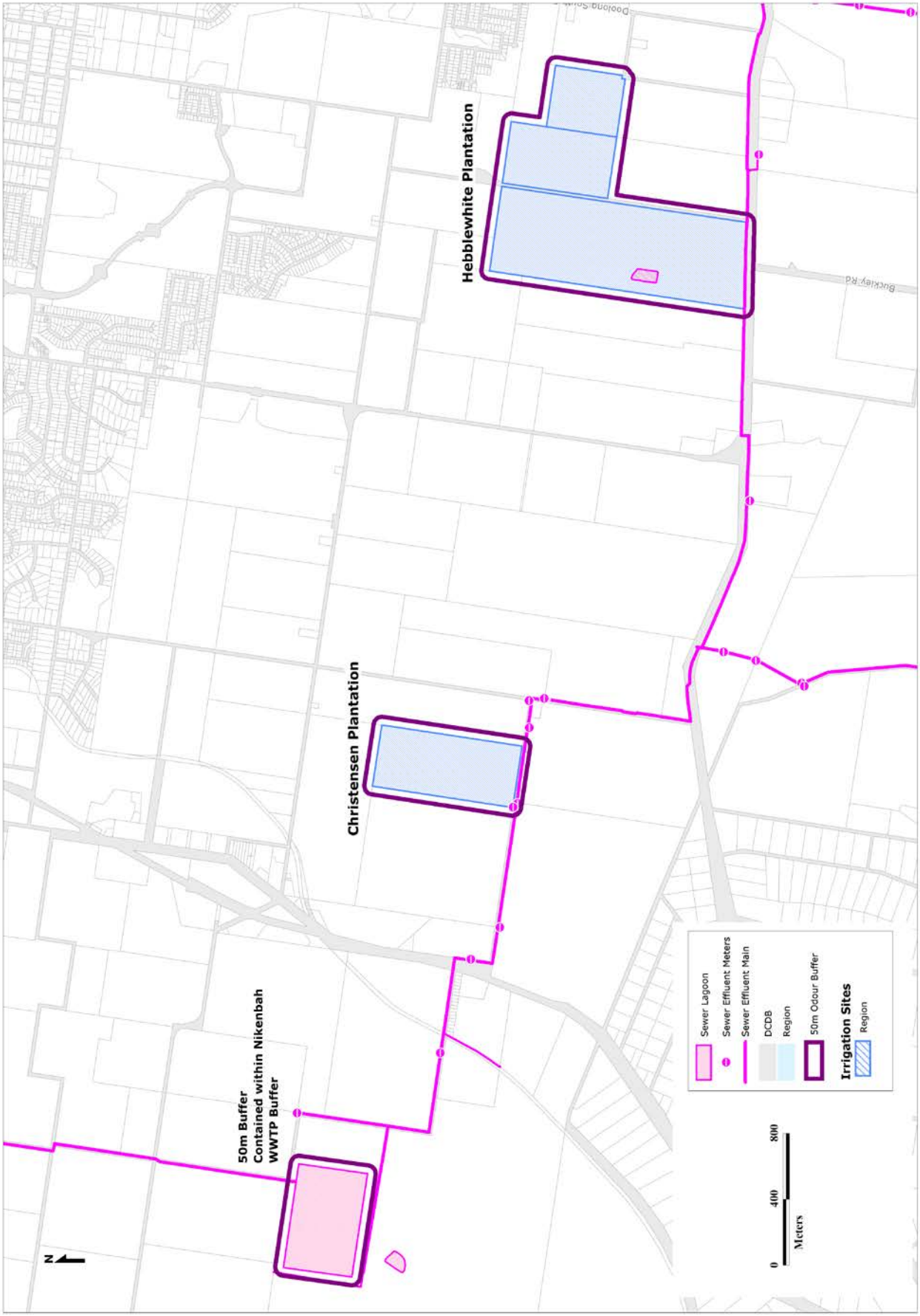


Figure 11 Nikenbah Effluent Lagoon and Christensen and Hebblewhite Plantation Buffer Zones

