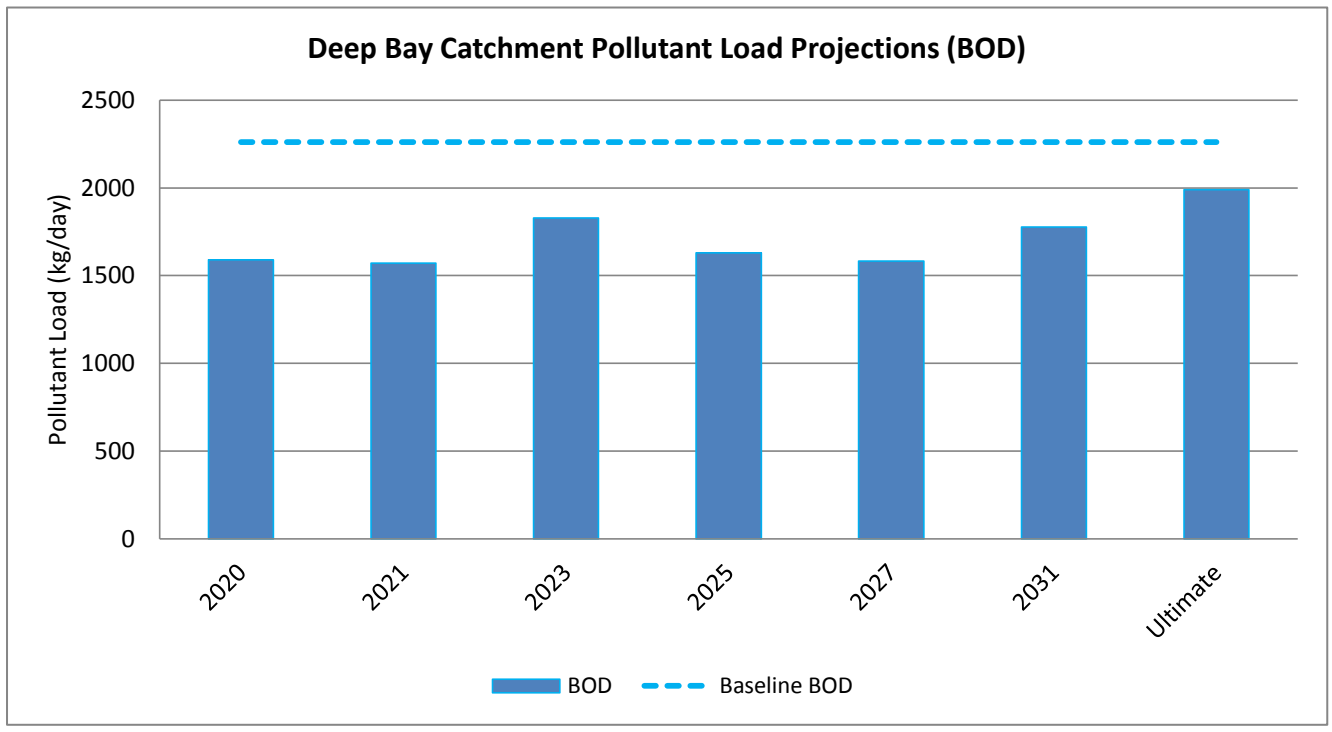
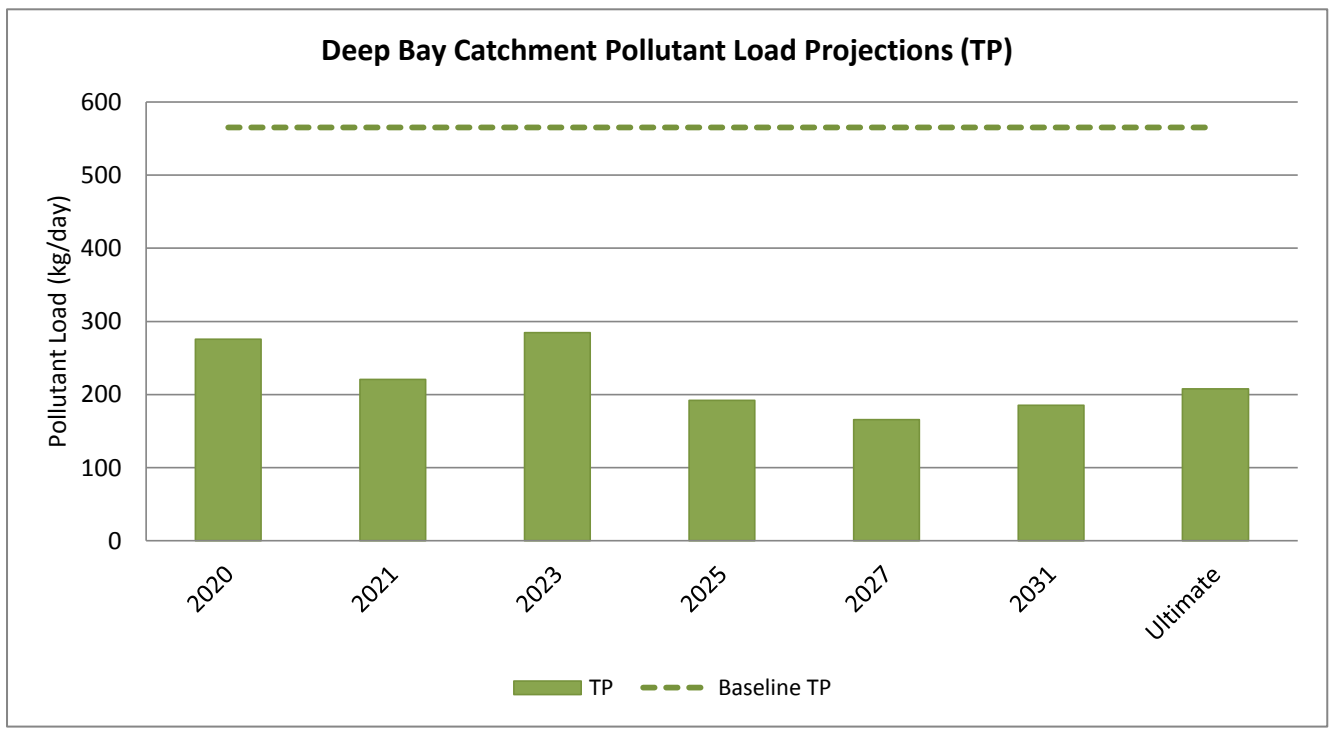
