

Appendix 7.3 Comparison of the Proposed Sewage Flow Against the Capacity of the Existing 450mm Sewer along Nam Long Shan Road

Catchment No.	Node Reference	Contributing Planning Area	Number of Flat / Class	Population	Population	Per Capita Contribution	Average Daily Flow
						m ³ /d	m ³ /d
S1	FMH7056267	Existing facilities of Ocean Park ¹	-	-	-	-	1239.00
S2	FMH7056262	Tai Shue Wan Water Park Development (Project) and existing Tai Shue Wan facilities ²	-	-	-	-	1286.11
S3	FMH7056229	TWGHs David Trench Home for Elderly ³	-	-	-	-	160.92
S4	FMH7056213	Singapore International School	-	1280 Pupils and 176 Staff ⁴	1408 Pupils and 194 Staffs ⁶	0.04 for Pupils and 0.28 for Staffs	110.64
S5	FMH7056213	Shue Yan Secondary School		1200 Pupils and 120 Staff ⁵	1320 Pupils and 132 Staffs ⁶	0.04 for Pupils and 0.28 for Staffs	89.76
					-	Total	2,886.43

Note:

1. The ADWF of catchment S1 is given by Ocean Park.
2. The ADWF and the peak flow of project in catchment S2 are estimated by the project consultant and the detail calculation can be found at appendix 7.4
3. The ADWF estimated from the peak flow provided by DSD. (Peak flow = 14.9 l/s and peaking factor = 8)
4. The data of the no. of pupils and staffs are from school website
5. The no. of pupils of the school is assumed according to the Hong Kong Planning Standards and Guidelines from Planning Department.
6. 10% of contingency factor has been applied to the population of the School.

**Tai Shue Wan Water Park Development at Ocean Park
2021 Scenario**

Assumptions:

1. Pipe roughness = 3 mm
2. Transitional flow and water at 15 degree celcius, i.e. kinematic viscosity is 1.14×10^{-6} m²/s