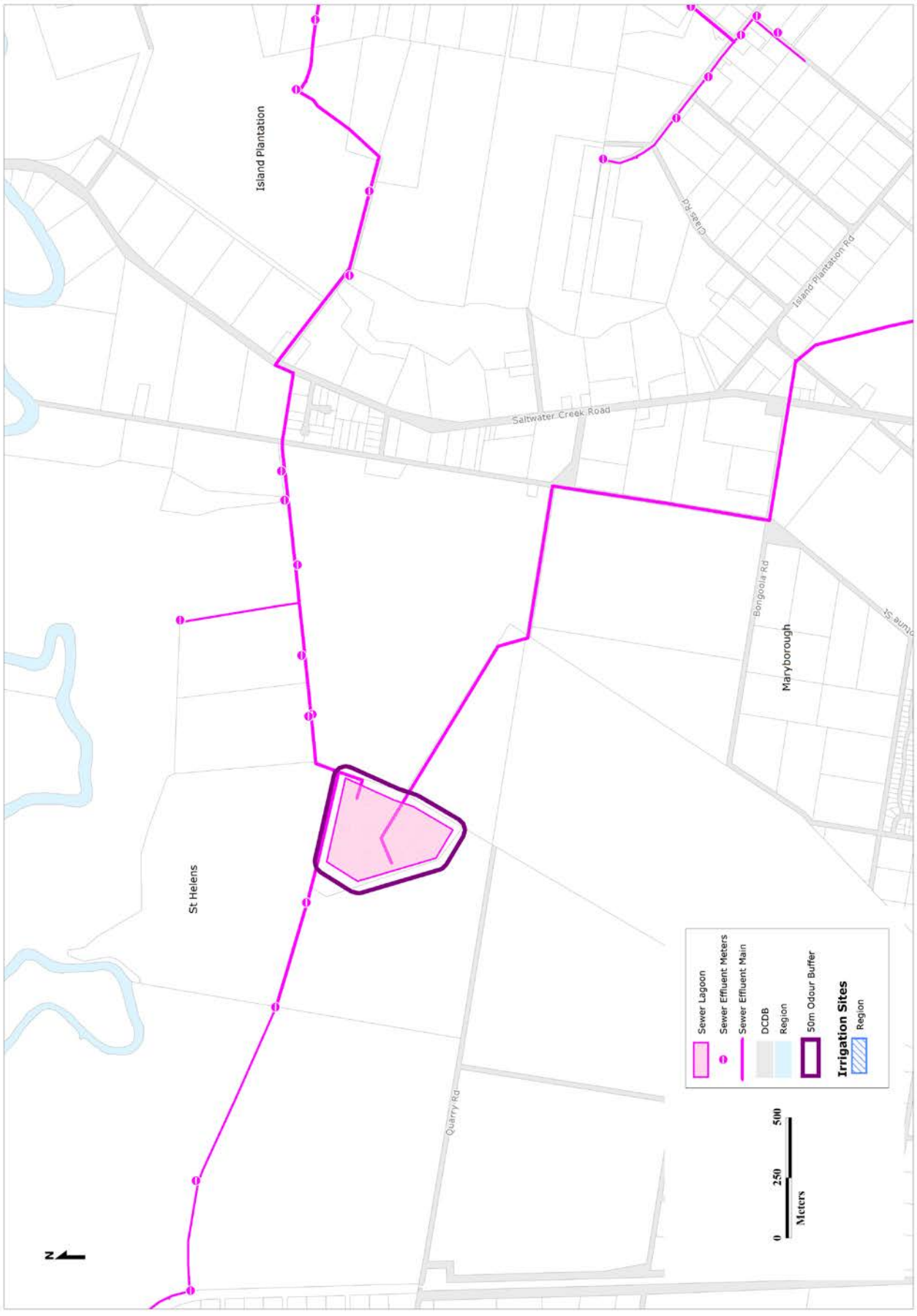


Figure 12 St Helens Effluent Storage Lagoon Buffer Zone

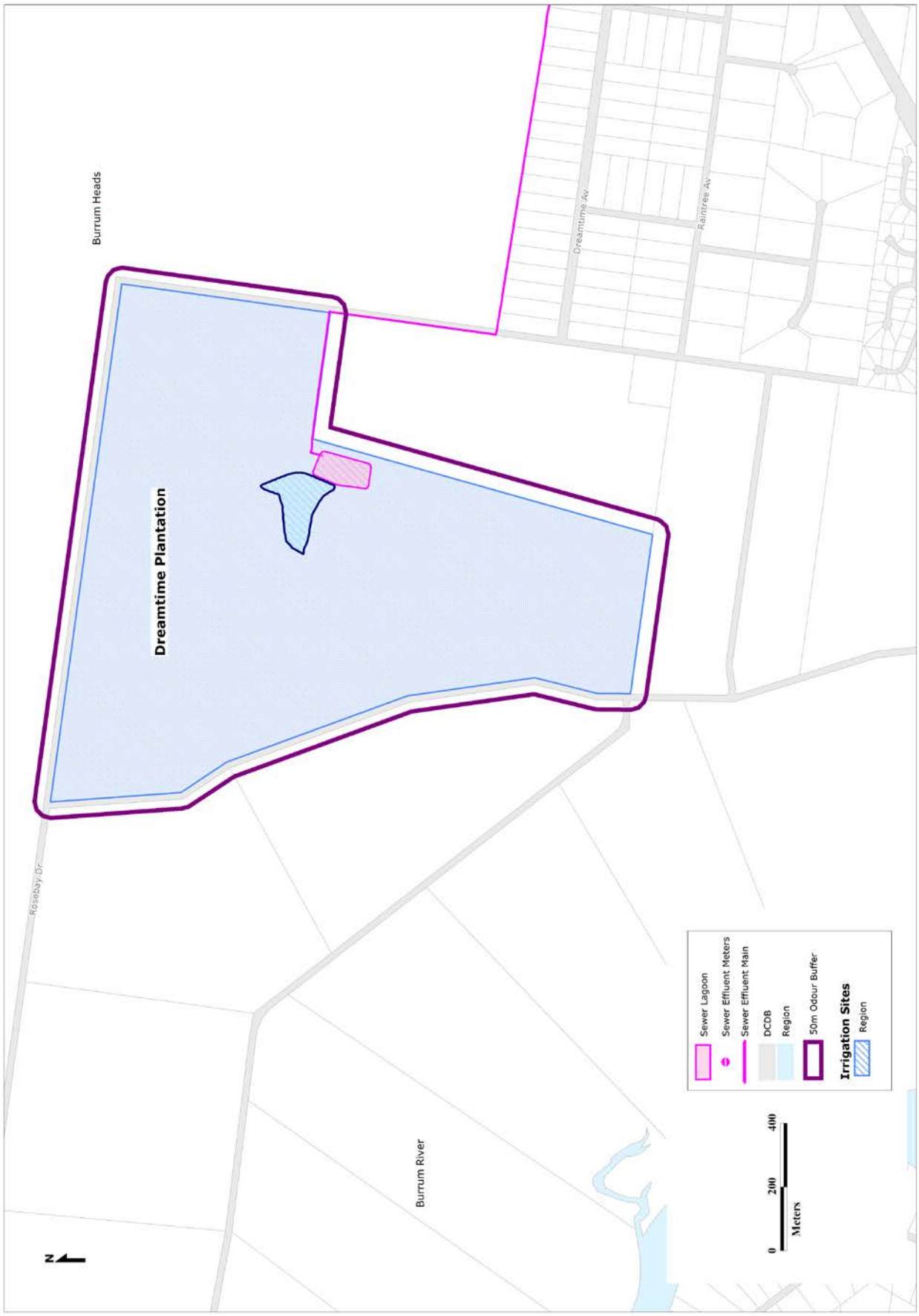


Figure 13 Dreamtime Plantation Buffer Zone