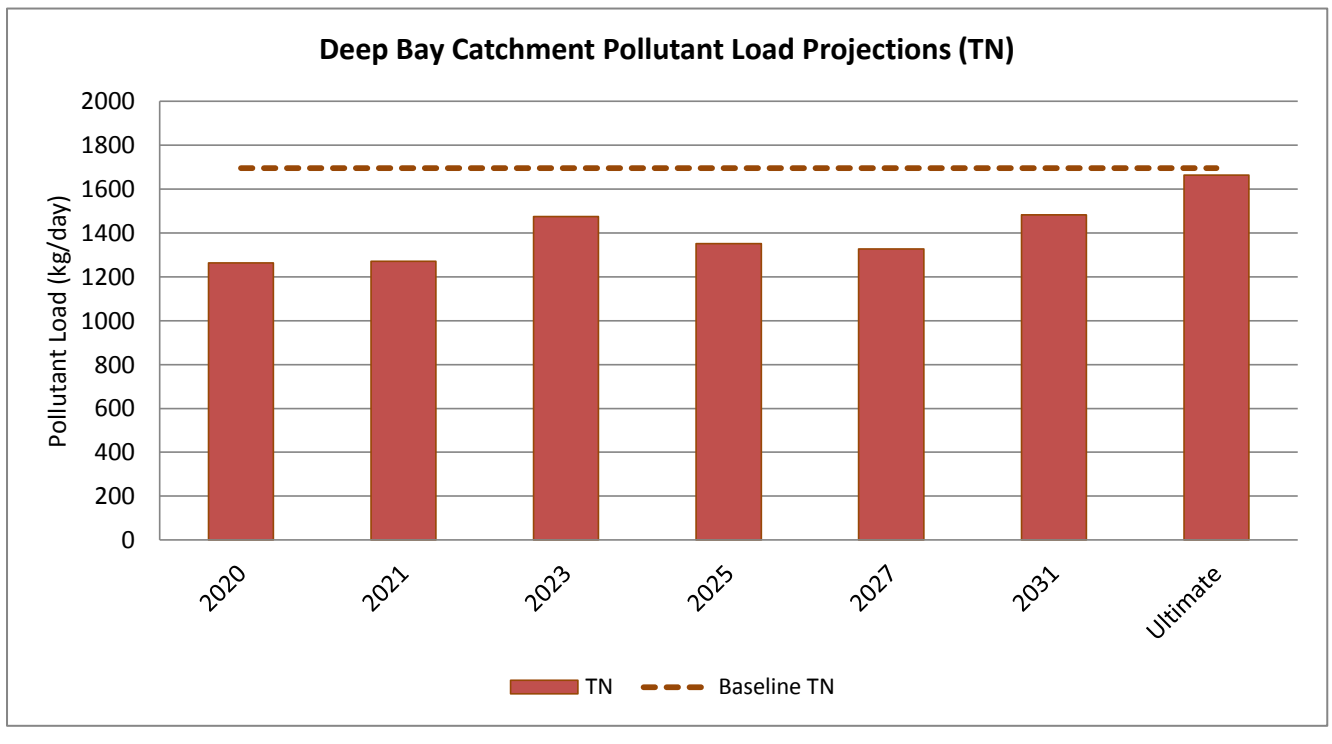
Flow Basis and Development Programme

