

Wastewater Quantity



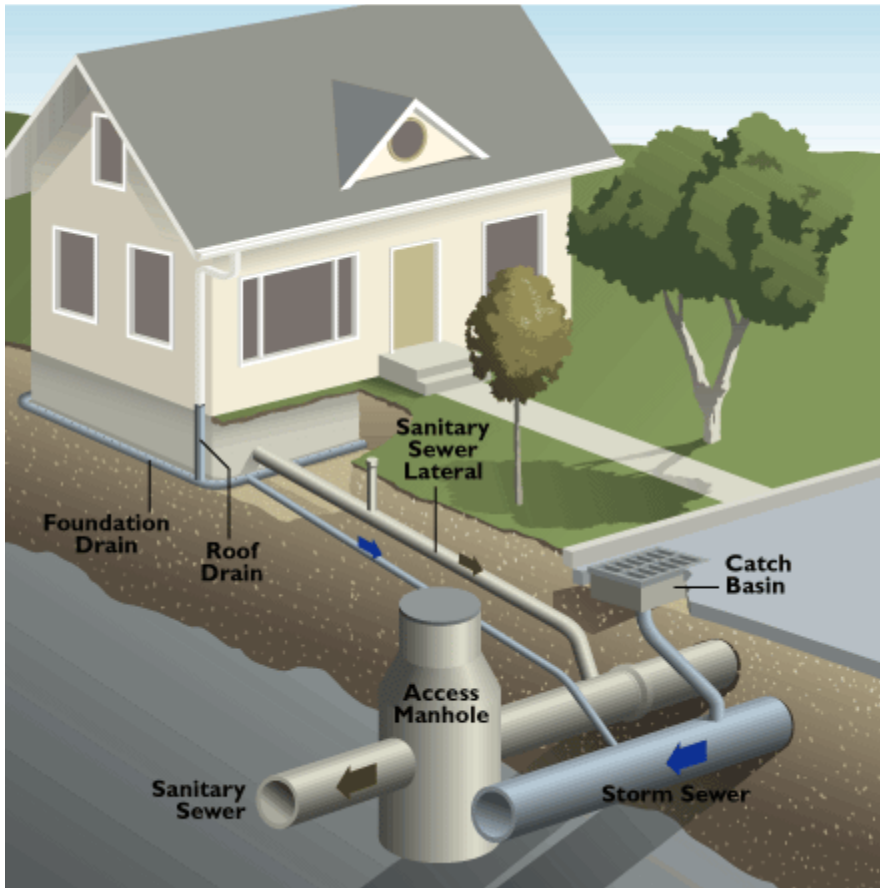
Sewage

Liquid

discharge from

domestic

sources



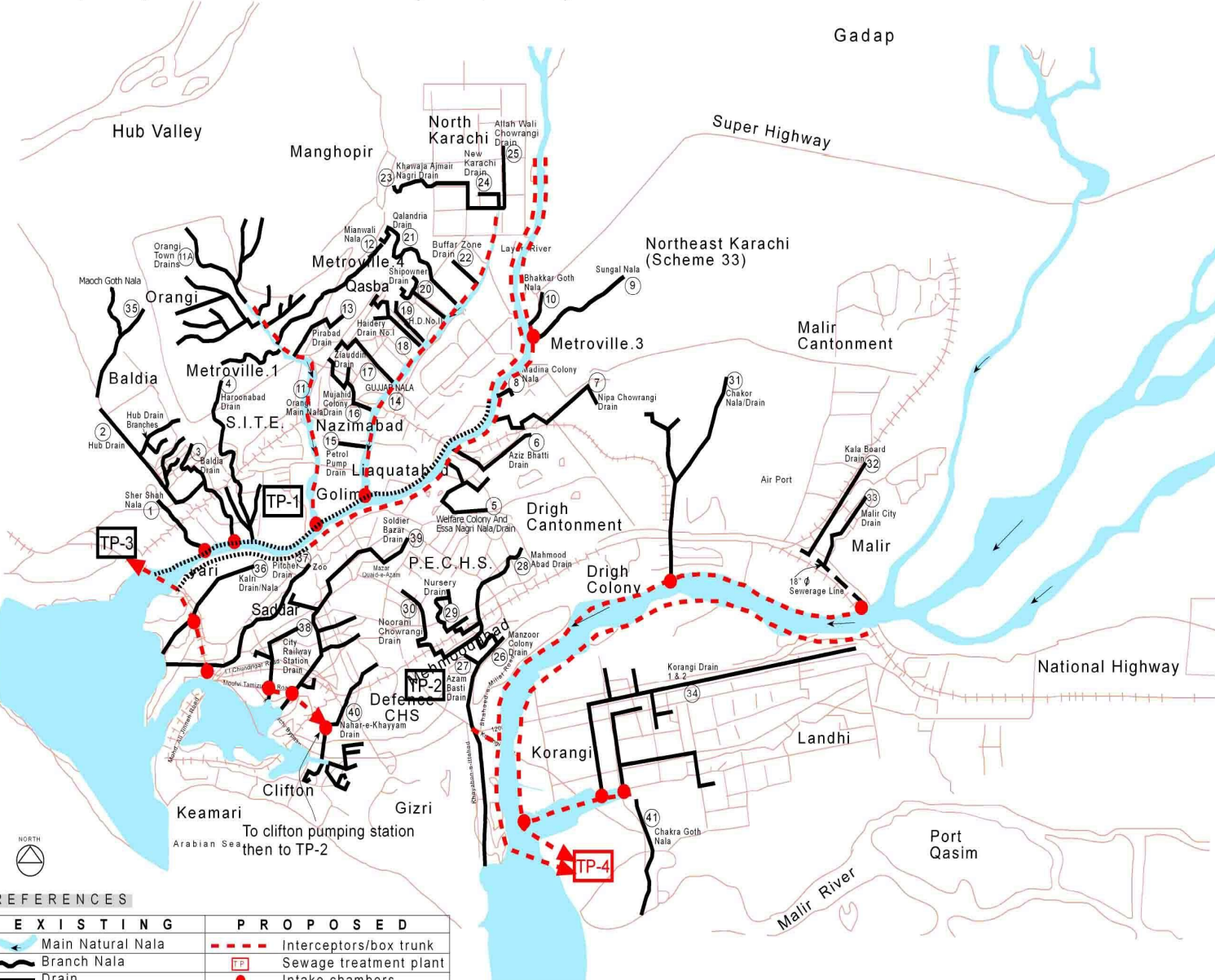
Sewer
Pipes or
channels to
convey sewage
to sewage
treatment plant



Sewage Treatment Plant (STP)
Plant designed to treat sewage

Karachi map showing the documented natural nalas & drain (which are the main disposals for sewage and rain water) and the integration of these with the mains & STPs.

Conceptual plan for a realistic sewage disposal system



REFERENCES

EXISTING	PROPOSED
Main Natural Nala	Interceptors/box trunk
Branch Nala	Sewage treatment plant
Drain	Intake chambers
Drain/Nala's Number	
Interceptors/box trunk	
Sewage treatment plant	

S.NO.	NAME OF DRAIN/NALA	LENGTH (ft)
	Nalas/drains no 1 to 25 dispose into the Lyari Nadi and then into the sea.	
1.	Sher Shah Nala	6603
2.	Hub Drain + Branches	36438
3.	Baldia Nala/Drain	15715
4.	Haroonabad Drain	25980
5.	Welfare Colony And	16671
	Essa Nagri Nala/Drain	
6.	Aziz Bhatti Drain	13856
7.	NIPA Chowrangi Drain	15588
8.	Madina Colony Nala	1000
9.	Sungal Nala/Drain	8660
10.	Bhakkar Goth Nala	3565
11.	<u>ORANGI NALA MAIN</u> (Orangi to Lyari River)	38250
