

Appendix 6-1

Estimation of Sewage Flow from the Proposed Development

Unit Flow Factors and Peaking Factors

The person-per-occupied flat is taken as 3.5 and the peaking factors with stormwater allowance are adopted in the estimation. The estimation of sewage load (ADWF & design flow) from the proposed development is estimated in Table (a) to (d) in accordance with the Guideline for Estimating Sewage Flows for Sewage Infrastructure Planning (GESF) published by EPD.

Estimation of Sewage Flow from Development

Table (a) Estimated Sewage Flow from the Residential Development

<i>Residential Unit</i>	
No. of house	: 32
Population	= 3.5 heads per flat × 32 flat
	= 112 heads
Unit flow Factor ⁽¹⁾	: 0.37 m ³ /head/d
ADWF	= 112 × 0.37
	= 41.44 m ³ /d (0.48 L/s)
Peaking Factor	: 8 (for population < 1,000)
Design Flow	= 41.44 × 8
	= 331.52 m ³ /d (3.84 L/s)

Note:

(1) The unit flow rate for the residential area is extracted from GESF.

Table (b) Estimated Sewage Flow from the Non-Residential Development

<i>Club house and Estate Management</i>	
Population	: 20 employees
Unit flow Factor ⁽¹⁾	: 0.28 m ³ /head/d
ADWF	= 20 × 0.28
	= 5.60 m ³ /d (0.065 L/s)
Peaking Factor	: 8 (for population < 1,000)
Design Flow for Employees	= 5.60 × 8
	= 44.80 m ³ /d (0.52 L/s)

Note:

(1) The unit flow rate for the employee is extracted from GESF.

Table (c) Estimated Sewage Flow from Swimming Pool

Employees	
Pool Volume	: 229.2 m ³
Turnover Rate	: 4 hrs
Surface Loading Rate of Filter	: 20 m ³ /m ² /hr
Filter Areas Required	= 229.2/4/20
	= 2.865 m ²
Backwash Duration	: 3 min/d
Backwash Flow Rate	: 30 m ³ /m ² /hr
Design Flow for Swimming Pool Backwashing	= 30 x 2.865 x 3 / 60
	= 4.30 m ³ /d (0.050 l/s)

Table (d) Total Estimated Sewage Flow Generated from the Development

Items	Units	Resident	Employee	Swimming Pool	Total
Total ADWF	m ³ /d	41.44	5.60	4.3	51.34
	l/s	0.48	0.065	0.05	0.60
Total Design Flow	m ³ /d	331.52	44.80	4.3	380.62
	l/s	3.84	0.52	0.05	4.41