Year	% Sewage Flow				SWHSTW Base Flow (EPD/WPG)	Total Flow to SWHSTW	SWHSTW Treatment Capacity [EPD/SIG Tender Ref SI 10-120 Option 2 Layout, July 2012]	
	LMCL [CE53/2008]	NENT-NDAs [CE61/2007]					Sec. treatment	Tertiary treatment (total)
		FLN-NDA	KTN-NDA	PC/TKL-NDA				
2011					90,682	90,682	93,000	-
2014					95,597	95,597	93,000	-
2015					97,055	97,055	93,000	-
2016					98,888	98,888	53,000	40,000
2017					101,095	101,095	53,000	40,000
2018					103,059	103,059	53,000	80,000
2019					114,141	114,141	53,000	80,000
2020	42%				117,569	117,569	53,000	80,000
2021	49%				132,819	132,819	40,000	113,000
2022	56%				141,227	141,227	40,000	113,000
2023	63%	Sewage Flow to be delivered to SWHSTW	Sewage Flow to be delivered to SWHSTW	Subject to replanning and would be proceeded at a later stage	145,066	145,066	40,000	113,000
2024	69%				146,665	146,665	40,000	113,000
2025	76%				148,823	148,823	20,000	141,500
2026	83%				149,231	149,231	20,000	141,500
2027	83%				150,769	150,769	-	170,000
2028	83%				168,718	168,718	-	170,000
2029	83%				169,234	169,234	-	170,000
2030	83%				169,750	169,750	-	170,000
2031	83%				170,266	170,266	-	170,000
Ultimate	100%				190,000	190,000	-	190,000
Flow	18,000	-	-	-			-	-


