

## Pollution Loading of Unsewered Population

### Unsewered Population

Description	Land Usual Residents	Mobile Residents	Full-Time School Places	Total Employment	Total Employees in Commercial Sector
Existing Population	280	0	0	4500	4500
Likely Future Population	336	0	0	5405	5405

Note:

The discussion of unsewered population can be referred to Chapter 1.

Number of employees in Commercial Sector = S3+S4+S6+S7+S8+S9+S10+S11+S17+S18, where S1-S19 refer to the 19 employment types as classified in TPEDM

The assessment year of Likely Future Case is assumed to be 2038 which is the full population intake year. With reference to the Census and Statistics Department, the annual growth rate of 0.8% is adopted to estimate the future unsewered population.

### Flow and load factors for Residential Population

Description	Flow <sup>1</sup>	SS <sup>2</sup>	BOD5 <sup>2</sup>	NH3-N <sup>2</sup>	TP <sup>3</sup>	E. coli <sup>2</sup>
	m <sup>3</sup> /d/head	g/d/head	g/d/head	g/d/head	g/d/head	no./d/head
Usual Residents	0.25	40	42	5	1.33	4.30E+10
Mobile Residents	0.19	40	42	5	1.33	4.30E+10

Notes:

1.Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (Version 1.0), EPD, March 2005

2.DSD Sewerage Manual

3.EPD Update Study

### Flow and load factors for Transient Population

Description	Flow <sup>1</sup>	SS <sup>2</sup>	BOD5 <sup>2</sup>	NH3-N <sup>2</sup>	TP <sup>3</sup>	E. coli <sup>2</sup>
	m <sup>3</sup> /d/head	g/d/head	g/d/head	g/d/head	g/d/head	no./d/head
Employed population	0.08	34	34	4	1.06	3.50E+10
Students	0.04	34	34	4	1.06	3.50E+10

Notes:

1.Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (Version 1.0), EPD, March 2005

2.DSD Sewerage Manual

3.EPD Update Study

### Flow and load factors for Commercial Activities

Description	Flow <sup>1</sup>	SS <sup>2</sup>	BOD5 <sup>2</sup>	NH3-N <sup>2</sup>	TP <sup>3</sup>	E. coli <sup>2</sup>
	m <sup>3</sup> /d/head	g/d/head	g/d/head	g/d/head	g/d/head	no./d/head
S3 Electricity Gas & Water	0.25	25	53	0.8	0.53	0
S8 & S11 Transport, Storage & Communication	0.1	25	53	0.8	0.53	0
S6 & S7 Wholesale & Retail	0.2	25	53	0.8	0.53	0
S4 Construction	0.15	25	53	0.8	0.53	0
S9 & S10 Restaurants & Hotels	1.5	25	53	0.8	0.53	0
S17 & S18 Community, Social & Personal Services	0.2	25	53	0.8	0.53	0

Notes:

1.Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (Version 1.0), EPD, March 2005

2.DSD Sewerage Manual

3.EPD Update Study

### Removal Efficiency of Septic Tank

Loading Type	Range of Removal	Design Removal
SS	66% - 75%	70%
BOD	40% - 52%	45%
TN	20% - 29%	24%
E. Coli.	3 log - 4 log	3 log
Loading Type	Range of Increase	Design Increase
NH3N2	178% - 223%	200%

Notes:

Reference to EIA-190/2010 for "Liantang / Heung Yuen Wai Boundary Control Point and Associated Works"

### Flow and Pollutant Loading Generated from Unsewered Population

Description	Flow	SS	BOD5	NH3-N	TP	E. coli
	m <sup>3</sup> /d	kg/d	kg/d	kg/d	kg/d	no./d
Existing Unsewered Population	1555	83	222	69	7.5	1.70E+11
Likely Future Unsewered Population (Without project)	1868	100	266	83	9.0	2.04E+11

Notes:

According to EIA-190/2010 for "Liantang / Heung Yuen Wai Boundary Control Point and Associated Works", most of the organic nitrogen would be converted to NH3 by microorganism in septic tank. As such, organic nitrogen is assumed to be negligible and total nitrogen is assumed to be equivalent to NH3.