11A.	Orangi Town Drain/Nala 16 Branches	94234
12.	Mianwali Colony Nala	11256
13.	Pirabad/Muslimabad Drain	5550
14.	<u>GUJJAR NALA</u>	40000
15.	Petrol Pump Drain	3350
16.	Mujahid Colony Drain	12500
17.	Ziauddin Hospital Drain	7000
18.	Haidary Drain - I	8000
19.	Haidary Drain - II	7600
20.	Shipowner College Drain	6570
21.	Qalandaria Drain	17200
22.	Buffar Zone Drain	1500
23.	Khawaja Ajmair Nagri Drain	19000
24.	New Karachi Drain	2500
25.	Allah Wali Chowrangi Drain	10500
	Nalas/drains no 26 to 34 dispose into the Malir Nadi and then into the sea.	
26.	Manzoor Colony Drain	11700
27.	Azam Basti Drain	1750
28.	Mahmoodabad Drain Main	13480
29.	Nursery Drain (Branch M.D.)	6975
30.	Noorani Chowrangi Drain (Branch M.D.)	15950
31.	Chakor Nala/Drain	23080
32.	Kala Board Drain	9310
33.	Malir City Drain	9959
34.	Korangi Drain 1 & 2	48496
	Nalas/drains no 35 to 41 dispose into the back water and then into the sea.	
35.	Maoch Goth Nala	23500
36.	Kalri Drain / Nala	94234
37.	Pitcher Drain	12124
38.	City Railway Station Drain	10825
39.	Solder Bazar Drain + 4 Branches	40000
40.	Nahar-e-Khayyam Drain	5629
41.	Chakra Goth Nala	7000