Deep Bay Catchment Pollutant Load Projections (BOD)
Pollutant Load (kg/day)
2500
2000
1500
1000
500
0
2020
2021
2023
2025
2027
2031
Ultimate
BOD
Baseline BOD


Deep Bay Catchment Pollutant Load Projections (TP)
Pollutant Load (kg/day)
600
500
400
300
200
100
0
2020
2021
2023
2025
2027
2031
Ultimate
TP
Baseline TP


Deep Bay Catchment Pollutant Load Projections (TN)
Pollutant Load (kg/day)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
2020
2021
2023
2025
2027
2031
Ultimate
TN
Baseline TN

Deep Bay Catchment - Sewerage Infrastructure Planning and Proposed Effluent Discharge Standards

Base Case[1)]

Base Case Discharge Standard- SWHSTW		
Flow	113000	m^3/day
BOD	20	mg/L
TN	15	mg/L
TP	5	mg/L
SS	30	mg/L
NH_3-N	2	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

SWHSTW

To Deep Bay

Base Case Sewage Flow to Deep Bay		
Flow	113000	m^3/day
Base Case Pollutant Load to Deep Bay		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

Year 2020[1)]

Under LMCL Development

Future Discharge Standard - LMCLSTW		
Flow	7500	m^3/day
BOD	5	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - LMCLSTW[2)]		
BOD	37.5	kg/day
TN	60	kg/day
TP	7.5	kg/day

LMCLSTW

To Deep Bay

Future Sewage Flow to Deep Bay		
Flow	125069	m^3/day
Future Pollutant Load to Deep Bay[4)]		
BOD	1589	kg/day
TN	1264	kg/day
TP	275	kg/day

Under NENT-NDAs Study / EPD Study

Future Discharge Standard - SWHSTW		
Flow	80000	m^3/day
BOD	10	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	800	kg/day
TN	640	kg/day
TP	80	kg/day

SWHSTW

To Deep Bay

Under NENT-NDAs Study / EPD Study

Existing Discharge Standard - SWHSTW		
Flow	37569	m^3/day
BOD	20	mg/L
TN	15	mg/L
TP	5	mg/L
SS	30	mg/L
NH_3-N	2	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - PCSTW		
BOD	751	kg/day
TN	564	kg/day
TP	188	kg/day

SWHSTW

Under Separate Study

Future Discharge Standard - PCSTW		
Flow	0	m^3/day
BOD	0	mg/L
TN	0	mg/L
TP	0	mg/L
SS	-	mg/L
NH_3-N	-	mg/L
E. Coli [3)]	-	cfu/100mL
Residual Pollutant Load - PCSTW		
BOD	0	kg/day
TN	0	kg/day
TP	0	kg/day

PCSTW

To Deep Bay

Notes:

1) Only BOD, TN and TP are subject pollutants following "no net increase in pollutant loads to Deep Bay" policy. SS and NH_3-N are related to impacts on the receiving water bodies, and *E. Coli* are according to EPD's internal guidelines.

2) The residual pollutant load from LMCLSTW is compensated off-site via improvement of SWHSTW.

3) 95th percentile value.

4) Assuming the worst-case scenario that there will be no reclaimed water uses.

Deep Bay Catchment - Sewerage Infrastructure Planning and Proposed Effluent Discharge Standards

Base Case[1)]

Base Case Discharge Standard- SWHSTW		
Flow	113000	m^3/day
BOD	20	mg/L
TN	15	mg/L
TP	5	mg/L
SS	30	mg/L
NH_3-N	2	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

SWHSTW

To Deep Bay

Base Case Sewage Flow to Deep Bay		
Flow	113000	m^3/day
Base Case Pollutant Load to Deep Bay		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

Year 2021[1)]

Under LMCL Development

Future Discharge Standard - LMCLSTW		
Flow	8750	m^3/day
BOD	5	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - LMCLSTW[2)]		
BOD	43.75	kg/day
TN	70	kg/day
TP	8.75	kg/day

LMCLSTW

To Deep Bay

Future Sewage Flow to Deep Bay		
Flow	141569	m^3/day
Future Pollutant Load to Deep Bay[4)]		
BOD	1570	kg/day
TN	1271	kg/day
TP	221	kg/day

Under NENT-NDAs Study / EPD Study

Future Discharge Standard - SWHSTW		
Flow	113000	m^3/day
BOD	10	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	1130	kg/day
TN	904	kg/day
TP	113	kg/day

SWHSTW

To Deep Bay

Under NENT-NDAs Study / EPD Study

Existing Discharge Standard - SWHSTW		
Flow	19819	m^3/day
BOD	20	mg/L
TN	15	mg/L
TP	5	mg/L
SS	30	mg/L
NH_3-N	2	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - PCSTW		
BOD	396	kg/day
TN	297	kg/day
TP	99	kg/day

SWHSTW

Under Separate Study

Future Discharge Standard - PCSTW		
Flow	0	m^3/day
BOD	0	mg/L
TN	0	mg/L
TP	0	mg/L
SS	-	mg/L
NH_3-N	-	mg/L
E. Coli [3)]	-	cfu/100mL
Residual Pollutant Load - PCSTW		
BOD	0	kg/day
TN	0	kg/day
TP	0	kg/day

PCSTW

To Deep Bay

Notes:

1) Only BOD, TN and TP are subject pollutants following "no net increase in pollutant loads to Deep Bay" policy. SS and NH_3-N are related to impacts on the receiving water bodies, and *E. Coli* are according to EPD's internal guidelines.