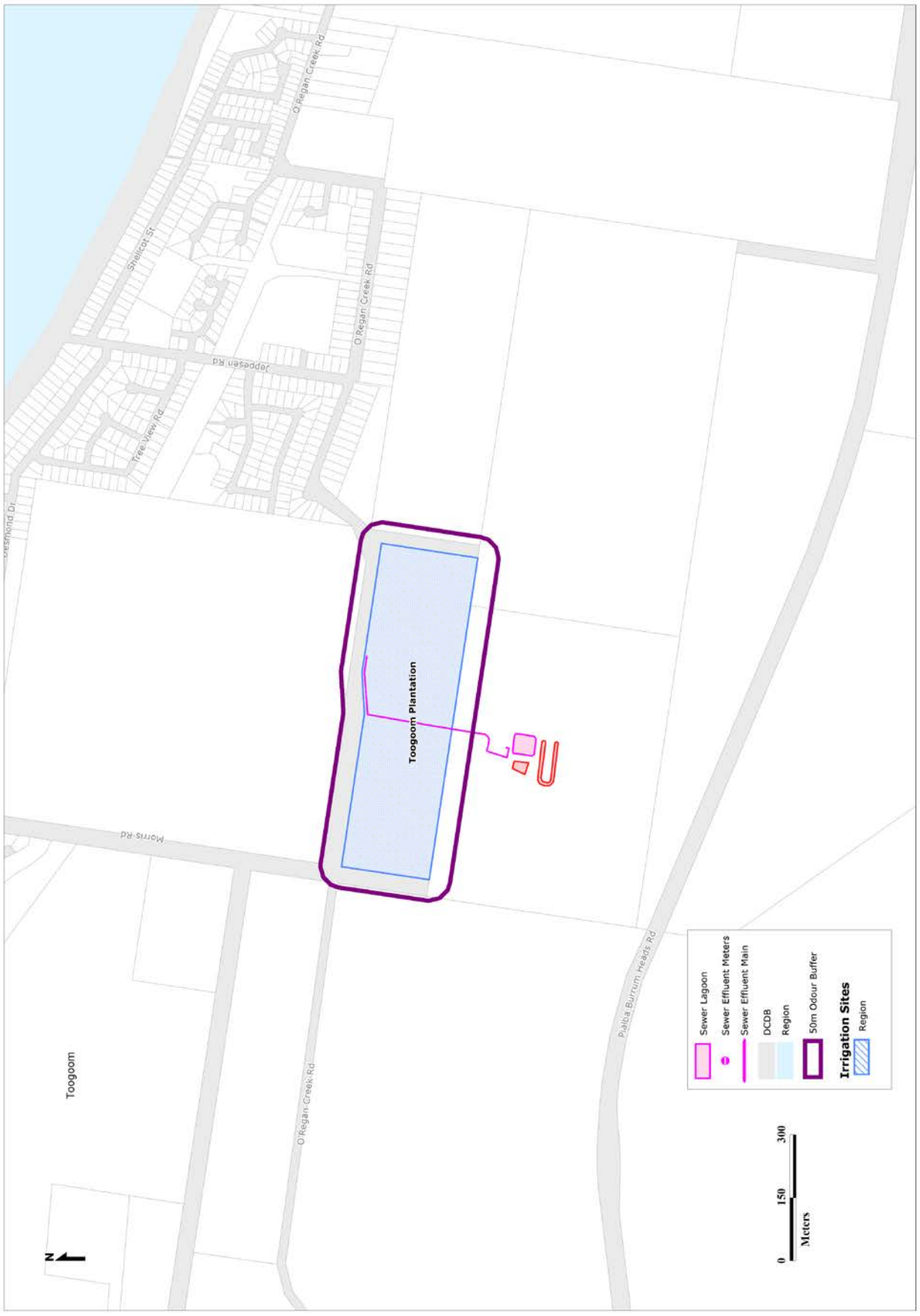
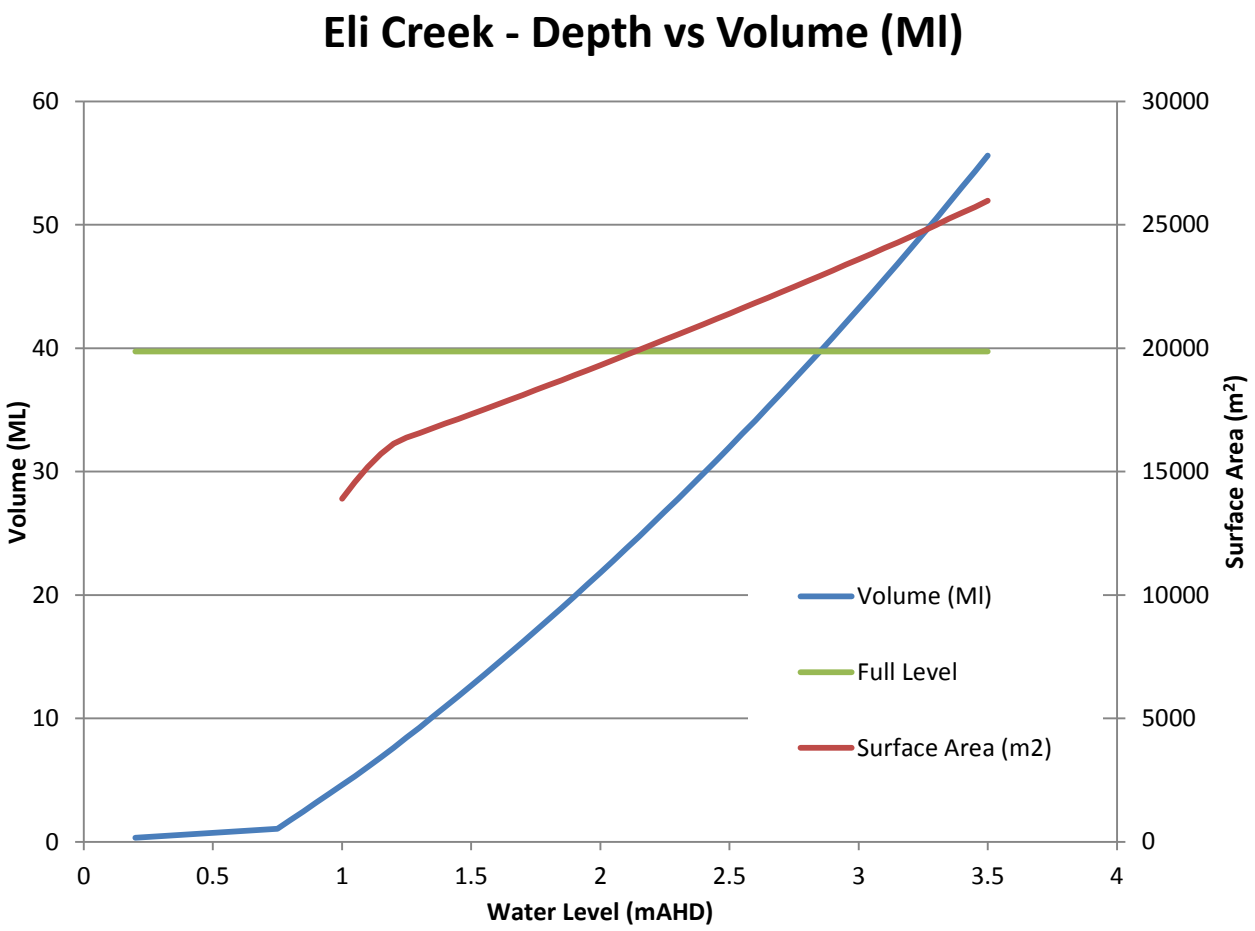
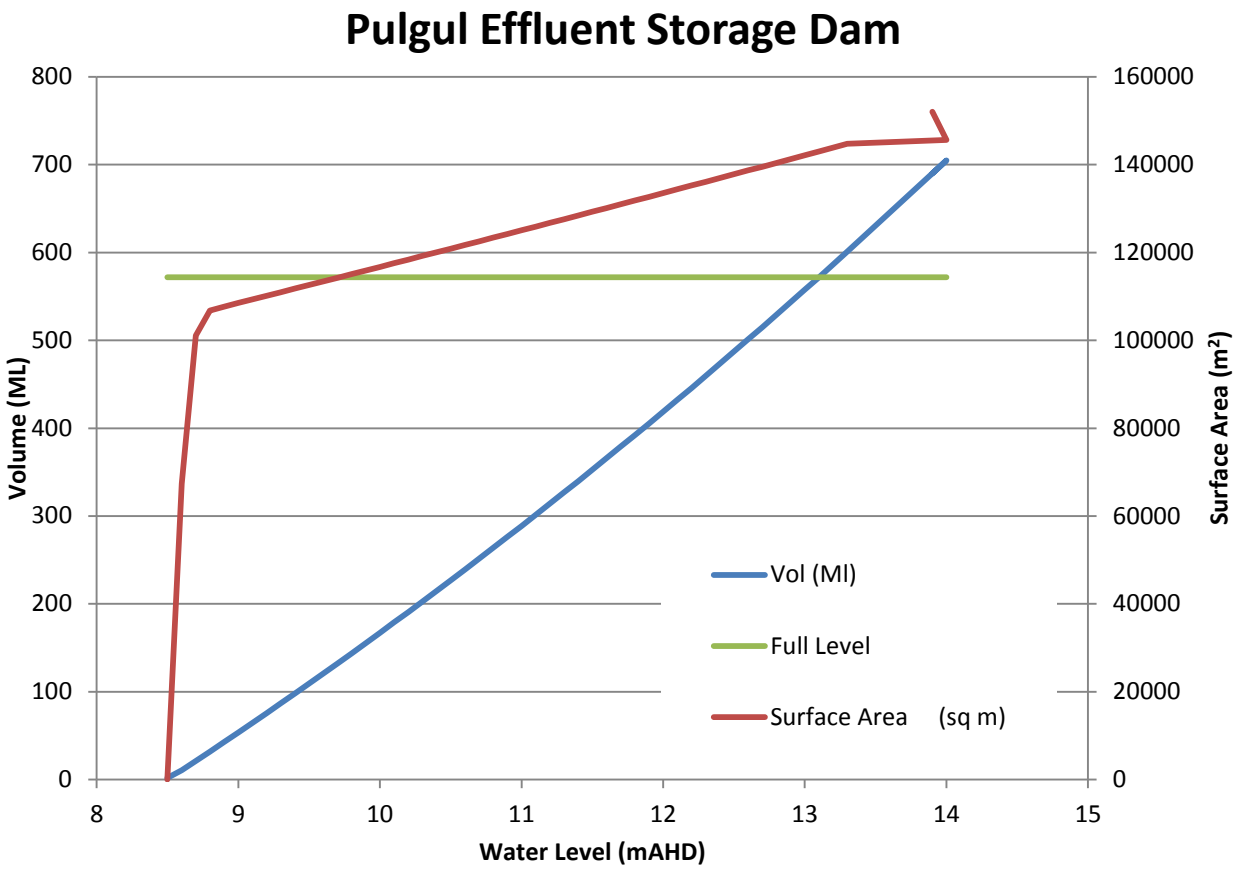
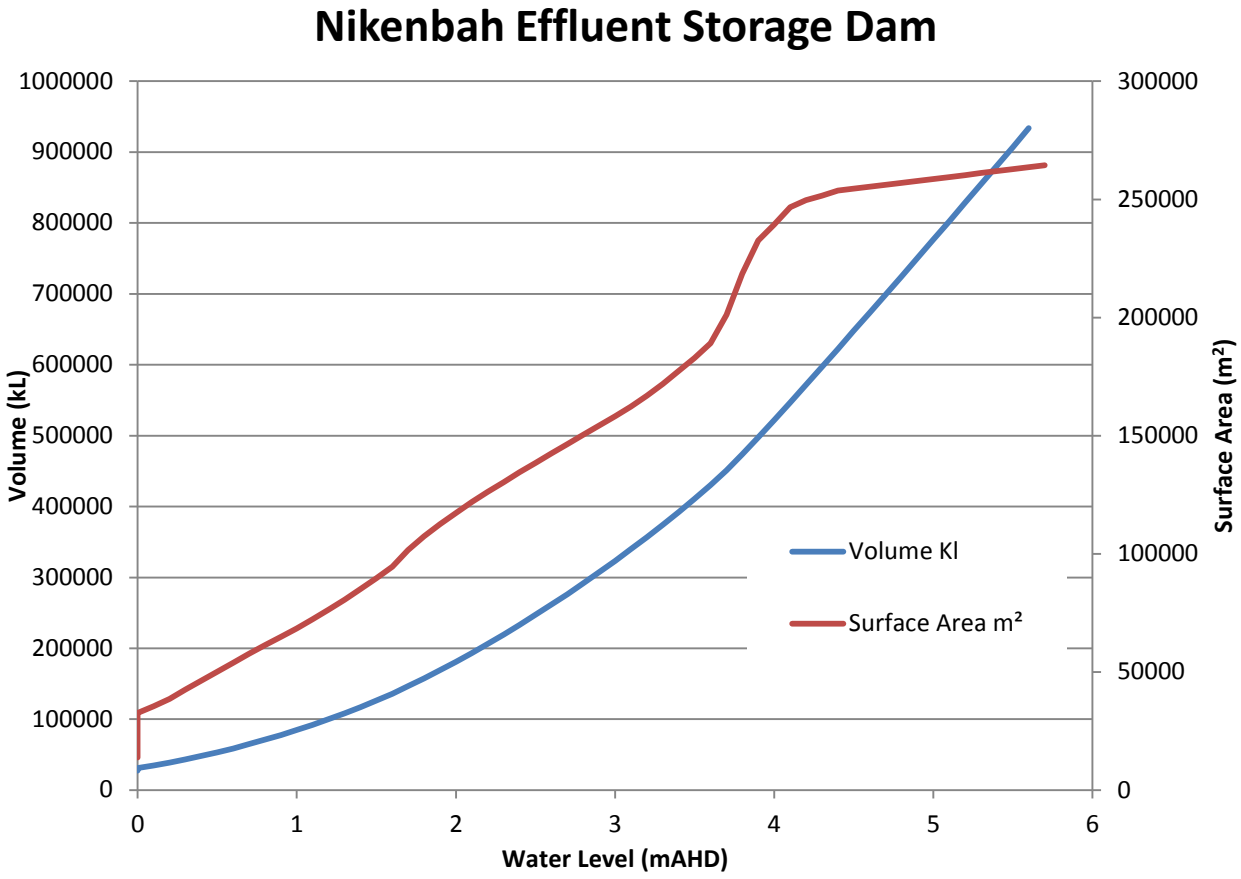


