

Annex G of FI (3)

Updated Alternative Sewerage Flow Calculation

CM010 - The Pulse Repulse Bay
Sewage Flows

Refer:

1. Approved GBP for Existing Building
2. Proposed Layouts for Future Redevelopment
3. PlanD "Commercial and Industrial Floorspace Utilization Survey" (CIFSUS) Report, Figure 9: Worker Density by Industry
4. EPD "Guidelines for the Estimation of Sewage Flow for Sewage Infrastructure Planning" (GESF), Table T-2: Unit Flow Factors for Commercial Flows and Student Flows
5. Building (Standards of Sanitary Fitments, Plumbing Drainage Works and Latrines) Regulations (Cap. 123I, Section 7A):

Existing

Floor	Utilization	GFA (m ²)	Worker Density (No./100m ²)	No. of Workers/ Vistors		Commercial Activity	Unit Flow Factor (m ³ /h/d)	Daily Flow (m ³ /d)
				(Calc)	(Say)			
Upper Ground Floor	Retail	3,697.255	3.5	129.40	130	J4	0.280	36.4
First Floor	Restaurant	3,603.360	5.1	183.77	184	J10	1.580	290.7
B1 Toilets - Male	Shopping			500	500	Person*	0.040	20.0
B1 Toilets - Female	Shopping			160	160	Person*	0.040	6.4
Existing Total Daily Flow from B1/F (Part), UG/F & 1/F								353.5
Average Dry Weather Flow (l/s)								4.1
Contributing Population, P, @ 0.27m ³ /peron/day								1,309
Peaking Factor (1000<P<5,000)								5
Existing Peak Discharge from B1/F (Part), U/G and 1/F of the Pulse (l/s)								20.5

Notes:

* - Unit users of Shopping Arcade assumed as School Students from Table T-2 of GESF

For Job Type J10, the "per-employee" unit flow factor takes into account the flows of customers.

Assessment based on existing building alone, so Catchment Inflow Factors not applicable

Assessment based on existing building alone, so Peaking Factors excluding stormwater allowance appropriate

Future

Floor	Utilization	GFA (m ²)	Worker Density (No./100m ²)	No. of Workers/ Vistors		Commercial Activity	Unit Flow Factor (m ³ /h/d)	Daily Flow (m ³ /d)
				(Calc)	(Say)			
B1/F, UG/F & 1/F	Hotel	5610	3.2	179.52	180	J10	1.580	284.4
	Restaurant	393	5.1	20.04	21	J10	1.580	33.2
	Spa/Gym	587	3.3	19.37	20	J10	1.580	31.6
Future Total Daily Flow from B1/F (Part), UG/F & 1/F								349.2
Average Dry Weather Flow (l/s)								4.0
Contributing Population, P, @ 0.27m ³ /person/day								1,293
Peaking Factor (1000<P<5,000)								5
Future Peak Discharge from B1/F (Part), U/G and 1/F of the Pulse (l/s)								20.2

Note:

For Job Type J10, the "per-employee" unit flow factor takes into account the flows of customers.

The Worker Density for Spa/Gym has been based on CIFSUS "Community, Social and Personal Services" Category

The Unit Flow Factor for Spa/Gym has been based on GESF Commercial Activity J10 (i.e. conservative)

Assessment based on existing building alone, so Catchment Inflow Factors not applicable

Assessment based on existing building alone, so Peaking Factors excluding stormwater allowance appropriate