Dated: September 2006

A vibrant, high-angle photograph of a busy city street, likely in New York City. The street is filled with a dense crowd of pedestrians walking in various directions. In the foreground, several people are seen from behind, looking towards the street. The middle ground is dominated by a large number of yellow taxis, some stopped at a traffic light. The background shows tall buildings, flags, and street signs, including one for 'LITTLE BRAZIL' and another for 'M1 M4 032'. The overall atmosphere is one of a bustling, urban environment.

Population Equivalent (PE)

Calculate no. of population to serve



5

PE per UNIT



3 PE

per 100 m² of
FLOOR AREA



0.2

PE per STUDENT
Non-residential school



SEKOLAH KEMAJUAN KUALA BALAH

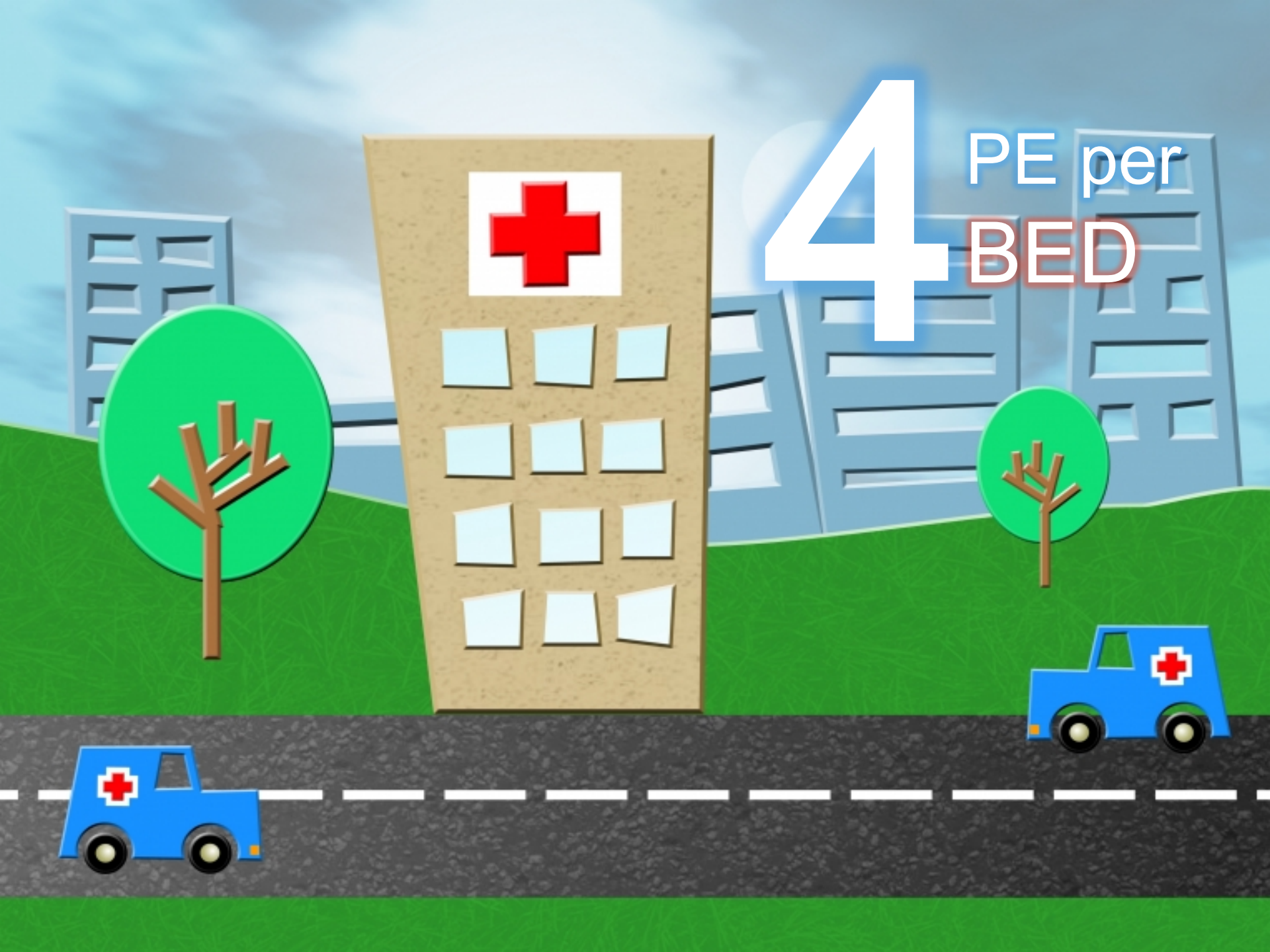
WELCOME

SEKOLAH KEMAJUAN KUALA BALAH

1

PE per STUDENT
Residential school

4 PE per
BED





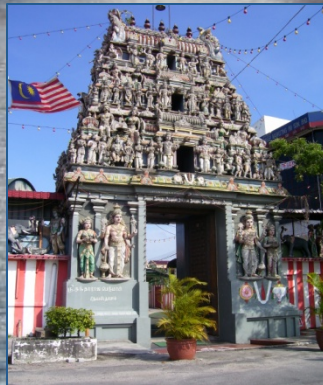
PAN PACIFIC
Manila

4 PE
per ROOM