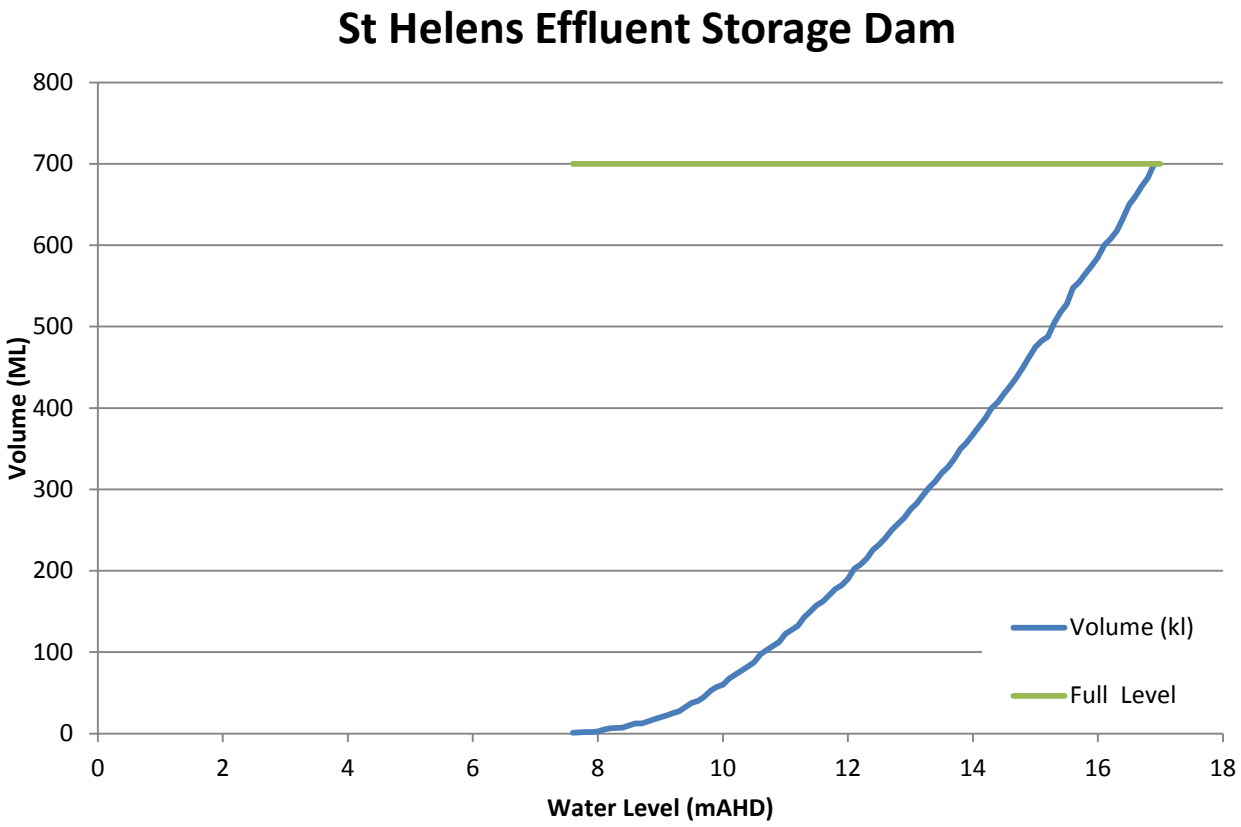
Figure 14 Toogoom Plantation Buffer Zone