HYDRAULIC CAPACITY OF EXISTING SEWERAGE PIPE

From Manhole	To Manhole	Pipe Diameter	Invert Level Upstream	Invert Level Downstream	Gradient	Hori. Dist.	Pipe Length	ADWF	Acc. ADWF discharge	Peaking factor	Peak flow to down stream	% utilization	At pipe flow full
		mm	mPD	mPD	1 in	m	m	m ³ /day	m ³ /day		l/s		l/s
FMH7056268	FMH7056267	450	86.2	85.4	22	17	17	0	0	0	0.0	0.0	554
FMH7056267	FMH7056266	450	85.3	82.4	13	38	38	1239	1239	6	86.1	12.0	718
FMH7056266	FMH7056265	450	82.1	81.1	26	28	28	0	1239	6	86.1	16.9	509
FMH7056265	FMH7056264	450	81.0	80.1	31	28	28	0	1239	6	86.1	18.5	464
FMH7056264	FMH7056263	450	79.2	79.1	148	29	19	0	1239	6	86.1	40.4	213
FMH7056263	FMH7056262	450	79.5	79.4	204	22	22	0	1239	6	86.1	47.5	181
FMH7056262	FMH7056261	450	79.4	79.3	142	21.3	21.3	1286	2525	5	146.2	67.3	217.2
FMH7056261	FMH7056260	450	79.2	79.1	139	18.1	18.1	0	2525	5	146.2	66.7	219.2
FMH7056260	FMH7056259	450	79.1	78.6	58	30.0	30.0	0	2525	5	146.2	42.9	341.0
FMH7056259	FMH7056258	450	78.6	78.3	32	16.3	16.3	0	2525	5	146.2	40.9	357.8
FMH7056258	FMH7056257	450	78.3	77.3	27	26.3	26.3	0	2525	5	146.2	29.5	495.5
FMH7056257	FMH7056256	450	77.2	76.5	33	25.0	25.0	0	2525	5	146.2	32.4	451.8
FMH7056256	FMH7056255	450	76.5	76.3	62	8.8	8.8	0	2525	5	146.2	44.6	327.6
FMH7056255	FMH7056254	450	76.3	75.9	30	13.8	50.0	0	2525	5	146.2	30.8	473.9
FMH7056254	FMH7056253	450	75.9	74.8	17	18.8	18.8	0	2525	5	146.2	23.5	622.0
FMH7056253	FMH7056252	450	73.9	73.5	13	5.0	5.0	0	2525	5	146.2	19.9	733.1
FMH7056252	FMH7056251	450	73.4	73.3	118	21.3	21.3	0	2525	5	146.2	61.4	238.2
FMH7056251	FMH7056250	450	73.0	72.2	88	67.5	67.5	0	2525	5	146.2	52.9	276.5
FMH7056250	FMH7056249	450	72.2	72.0	83	20.0	20.0	0	2525	5	146.2	51.5	283.6
FMH7056249	FMH7056248	450	71.7	71.6	188	3.8	3.8	0	2525	5	146.2	77.4	188.9
FMH7056248	FMH7056247	450	71.6	71.5	198	23.8	23.8	0	2525	5	146.2	79.5	183.9
FMH7056247	FMH7056246	450	71.5	71.3	176	30.0	30.0	0	2525	5	146.2	75.1	194.8
FMH7056246	FMH7056245	450	71.3	70.5	14	11.3	11.3	0	2525	5	146.2	21.4	682.5
FMH7056245	FMH7056244	450	70.5	70.4	112	11.3	50.0	0	2525	5	146.2	59.9	244.1
FMH7056244	FMH7056243	450	70.3	70.1	167	40.0	40.0	0	2525	5	146.2	72.9	200.4
FMH7056243	FMH7056242	450	70.1	67.9	13	30.0	30.1	0	2525	5	146.2	20.6	709.8
FMH7056242	FMH7056241	450	67.9	67.8	219	8.8	8.8	0	2525	5	146.2	83.6	174.9
FMH7056241	FMH7056240	450	67.8	67.0	54	42.5	42.5	0	2525	5	146.2	41.7	350.9
FMH7056240	FMH7056239	450	66.9	63.8	12	37.5	37.6	0	2525	5	146.2	19.5	750.1
FMH7056239	FMH7056238	450	63.7	62.2	15	22.5	22.5	0	2525	5	146.2	21.9	667.0
FMH7056238	FMH7056237	450	62.2	61.3	25	21.9	21.9	0	2525	5	146.2	28.5	513.7
FMH7056237	FMH7056236	450	61.3	60.1	12	15.0	15.1	0	2525	5	146.2	19.7	742.3
FMH7056236	FMH7056235	450	60.0	58.8	32	37.5	37.5	0	2525	5	146.2	32.1	455.7
FMH7056235	FMH7056234	450	58.8	57.2	25	40.0	40.0	0	2525	5	146.2	28.3	516.6
FMH7056234	FMH7056233	450	56.4	54.9	26	38.8	38.8	0	2525	5	146.2	28.7	509.8
FMH7056233	FMH7056232	450	54.8	54.3	20	10.0	10.0	0	2525	5	146.2	25.0	585.3
FMH7056232	FMH7056231	450	54.3	53.3	22	22.5	22.5	0	2525	5	146.2	26.4	554.5
FMH7056231	FMH7056230	450	52.9	50.7	11	23.1	23.2	0	2525	5	146.2	18.6	786.6
FMH7056230	FMH7056229	450	50.0	47.8	12	26.9	27.0	0	2525	5	146.2	19.7	743.2
FMH7056229	FMH7056228	450	47.1	45.5	14	22.5	22.6	161	2686	5	155.5	22.4	695.5
FMH7056228	FMH7056227	450	45.1	43.8	15	18.8	18.8	0	2686	5	155.5	23.2	669.2
FMH7056227	FMH7056226	450	43.2	41.6	14	22.5	22.6	0	2686	5	155.5	22.2	701.9
FMH7056226	FMH7056225	450	40.9	38.6	14	33.8	33.8	0	2686	5	155.5	22.6	686.8
FMH7056225	FMH7056224	450	38.6	38.0	10	5.0	5.0	0	2686	5	155.5	18.6	836.0
FMH7056224	FMH7056223	450	38.0	36.6	20	27.5	27.5	0	2686	5	155.5	26.8	580.6
FMH7056223	FMH7056222	450	36.6	35.7	16	13.8	13.8	0	2686	5	155.5	24.0	648.2
FMH7056222	FMH7056221	450	35.6	35.3	13	4.4	4.4	0	2686	5	155.5	21.2	733.1
FMH7056221	FMH7056220	450	35.2	34.3	14	13.8	13.8	0	2686	5	155.5	22.7	684.9
FMH7056220	FMH7056219	450	34.2	33.7	16	7.5	7.5	0	2686	5	155.5	24.2	641.9
FMH7056219	FMH7056218	450	33.7	31.7	17	33.1	33.2	0	2686	5	155.5	24.4	636.8
FMH7056218	FMH7056217	450	31.7	28.5	13	41.3	41.4	0	2686	5	155.5	21.4	727.6
FMH7056217	FMH7056216	450	27.9	26.2	11	18.1	18.2	0	2686	5	155.5	19.8	786.7
FMH7056216	FMH7056215	450	25.8	23.9	12	23.8	23.8	0	2686	5	155.5	20.9	742.7
FMH7056215	FMH7056214	450	23.8	23.4	23	10.0	10.0	0	2686	5	155.5	28.6	543.6
FMH7056214	FMH7056213	450	21.5	20.7	32	23.8	23.8	0	2686	5	155.5	33.8	460.4
FMH7056213	FMH7056212	450	20.6	20.4	134	14.7	14.7	200	2886	5	167.1	74.6	223.9

Maximum 83.6
Minimum 12.0

Catchment No.	Average Daily Flow (m ³ /d)	Notes
S1 (Existing facilities of Ocean Park)	1239.0	From Ocean Park
S2 (Project and Existing Tai Shue Wan Facilities)	1286.1	From design consultant of project (appendix 7.4)
S3 (TWGHs David Trench Home for Elderly)	160.9	From DSD
S4 (Singapore International School)	110.6	-
S5 (Shue Yan Secondary School)	89.8	-

Contributing Catchment No.	Discharged Manhole	Average Daily Flow (m ³ /d)	Contributing Population	Peaking Factor	Peak Flow (l/s)	Notes
S1	FMH7056267	1239.0	4589	6	86.1	From Ocean Park
S1 + S2	FMH7056262	2525.1	9353	5	146.2	-
S1 + S2 + S3	FMH7056229	2686.0	9949	5	155.5	-
S1 + S2 + S3 + S4 + S5	FMH7056213	2886.4	10691	5	167.1	-