A photograph of a large industrial facility, likely a refinery or chemical plant. The scene is filled with complex machinery, including large vertical columns, a network of pipes, and multiple levels of walkways and stairs. The lighting is dramatic, with bright light coming from a high window on the right, creating strong shadows and highlights. The overall atmosphere is one of a busy, large-scale industrial operation.

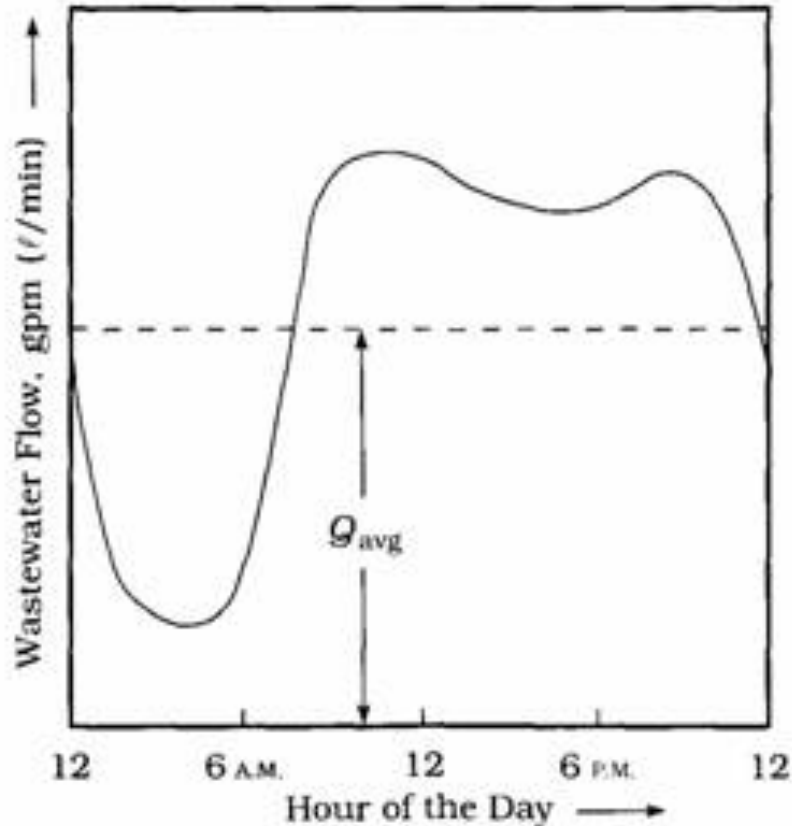
0.3 PE per
STAFF

0.5 PE per
PERSON



Type of Premise	PE
Residential	5 per unit
Commercial e.g. recreational centers, theatres, restaurants etc.	3 per 100 m ² of floor area
Schools : Non-residential Residential	0.2 per student 1 per student
Hospital	4 per bed
Hotels (with dining and laundry facilities)	4 per room
Factories (domestic)	0.3 per staff
Mosque/Prayer hall	0.2 per person

Flow rate (L/min)



Varies hourly, daily and weekly

Peak flow occurs at maximum flow for the day

Design flow rate

225

Litres/capita/day (lpcd)

Average daily flow = Design flow rate x PE

$$\text{Peak Flow Factor (PFF)} = 4.7 p^{-0.11}$$

where p is population equivalent (PE) in thousand

Peak Flow = PFF x average daily flow