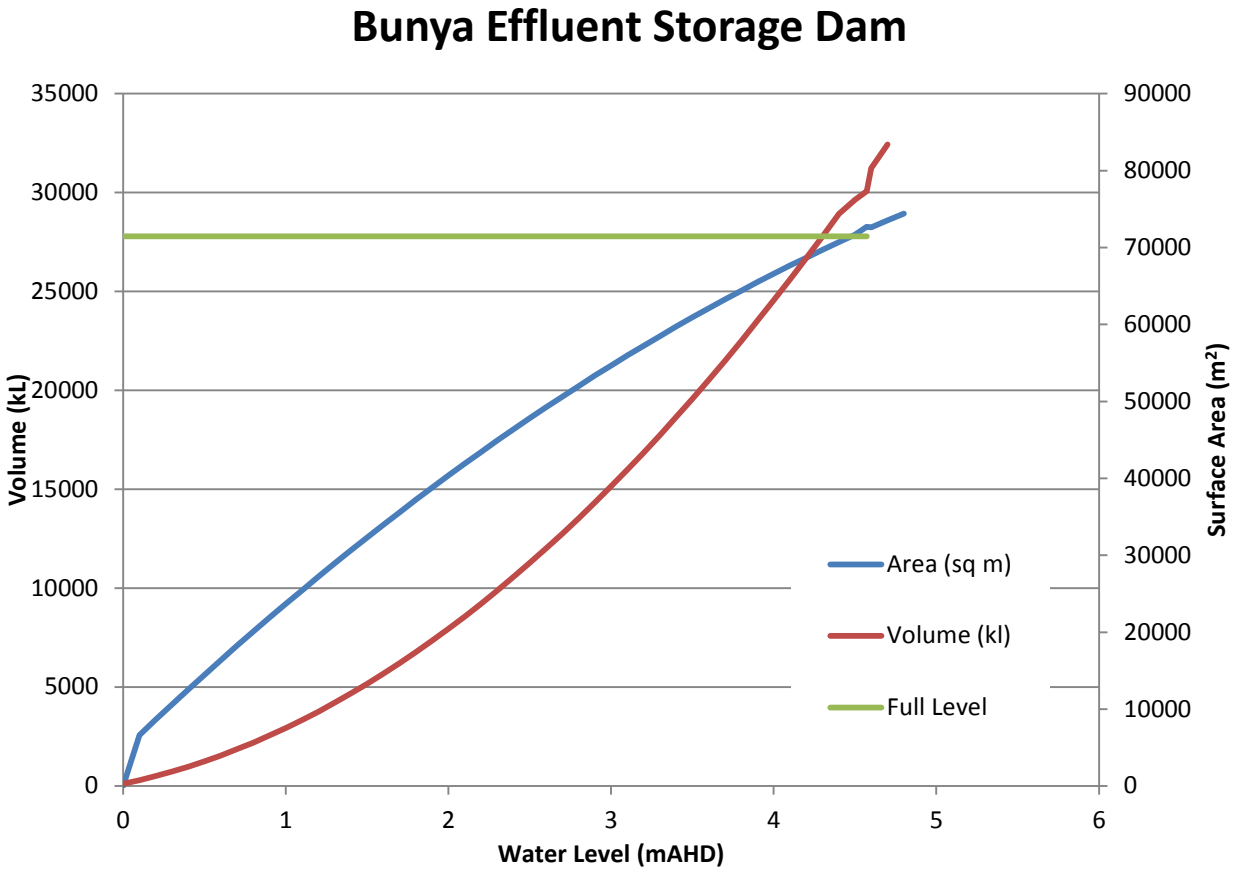
APPENDIX 7 REUSE

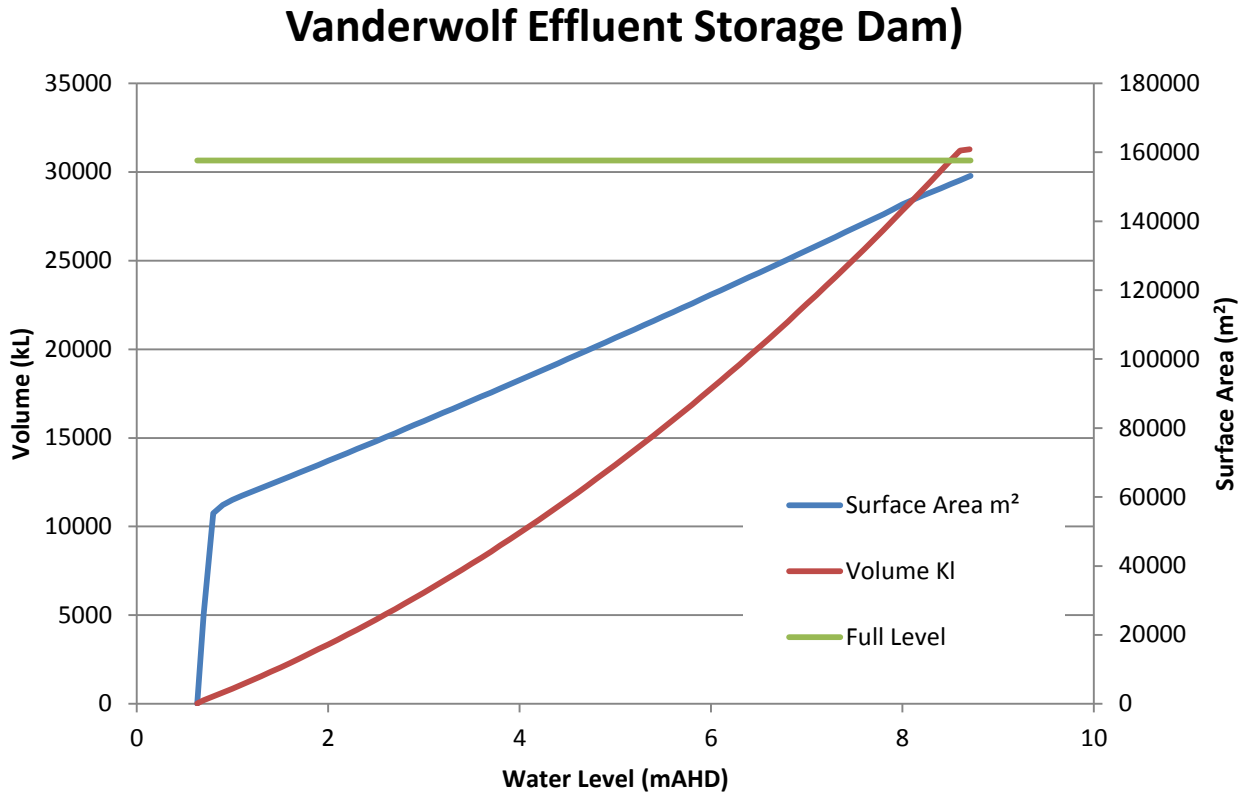

Eli Creek - Depth vs Volume (Ml)
Volume (ML)
Surface Area (m²)
Water Level (mAHD)
Volume (Ml)
Full Level
Surface Area (m2)
0
10
20
30
40
50
60
0
5000
10000
15000
20000
25000
30000
0
0.5
1
1.5
2
2.5
3
3.5
4


Pulgul Effluent Storage Dam
Volume (ML)
Surface Area (m²)
Water Level (mAHD)
Vol (Ml)
Full Level
Surface Area (sq m)
0
100
200
300
400
500
600
700
800
0
20000
40000
60000
80000
100000
120000
140000
160000
8
9
10
11
12
13
14
15

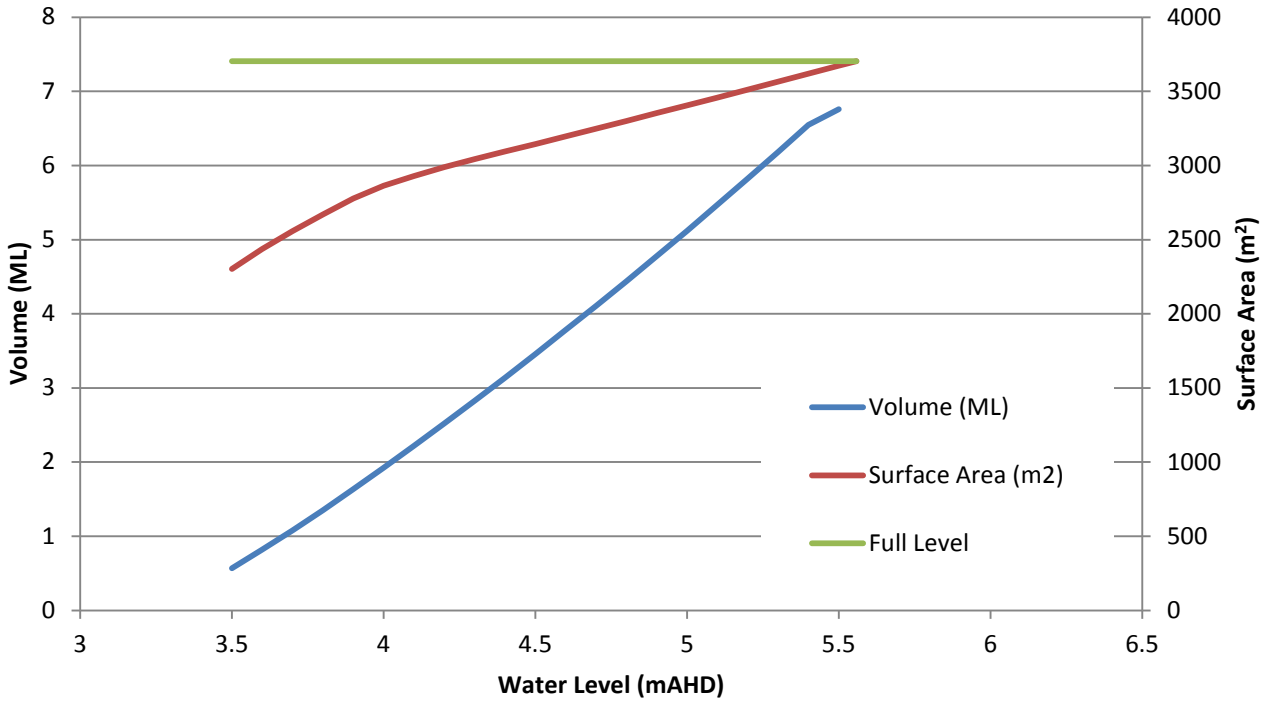

Nikenbah Effluent Storage Dam
Volume (kL)
Surface Area (m²)
Water Level (mAHD)
Volume Kl
Surface Area m²
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
300000
250000
200000
150000
100000
50000
0
0
1
2
3
4
5
6