2) The residual pollutant load from LMCLSTW is compensated off-site via improvement of SWHSTW.

3) 95th percentile value.

4) Assuming the worst-case scenario that there will be no reclaimed water uses.

Deep Bay Catchment - Sewerage Infrastructure Planning and Proposed Effluent Discharge Standards

Base Case[1)]

Base Case Discharge Standard- SWHSTW		
Flow	113000	m^3/day
BOD	20	mg/L
TN	15	mg/L
TP	5	mg/L
SS	30	mg/L
NH_3-N	2	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

SWHSTW

To Deep Bay

Base Case Sewage Flow to Deep Bay		
Flow	113000	m^3/day
Base Case Pollutant Load to Deep Bay		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

Year 2023[1)]

Under LMCL Development

Future Discharge Standard - LMCLSTW		
Flow	11250	m^3/day
BOD	5	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - LMCLSTW[2)]		
BOD	56.25	kg/day
TN	90	kg/day
TP	11.25	kg/day

LMCLSTW

To Deep Bay

Future Sewage Flow to Deep Bay		
Flow	156316	m^3/day
Future Pollutant Load to Deep Bay[4)]		
BOD	1828	kg/day
TN	1475	kg/day
TP	285	kg/day

Under NENT-NDAs Study / EPD Study

Future Discharge Standard - SWHSTW		
Flow	113000	m^3/day
BOD	10	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	1130	kg/day
TN	904	kg/day
TP	113	kg/day

SWHSTW

To Deep Bay

Under NENT-NDAs Study / EPD Study

Existing Discharge Standard - SWHSTW		
Flow	32066	m^3/day
BOD	20	mg/L
TN	15	mg/L
TP	5	mg/L
SS	30	mg/L
NH_3-N	2	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - PCSTW		
BOD	641	kg/day
TN	481	kg/day
TP	160	kg/day

SWHSTW

Under Separate Study

Future Discharge Standard - PCSTW		
Flow	0	m^3/day
BOD	0	mg/L
TN	0	mg/L
TP	0	mg/L
SS	-	mg/L
NH_3-N	-	mg/L
E. Coli [3)]	-	cfu/100mL
Residual Pollutant Load - PCSTW		
BOD	0	kg/day
TN	0	kg/day
TP	0	kg/day

PCSTW

To Deep Bay

Notes:

1) Only BOD, TN and TP are subject pollutants following "no net increase in pollutant loads to Deep Bay" policy. SS and NH_3-N are related to impacts on the receiving water bodies, and *E. Coli* are according to EPD's internal guidelines.

2) The residual pollutant load from LMCLSTW is compensated off-site via improvement of SWHSTW.

3) 95th percentile value.

4) Assuming the worst-case scenario that there will be no reclaimed water uses.

Deep Bay Catchment - Sewerage Infrastructure Planning and Proposed Effluent Discharge Standards

Base Case[1)]

Base Case Discharge Standard- SWHSTW		
Flow	113000	m^3/day
BOD	20	mg/L
TN	15	mg/L
TP	5	mg/L
SS	30	mg/L
NH_3-N	2	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

SWHSTW

To Deep Bay

Base Case Sewage Flow to Deep Bay		
Flow	113000	m^3/day
Base Case Pollutant Load to Deep Bay		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

Year 2025[1)]

Under LMCL Development

Future Discharge Standard - LMCLSTW		
Flow	13750	m^3/day
BOD	5	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - LMCLSTW[2)]		
BOD	68.75	kg/day
TN	110	kg/day
TP	13.75	kg/day

LMCLSTW

To Deep Bay

Future Sewage Flow to Deep Bay		
Flow	162573	m^3/day
Future Pollutant Load to Deep Bay[4)]		
BOD	1630	kg/day
TN	1352	kg/day
TP	192	kg/day

