

## **Appendix 5-2**

# **Calculation of Pollution Loading due to Stormwater During Operational Phase**

## Appendix 5-2A Calculation of Pollution Loading of Stormwater During Operational Phase of this Project

### (A) Calculation of Pollution Loading from Surface Runoff

Rainfall Intensity (washing out pollutant) <sup>##</sup>	1386 mm/year		
BOD <sub>5</sub> concentration, mg/L <sup>*</sup>	22.5	BOD <sub>5</sub> concentration, mg/L <sup>*</sup>	22.5
TN Concentration, mg/L <sup>*</sup>	2	TN Concentration, mg/L <sup>*</sup>	2
TP Concentration, mg/L <sup>*</sup>	0.2	TP Concentration, mg/L <sup>*</sup>	0.2
Removal efficiency of silt traps <sup>***</sup>	20%	-	-

After Development							Before Development						
Location	Catchment Area, km <sup>2</sup> <sup>###</sup>	Runoff Coefficient	Average Daily Runoff (m <sup>3</sup> /day) #	Pollution Loading, Kg/day			Location	Catchment Area, km <sup>2</sup> <sup>@@</sup>	Runoff Coefficient	Average Daily Runoff (m <sup>3</sup> /day) #	Pollution Loading, Kg/day		
				BOD <sub>5</sub>	TN	TP					BOD <sub>5</sub>	TN	TP
Residential Buildings' Footprint <sup>###</sup>	0.0049	0.95	17.56	0.00	0.00	0.00	Paved Area	0.0240	0.95	86.45	1.95	0.17	0.02
Other Paved Areas	0.0240	0.95	86.46	1.56	0.14	0.01	Unpaved Area (grass land)	0.0110	0.35	14.59	0.33	0.03	0.00
Unpaved Area <sup>@</sup>	0.0088	0.35	11.71	0.21	0.02	0.00	Pond	0.0027	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.0376</b>		<b>115.73</b>	<b>1.77</b>	<b>0.16</b>	<b>0.02</b>		<b>0.0376</b>		<b>101.04</b>	<b>2.27</b>	<b>0.20</b>	<b>0.02</b>
<b>Change in Pollution Loading (After Development - Before Development)</b>				<b>(0.51)</b>	<b>(0.05)</b>	<b>(0.00)</b>							

Remark:

# Estimated Average daily runoff based on the proposed development provided by the Engineer.

## According to "Stormwater Drainage Manual, annual rainfall in Hong Kong is around 2200mm. However, according to the report on "Update on Cumulative Water Quality and Hydrological Effect of Coastal Developments and Upgrading of Assessment Tool", only rainfall events of sufficient intensity and volume would give rise to runoff. It indicated that runoff percentage for the wet season is about 82% while dry season is only 44%. Therefore, only rainfall of  $2200 \times (82\% + 44\%) / 2 = 1386\text{mm}$  can be generated into runoff and is adopted in this Study.

### The proposed development is for small house development, it is expected that there will be no major pollution runoff from the residential building roof.

@ Unpaved area including proposed landscaping area/ buffer planting.

@@ Catchment area of the whole developable area (i.e. the residential portion) in the absence of the proposed development.

\* According to the report "EPD, Update on Cumulative Water Quality and Hydrological Effect of Coastal Developments and Upgrading of Assessment Tool-Pollution Loading Inventory Report". The same source of information was also adopted in the calculation of pollution loading due to stormwater during operational phase approved EIA report for "Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation", Appendix 5-2.

\*\*\* As silt traps will be implemented, 20% of removal efficiency of silt traps is assumed in this Study. The same source of information was also adopted in the calculation of pollution loading due to stormwater during operational phase approved EIA report for "Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation", Appendix 5-2.

**Appendix 5-2B Estimation on the Increase of Surface Runoff Due to Nearby Development Projects**

Development Project	Catchment Area, ha	Estimated Increase in Surface Runoff, m <sup>3</sup> /day
Planned "Yau Mei Site" **	4.3	37.0
Planned "REC Site" **	9	77.4
Planned "RD Site" **	6.6	56.8
This Project Site * & #	3.76	14.7
<b>Total</b>		<b>185.9</b> m <sup>3</sup> /day
<b>Total</b>		<b>2.2</b> L/s

Remark:

\* Based on the catchment area presented in Appendix 5-2A.

\*\* Based on the estimated figures in Appendix 5-2B of the submitted EIA report for the planned "Yau Mei Site" (EIA-227/2015).

# Estimated increase in surface runoff as estimated in Appendix 5-2A (i.e. the difference between the daily runoff before and after the development).