St Helens Effluent Storage Dam
Volume (ML)
Water Level (mAHD)
Volume (kl)
Full Level
800
700
600
500
400
300
200
100
0
0
2
4
6
8
10
12
14
16
18

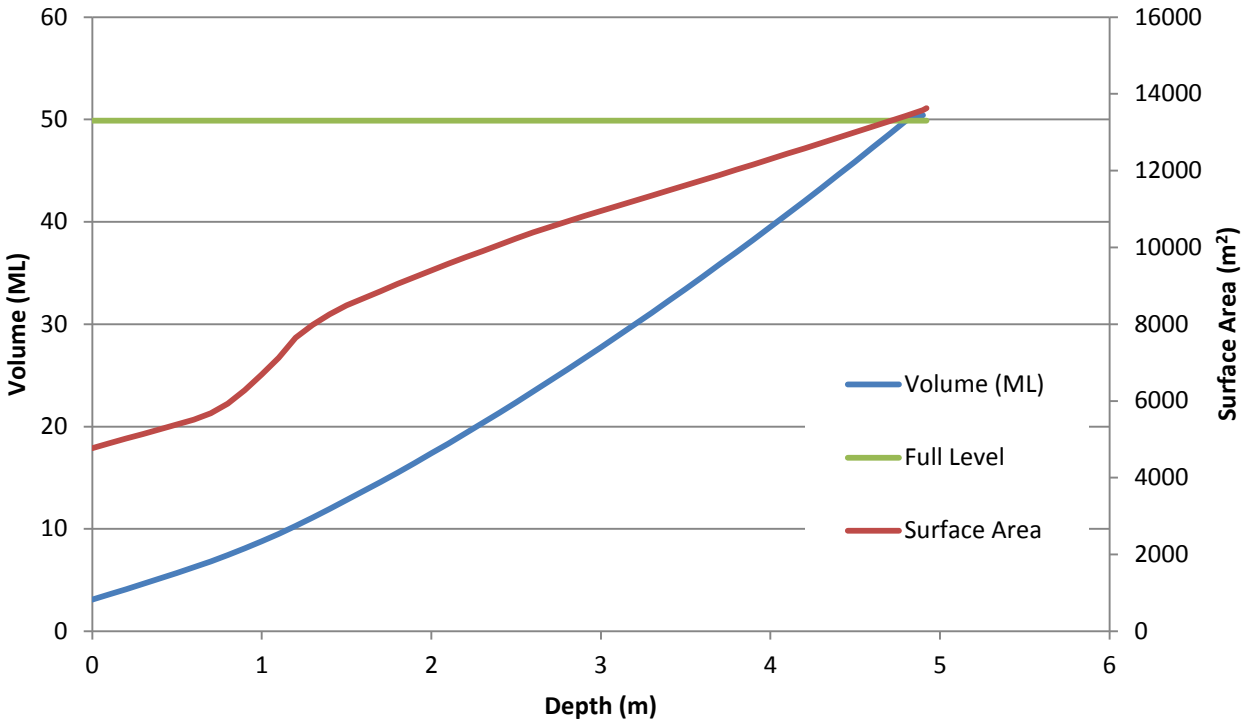

Bunya Effluent Storage Dam
35000
30000
25000
20000
15000
10000
5000
0
Volume (kL)
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
Surface Area (m²)
0
1
2
3
4
5
6
Water Level (mAHD)
Area (sq m)
Volume (kl)
Full Level


Vanderwolf Effluent Storage Dam)
35000
30000
25000
20000
15000
10000
5000
0
Volume (kL)
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
Surface Area (m²)
0
2
4
6
8
10
Water Level (mAHD)
Surface Area m²
Volume Kl
Full Level

Burrum Lined Effluent Storage Lagoon



Dreamtime Turkey Nest Effluent Storage



Option H1

REQUIRED		2017	2026	2031
Cane			800	950
Planation's		320	650	1070
	TOTAL	***320***	***1450***	***2020***
POTENTIAL LAND				
Cassava			320	320
Area West of Nikenbah			330	330
Area East Of Nikenbah				100
Area to North west Cassava				950
	TOTAL		***650***	***1700***

Present Year	2015
NPV Rate	6.25%

Multiplier: 1000

Description	Year	Quantity	Rates	Cost ($000)	PV
Nikenbah to Cassava DN750 17.1km	2017	17100	1157	19,785	$17,525,547
Pump station at Nikenbah (234L/s @ 34m)	2017	1	674633	675	$597,599
Pump Station at Cassava (234L/s @ 34m)	2017	1	674633	675	$597,599
Cassava Dam No. 2 Improvements	2017	1	200000	200	$177,163
Cassava Irrigation Area Development (320Ha)	2017	320	13000	4,160	$3,684,983
New Storage at Cassava (500ML)	2017	500	7000	3,500	$3,100,346
Upgrade Pulgul WWTP (4.5Ml)	2019	1	30000000	30,000	$23,539,948
Upgrade Pulgul Outfall DN500 1.3km	2019	1	1100000	1,100	$863,131
Acquisition and Development of new land for Plantations (330Ha)	2026	330	23000	7,590	$3,896,040
Acquisition new Land (100Ha)	2028	100	23000	2,300	$1,045,807
New DN450 Pipeline (5.1km) Nikenbah to cane farms along Booral Rd	2028	5100	781	3,983	$1,811,111
New Pump Station Nikenbah to Booral Rd (100L/s @ 7m)	2028	1	108883	109	$49,509
Pipeline to new cane farms (NW of Cassava) DN500 11.1km	2029	11100	812	9,013	$3,857,215
New Pump Station to cane farms (NW of Cassava) (220L/s @ 40m)	2029	1	674633	675	$288,710
Acquisition and development new land for Plantations (420Ha)	2031	420	23000	9,660	$3,661,964
				93,424	

Multiplier: 1000000

Plantation year	Year	No. Ha	Income ($/Ha)	Estimated Total Income ($m)	PV
2017	2024	320	3,000	0.96	-$556,302
2017	2029	320	20,000	6.4	-$2,738,892
2017	2035	320	30,000	9.6	-$2,855,568
2026	2033	330	3,000	0.99	-$332,441
2026	2038	330	20,000	6.6	-$1,636,735
2026	2044	330	30,000	9.9	-$1,706,459
2031	2038	420	3000	1.26	-$312,468
2031	2043	420	20,000	8.4	-$1,538,399
2031	2049	420	30,000	12.6	-$1,603,934
				56.71	

TOTAL NPV COST $51,415,475

Option H2(a)

REQUIRED		2031
Planation's		170
	TOTAL	***170***
POTENTIAL LAND		
Cassava		170
	TOTAL	***170***

Present Year	2015
NPV Rate	6.25%

Multiplier: 1000

Description	Year	Amount	Rates	Cost ($000)	PV
Replace Pulgul WWTP (9Ml)	2019	2	30000000	60,000	$47,079,896
Upgrade Pulgul Outfall DN600 4.9km	2019	1	16400000	16,400	$12,868,505
Outfall pump station (521L/s @ 19m)	2019	1	674633	675	$529,361
Nikenbah to Cassava pipeline DN300 17.1km	2026	17100	425	7,268	$3,730,497
Pump station at Nikenbah (40L/s @ 59m)	2026	1	294900	295	$151,376
Pump station at Cassava (40L/s @ 59m)	2026	1	294900	295	$151,376
Cassava Dam No. 2 Improvements	2026	1	200000	200	$102,662
Cassava Irrigation Area Development (170Ha)	2026	170	13000	2,210	$1,134,420
				87,342	

Multiplier: 1000000

Years until next cut	Year	No. Ha	Income ($/Ha)	Estimated Total Income ($m)	PV
2031	2038	170	3000	0.51	-$126,475
2031	2043	170	20,000	3.4	-$622,685
2031	2049	170	30,000	5.1	-$649,212
				9.01	

TOTAL NPV Cost $64,349,721

Option H2(b)

REQUIRED		2017	2026	2031
Cane				
Planation's		320	550	980
	TOTAL	***320***	***550***	***980***
POTENTIAL LAND				
Cassava		320	320	320
Area West of Nikenbah			230	660
Area to North west Cassava				950
	TOTAL	***320***	***550***	***1930***