Under NENT-NDAs Study / EPD Study

Future Discharge Standard - SWHSTW		
Flow	141500	m^3/day
BOD	10	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	1415	kg/day
TN	1132	kg/day
TP	142	kg/day

SWHSTW

To Deep Bay

Under NENT-NDAs Study / EPD Study

Existing Discharge Standard - SWHSTW		
Flow	7323	m^3/day
BOD	20	mg/L
TN	15	mg/L
TP	5	mg/L
SS	30	mg/L
NH_3-N	2	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - PCSTW		
BOD	146	kg/day
TN	110	kg/day
TP	37	kg/day

SWHSTW

Under Separate Study

Future Discharge Standard - PCSTW		
Flow	0	m^3/day
BOD	0	mg/L
TN	0	mg/L
TP	0	mg/L
SS	-	mg/L
NH_3-N	-	mg/L
E. Coli [3)]	-	cfu/100mL
Residual Pollutant Load - PCSTW		
BOD	0	kg/day
TN	0	kg/day
TP	0	kg/day

PCSTW

To Deep Bay

Notes:

1) Only BOD, TN and TP are subject pollutants following "no net increase in pollutant loads to Deep Bay" policy. SS and NH_3-N are related to impacts on the receiving water bodies, and *E. Coli* are according to EPD's internal guidelines.

2) The residual pollutant load from LMCLSTW is compensated off-site via improvement of SWHSTW.

3) 95th percentile value.

4) Assuming the worst-case scenario that there will be no reclaimed water uses.

Deep Bay Catchment - Sewerage Infrastructure Planning and Proposed Effluent Discharge Standards

Base Case[1)]

Base Case Discharge Standard- SWHSTW		
Flow	113000	m^3/day
BOD	20	mg/L
TN	15	mg/L
TP	5	mg/L
SS	30	mg/L
NH_3-N	2	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

SWHSTW

To Deep Bay

Base Case Sewage Flow to Deep Bay		
Flow	113000	m^3/day
Base Case Pollutant Load to Deep Bay		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

Year 2027[1)]

Under LMCL Development

Future Discharge Standard - LMCLSTW		
Flow	15000	m^3/day
BOD	5	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - LMCLSTW[2)]		
BOD	75	kg/day
TN	120	kg/day
TP	15	kg/day

LMCLSTW

To Deep Bay

Future Sewage Flow to Deep Bay		
Flow	165769	m^3/day
Future Pollutant Load to Deep Bay[4)]		
BOD	1583	kg/day
TN	1326	kg/day
TP	166	kg/day

Under NENT-NDAs Study / EPD Study

Future Discharge Standard - SWHSTW		
Flow	150769	m^3/day
BOD	10	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	1508	kg/day
TN	1206	kg/day
TP	151	kg/day

SWHSTW

To Deep Bay

Under Separate Study

Future Discharge Standard - PCSTW		
Flow	0	m^3/day
BOD	0	mg/L
TN	0	mg/L
TP	0	mg/L
SS	-	mg/L
NH_3-N	-	mg/L
E. Coli [3)]	-	cfu/100mL
Residual Pollutant Load - PCSTW		
BOD	0	kg/day
TN	0	kg/day
TP	0	kg/day

PCSTW

To Deep Bay

Notes:

1) Only BOD, TN and TP are subject pollutants following "no net increase in pollutant loads to Deep Bay" policy. SS and NH_3-N are related to impacts on the receiving water bodies, and *E. Coli* are according to EPD's internal guidelines.

2) The residual pollutant load from LMCLSTW is compensated off-site via improvement of SWHSTW.

3) 95th percentile value.

4) Assuming the worst-case scenario that there will be no reclaimed water uses.