Present Year	2015
NPV Rate	6.25%

Multiplier: 1000

Description	Year	Quantity	Rates	Cost ($000)	PV
Cassava Irrigation Area Development (320Ha)	2017	320	13000	4,160	$3,684,983
Cassava Dam No. 2 Improvements	2017	1	200000	200	$177,163
Nikenbah to Cassava DN500 17.1km	2017	17100	812	13,885	$12,299,693
Pump station at Nikenbah (227L/s @ 91m)	2017	1	987933	988	$875,124
Pump Station at Cassava (227L/s @ 91m)	2017	1	987933	988	$875,124
Upgrade Pulgul WWTP (4.5Ml)	2019	1	30000000	30,000	$23,539,948
Upgrade Pulgul Outfall DN450 4.9km	2019	1	8100000	8,100	$6,355,786
New Outfall pump station (227L/s@17m)	2019	1	456859	457	$358,481
Acquisition and development new land for Plantations (230Ha)	2021	230	23000	5,290	$3,676,902
Acquisition and development new land for Plantations (430Ha)	2031	430	23000	9,890	$3,749,154
New Storage between Nikenbah and Cassava (500ML)	2031	500	7000	3,500	$1,326,799
				77,458	

Multiplier: 1000000

	Year	No. Ha	Income ($/Ha)	Estimated Total Income ($m)	PV
2017	2024	320	3,000	0.96	-$556,302
2017	2029	320	20,000	6.4	-$2,738,892
2017	2035	320	30,000	9.6	-$2,855,568
2026	2033	230	3,000	0.69	-$231,701
2026	2038	230	20,000	4.6	-$1,140,755
2026	2044	230	30,000	6.9	-$1,189,351
2031	2038	430	3,000	1.29	-$319,907
2031	2043	430	20,000	8.6	-$1,575,028
2031	2049	430	30,000	12.9	-$1,642,123
				51.94	

TOTAL NPV COST $44,669,530

Option H3(a)

REQUIRED	2017	2026	2031
Cane Planation's	270	270	270
TOTAL	***270***	***270***	***270***
POTENTIAL LAND			
Cassava	270	270	270
TOTAL	***270***	***270***	***270***

Present Year	2015
NPV Rate	6.25%

Multiplier: 1000

Description	Year	Quantity	Rates	Cost ($000)	PV
Nikenbah to Cassava DN375 17.1km	2017	17100	594	10,157	$8,997,558
Pump station at Nikenbah (56L/s @ 64m)	2017	1	456859	457	$404,692
Pump Station at Cassava (56L/s @ 64m)	2017	1	456859	457	$404,692
Cassava Irrigation Area Development (270Ha)	2017	270	13000	3,510	$3,109,204
Cassava Dam No. 2 Improvements	2017	1	200000	200	$177,163
Upgrade Pulgul WWTP (4.5Ml)	2019	1	30000000	30,000	$23,539,948
Upgrade Pulgul Outfall DN450 4.9km	2019	1	8100000	8,100	$6,355,786
New Outfall pump station (232L/s@17m)	2019	1	456859	457	$358,481
AWTP at Nikenbah (4ML/day)	2026	1	38100000	38,100	$19,557,199
				91,438	

Multiplier: 1000000

	Year	No. Ha	Income ($/Ha)	Estimated Total Income ($m)	PV
2017	2024	270	3,000	0.81	-$469,380
2017	2029	270	20,000	5.4	-$2,310,940
2017	2035	270	30,000	8.1	-$2,409,385
				14.31	

TOTAL NPV COST $57,715,018

Option H3(b)

REQUIRED	2017	2026	2031
Cane		80	950
Planation's	370	650	870
TOTAL	***370***	***730***	***1820***
POTENTIAL LAND			
Cassava	320	320	320
Area West of Nikenbah	50	330	550
TOTAL		***650***	***870***

Present Year	2015
NPV Rate	6.25%

Multiplier: 1000

Description	Year	Quantity	Rates	Cost ($000)	PV
Cassava Irrigation Area Development (320Ha)	2017	320	13000	4,160	$3,684,983
Cassava Dam No. 2 Improvements	2017	1	200000	200	$177,163
Nikenbah to Cassava DN600 17.1km	2017	17100	1007	17,220	$15,253,437
Pump station at Nikenbah (202L/s @ 65m)	2017	1	790866	791	$700,560
Pump Station at Cassava (202L/s @ 65m)	2017	1	790866	791	$700,560
Acquisition and Development of new Plantation area west of Nikenbah (50Ha)	2017	50	23000	1,150	$1,018,685
Upgrade Pulgul WWTP (4.5Ml)	2019	1	30000000	30,000	$23,539,948
Upgrade Pulgul Outfall 1.3km DN375	2019	1	1100000	1,100	$863,131
Acquisition and Development of new Plantation area west of Nikenbah (280Ha)	2021	280	23000	6,440	$4,476,228
Nikenbah AWTP (4ML/day)	2026	1	38100000	38,100	$19,557,199
Nikenbah to Cassava DN375 17.1km	2026	17100	594	10,157	$5,213,918
AWTP pump station (56L/s @ 64m)	2026	1	345376	345	$177,286
Acquisition and Development of new Plantation area west of Nikenbah (220Ha)	2031	220	23000	5,060	$1,918,172
New Storage (200ML) to service area west of Nikenbah	2031	200	7000	1,400	$530,719
				116,914	

Multiplier: 1000000

Plantation year	Year	No. Ha	Income ($/Ha)	Estimated Total Income ($m)	PV
2017	2024	370	3,000	1.11	-$643,224
2017	2029	370	20,000	7.4	-$3,166,843
2017	2035	370	30,000	11.1	-$3,301,750
2026	2033	280	3,000	0.84	-$282,071
2026	2038	280	20,000	5.6	-$1,388,745
2026	2044	280	30,000	8.4	-$1,447,905
2031	2038	220	3000	0.66	-$163,673
2031	2043	220	20,000	4.4	-$805,828
2031	2049	220	30,000	6.6	-$840,156
				46.11	
				TOTAL NPV COST	$65,771,792

Option H4

Present Year	2015
NPV Rate	6.25%

Multiplier: 1000

Description	Year	Quantity	Rates	Cost ($000)	PV
Pulgul WWTP Upgrade (9ML/day) – N3/P1	2019	2	30000000	60,000	$47,079,896
Upgrade Pulgul Outfall 5.6km DN900	2019	1	25200000	25,200	$19,773,556
Pulgul Outfall Pump Station (1200L/s @ 19m)	2019	1	1075171	1,075	$843,649
Pipeline Eli Creek WWTP to Nikenbah WWTP DN500 7.9km	2031	7900	812	6,415	$2,431,757
Pump station at Eli Creek WWTP (318L/s @ 51m)	2031	1	893942	894	$338,880
Nikenbah WWTP Upgrade existing quality – N3/P1	2031	1	3500000	3,500	$1,326,799
Nikenbah WWTP New Treatment Train – N3/P1	2031	1	42300000	42,300	$16,035,310
Pipeline from Nikenbah to Pulgul Outfall 16.6km DN750	2031	16600	1193	19,804	$7,507,330
Nikenbah discharge Pump Station (688 L/S @ 48m)	2031	1	1308951	1,309	$496,204
				160,497	
				TOTAL NPV COST	$95,833,381
Sale of land	2031			22000	$8,339,877
				TOTAL NPV COST	$87,493,503

Option M1

REQUIRED	2017	2026	2031
Planation's	293	293	293
TOTAL	***293***	***293***	***293***
POTENTIAL LAND			
Plantations area between Hervey Bay and Maryborough	293	293	293
TOTAL	***293***	***293***	***293***

Present Year	2015
NPV Rate	6.25%

Multiplier: 1000

Description	Year	Quantity	Rates	Cost ($000)	PV
Upgrade Aubinville WWTP (Additonal Treatment 2.5Ml/day)	2026	0.6	30000000	16,667	$8,555,205
Upgrade Aubinville WWTP (Quality Improvement 5.625Ml/day)	2026	1.3	15000000	18,750	$9,624,606
Pipeline link to Nikenbah (24.3km DN375)	2017	24300	594	14,434	$12,786,004
St Helens Effluent Storage Pump Station (106L/s@67m)	2017	1	536832	537	$475,533
Land acquisition and Plantation Development (between HB and MB) (293Ha)	2017	293	23000	6,739	$5,969,495
				57,127	

Multiplier: 1000000

	Year	No. Ha	Income ($/Ha)	Estimated Total Income ($m)	PV
2017	2024	293	3,000	0.879	-$509,364
2017	2029	293	20,000	5.86	-$2,507,798
2017	2035	293	30,000	8.79	-$2,614,629
				15.529	
				TOTAL NPV COST	$31,779,052

Option M2

REQUIRED		2017	2026	2031
Cane		720	720	720
	TOTAL	***720***	***720***	***720***
POTENTIAL LAND				
Maryborough Sugar		720	720	720
	TOTAL	***720***	***720***	***720***

Present Year	2015
NPV Rate	6.25%

Multiplier: 1000

Description	Year	Quantity	Rates	Cost ($000)	PV
Upgrade Aubinville WWTP (Additonal Treatment 2.5Ml/day)	2026	0.6	30000000	16,667	$8,555,205
Upgrade Aubinville WWTP (Quality Improvement 5.625Ml/day)	2026	1.3	15000000	18,750	$9,624,606
Pipeline from Aubinville WWTP to MSF site (4.7km DN450)	2017	4700	781	4,671	$4,137,367
Aubinville WWTP Pump Station (180L/s@35m)	2017	1	536832	537	$475,533
Effluent Storage lagoon (500ML)	2017	500	7000	3,500	$3,100,346
				44,124	
				TOTAL NPV COST	$25,893,057

Option M3

Multiplier: 1000

Description	Year	Quantity	Rates	Cost ($000)	PV
Upgrade Aubinville WWTP (Additonal Treatment 2.5Ml/day)	2026	0.6	30000000	16,667	$8,555,205
Upgrade Aubinville WWTP (Quality Improvement 5.625Ml/day)	2026	1.25	15000000	18,750	$9,624,606
					$0
					$0
				35,417	
				TOTAL NPV COST	$18,179,811

APPENDIX 8 – UNIT COSTS

Table 1 Sewer Costs by Depth

Diameter	Sewer Rising				
(mm)	Main	Sewer by Depth			
		0 - 1.5m	1.5 - 3.0m	3.0 - 4.5m	Over 4.5m
100	$205	$135	$267	$299	$501
150	$283	$165	$325	$365	$610
200	$314	$211	$416	$467	$781
225	$347	$229	$451	$506	$847
250	$382	$299	$589	$660	$1,105
300	$453	$306	$603	$677	$1,132
375	$686	526	$788	$970	$1,313
400	N/A	N/A	N/A	N/A	N/A
450	$1,036	$609	$913	$1,124	$1,521
500	N/A	$676	$1,014	$1,248	$1,689
525	N/A	$686	$1,029	$1,266	$1,714
600	N/A	$811	$1,082	$1,320	$1,626
660	N/A	N/A	N/A	N/A	N/A
675	N/A	N/A	N/A	N/A	N/A
700	N/A	N/A	N/A	N/A	N/A
750	N/A	$1,197	$1,595	$1,947	$2,398
800	N/A	N/A	N/A	N/A	N/A
825	N/A	1547	$2,062	$2,516	$3,099
900	N/A	1530	$2,040	$2,490	$3,066
960	N/A	N/A	N/A	N/A	N/A
1000	N/A	N/A	N/A	N/A	N/A
1050	N/A	2806	$3,740	$4,565	$5,622
1085	N/A	N/A	N/A	N/A	N/A
1200	N/A	N/A	N/A	N/A	N/A
1290	N/A	N/A	N/A	N/A	N/A
1350	N/A	N/A	N/A	N/A	N/A
1500	N/A	N/A	N/A	N/A	N/A
1650	N/A	N/A	N/A	N/A	N/A
1800	N/A	N/A	N/A	N/A	N/A
1950	N/A	N/A	N/A	N/A	N/A
2250	N/A	6203	$7,702	$9,188	$10,723

Table 2 Cost Adjustment Factors

Level of Development	Soil Type	*Sewers < 1.5m* Pipe Size/Manholes			*Sewers 1.5 - 3.0m* Pipe Size/Manholes				*Sewers 3.0 - 4.5m* Pipe Size/Manholes				*Sewers 4.5m +* Pipe Size/Manholes			
		100mm - 300mm	400mm -< 600mm	660mm - < 900mm	100mm - 300mm	400mm -< 600mm	660mm - < 900mm	960mm -< 1200mm	100mm - 300mm	400mm -< 600mm	660mm - < 900mm	960mm -< 1200mm	100mm - 300mm	400mm -< 600mm	660mm - < 900mm	960mm -< 1200mm
			Manhole			Manhole				Manhole				Manhole		
RURAL	Sand	0.92	0.91	0.92	0.87	0.89	0.92	0.94	0.78	0.8	0.84	0.89	0.72	0.73	0.78	0.84
	Good Soil	0.93	0.92	0.93	0.92	0.93	0.95	0.96	0.88	0.88	0.91	0.95	0.87	0.86	0.89	0.93
	Poor Soil (High WT areas)	1.6	1.24	1.11	1.39	1.22	1.14	1.1	1.23	1.13	1.09	1.08	1.13	1.06	1.03	1.03
	ASS areas															
	Soft Rock	1.16	1.11	1.07	1.29	1.22	1.16	1.13	1.28	1.22	1.17	1.15	1.25	1.20	1.17	1.15
	Hard Rock	1.49	1.36	1.25	1.80	1.61	1.45	1.36	1.84	1.68	1.55	1.45	1.85	1.71	1.59	1.51
URBAN	Sand	0.99	0.99	0.99	0.95	0.96	0.97	0.98	0.9	0.92	0.93	0.94	0.85	0.87	0.89	0.91
	Good Soil	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Poor Soil (High WT areas)	1.65	1.29	1.16	1.44	1.27	1.18	1.13	1.31	1.21	1.15	1.11	1.22	1.15	1.11	1.08
	ASS areas															
	Soft Rock	1.19	1.15	1.1	1.33	1.25	1.19	1.15	1.33	1.27	1.21	1.17	1.31	1.26	1.22	1.18
	Hard Rock	1.51	1.39	1.27	1.83	1.63	1.47	1.37	1.88	1.72	1.58	1.47	1.89	1.76	1.63	1.53
HIGH DENSITY URBAN	Sand	1.49	1.5	1.44	1.49	1.45	1.33	1.24	1.67	1.69	1.53	1.29	1.71	1.79	1.64	1.37
	Good Soil	1.49	1.5	1.45	1.54	1.48	1.36	1.26	1.77	1.77	1.59	1.34	1.85	1.92	1.75	1.46
	Poor Soil (High WT areas)	2.15	1.8	1.61	1.98	1.76	1.54	1.39	2.08	1.98	1.74	1.46	2.08	2.07	1.86	1.55
	ASS areas															
	Soft Rock	1.69	1.65	1.55	1.88	1.74	1.55	1.41	2.1	2.04	1.81	1.52	2.17	2.18	1.97	1.65
	Hard Rock	2.01	1.9	1.72	2.37	2.12	1.83	1.63	2.65	2.49	2.17	1.82	2.74	2.68	2.39	2
CBD	Sand	1.98	2	1.89	2.04	1.93	1.69	1.5	3.19	3.24	2.75	2.02	2.57	2.7	2.39	1.83
	Good Soil	1.99	2	1.89	2.08	1.96	1.71	1.52	3.29	3.32	2.82	2.08	2.72	2.83	2.49	1.91
	Poor Soil (High WT areas)	2.64	2.29	2.06	2.53	2.24	1.9	1.65	3.61	3.53	2.97	2.19	2.94	2.98	2.61	2
	ASS areas															
	Soft Rock	2.19	2.15	2	2.42	2.22	1.91	1.67	3.62	3.59	3.04	2.25	3.03	3.09	2.72	2.1
	Hard Rock	2.5	2.4	2.16	2.92	2.59	2.19	1.89	4.18	4.04	3.4	2.55	3.61	3.59	3.13	2.45