Deep Bay Catchment - Sewerage Infrastructure Planning and Proposed Effluent Discharge Standards

Base Case[1)]

Base Case Discharge Standard- SWHSTW		
Flow	113000	m^3/day
BOD	20	mg/L
TN	15	mg/L
TP	5	mg/L
SS	30	mg/L
NH_3-N	2	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

SWHSTW

To Deep Bay

Base Case Sewage Flow to Deep Bay		
Flow	113000	m^3/day
Base Case Pollutant Load to Deep Bay		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

Year 2031[1)]

Under LMCL Development

Future Discharge Standard - LMCLSTW		
Flow	15000	m^3/day
BOD	5	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - LMCLSTW[2)]		
BOD	75	kg/day
TN	120	kg/day
TP	15	kg/day

LMCLSTW

To Deep Bay

Future Sewage Flow to Deep Bay		
Flow	185266	m^3/day
Future Pollutant Load to Deep Bay[4)]		
BOD	1778	kg/day
TN	1482	kg/day
TP	185	kg/day

Under NENT-NDAs Study / EPD Study

Future Discharge Standard - SWHSTW		
Flow	170266	m^3/day
BOD	10	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	1703	kg/day
TN	1362	kg/day
TP	170	kg/day

SWHSTW

To Deep Bay

Under Separate Study

Future Discharge Standard - PCSTW		
Flow	0	m^3/day
BOD	0	mg/L
TN	0	mg/L
TP	0	mg/L
SS	-	mg/L
NH_3-N	-	mg/L
E. Coli [3)]	-	cfu/100mL
Residual Pollutant Load - PCSTW		
BOD	0	kg/day
TN	0	kg/day
TP	0	kg/day

PCSTW

To Deep Bay

Notes:

1) Only BOD, TN and TP are subject pollutants following "no net increase in pollutant loads to Deep Bay" policy. SS and NH_3-N are related to impacts on the receiving water bodies, and *E. Coli* are according to EPD's internal guidelines.

2) The residual pollutant load from LMCLSTW is compensated off-site via improvement of SWHSTW.

3) 95th percentile value.

4) Assuming the worst-case scenario that there will be no reclaimed water uses.

Deep Bay Catchment - Sewerage Infrastructure Planning and Proposed Effluent Discharge Standards

Base Case[1)]

Base Case Discharge Standard- SWHSTW		
Flow	113000	m^3/day
BOD	20	mg/L
TN	15	mg/L
TP	5	mg/L
SS	30	mg/L
NH_3-N	2	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

SWHSTW

To Deep Bay

Base Case Sewage Flow to Deep Bay		
Flow	113000	m^3/day
Base Case Pollutant Load to Deep Bay		
BOD	2260	kg/day
TN	1695	kg/day
TP	565	kg/day

Ultimate Scenario[1)]

Under LMCL Development

Future Discharge Standard - LMCLSTW		
Flow	18000	m^3/day
BOD	5	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - LMCLSTW[2)]		
BOD	90	kg/day
TN	144	kg/day
TP	18	kg/day

LMCLSTW

To Deep Bay

Future Sewage Flow to Deep Bay		
Flow	208000	m^3/day
Future Pollutant Load to Deep Bay[4)]		
BOD	1990	kg/day
TN	1664	kg/day
TP	208	kg/day

* No net increase in pollutant load to Deep Bay is achieved

Under NENT-NDAs Study / EPD Study

Future Discharge Standard - SWHSTW		
Flow	190000	m^3/day
BOD	10	mg/L
TN	8	mg/L
TP	1	mg/L
SS	10	mg/L
NH_3-N	1.9	mg/L
E. Coli [3)]	1500	cfu/100mL
Residual Pollutant Load - SWHSTW		
BOD	1900	kg/day
TN	1520	kg/day
TP	190	kg/day

SWHSTW

To Deep Bay

Under Separate Study

Future Discharge Standard - PCSTW		
Flow	0	m^3/day
BOD	0	mg/L
TN	0	mg/L
TP	0	mg/L
SS	-	mg/L
NH_3-N	-	mg/L
E. Coli [3)]	-	cfu/100mL
Residual Pollutant Load - PCSTW		
BOD	0	kg/day
TN	0	kg/day
TP	0	kg/day

PCSTW

To Deep Bay

Notes:

1) Only BOD, TN and TP are subject pollutants following "no net increase in pollutant loads to Deep Bay" policy. SS and NH_3-N are related to impacts on the receiving water bodies, and *E. Coli* are according to EPD's internal guidelines.

2) The residual pollutant load from LMCLSTW is compensated off-site via improvement of SWHSTW.

3) 95th percentile value.

4) Assuming the worst-case scenario that there will be no reclaimed water uses.