

Calculation of Odour Emission Rate in PTWs

North Point PTW

Source	Emission Factors	Parameters	Remarks
DO for New Facilities Source ID (Model ID): F-NP-DO1 (F1)	OU/s	5.0045E+02	Surface Area of Channels/ Chambers (m2) 350 <i>From Engineer</i> Odour Emission Rate for Channels/ Chambers (OU/m2/s) 8.79 <i>Note (1)</i> Odour Emission Rate for Channels/ Chambers (OU/s) 3076.5 Surface Area of Solids Handling Areas (m2) 100 <i>From Engineer</i> Odour Emission Rate for Solids Handling Areas (OU/m2/s) 19.28 <i>Emission rate is based on the baseline odour survey results.</i> Odour Emission Rate for Solids Handling Areas (OU/s) 1928.0 Total Air Flow Rate (m3/hr) 43500 <i>From Engineer</i> Stack Velocity (m/s) 8 <i>From Engineer</i> Effective Stack Diameter (m) 1.3868 Stack Height (m) 8 <i>From Engineer</i> Removal efficiency % 90 <i>One Stage odour treatment (90% for biofilter)</i>
DO for Drop Shaft Source ID (Model ID): F-NP-DO2 (F2)	OU/s	3.5160E+01	Odour Emission Rate for Channels/ Chambers & Drop Shafts (OU/m2/s) 8.79 <i>Note (1)</i> Cross Sectional Area of Channels/ Chambers (m2) 40 <i>From Engineer</i> Odour Emission Rate for Drop Shaft (OU/s) 351.6 Total Air Flow Rate (m3/hr) 1300 <i>From Engineer</i> Stack Velocity (m/s) 8 <i>From Engineer</i> Effective Stack Diameter (m) 0.2397 Stack Height (m) 4 <i>From Engineer</i> Removal efficiency % 90 <i>One Stage odour treatment (90% for biofilter)</i>
DO for Existing Facilities Source ID (Model ID): E-NP-DO1 (E1) E-NP-DO2 (E2) E-NP-DO3 (E3)	OU/s	2.8099E+02 9.3663E+01 (each stack)	Surface Area of Channels (m2) 210 <i>From Engineer</i> Odour Emission Rate for Channels/ Chambers (OU/m2/s) 8.79 <i>Note (1)</i> Odour Emission Rate for Channels/ Chambers (OU/s) 1845.9 Surface Area of Solids Handling Areas (m2) 50 <i>From Engineer</i> Odour Emission Rate for Solids Handling Areas (OU/m2/s) 19.28 <i>Emission rate is based on the baseline odour survey results.</i> Odour Emission Rate for Solids Handling Areas (OU/s) 964.0 Total Air Flow Rate (m3/hr) 54965 <i>Total Air Flow Rate for all 3 stacks</i> Stack Velocity (m/s) 8.00 Effective Stack Diameter (m) 0.9000 Stack Height (m) 14.3 <i>Data based on Desgin Drawing</i> Removal efficiency % 90 <i>One Stage odour treatment (90% for biofilter)</i>

Notes:

(1) The odour strength at PTWs is not expected to be worse than that in SCISTW since the sewage in the PTWs is fresh sewage. For conservative analysis, the emission rate at SCISTW distribution channel (8.79 ou/m²/s) was adopted which is determined from the baseline odour survey carried out at SCISTW.

Calculation of Odour Emission Rate in PTWs

Wan Chai East PTW

Source	Emission Factors	Parameters	Remarks
DO for New Transfer P/S Source ID (Model ID): F-WC-DO1 (F1)	OU/s 3.5160E+02	Surface Area of Channels/ Chambers (m2) Odour Emission Rate for Channels/ Chambers (OU/m2/s) Odour Emission Rate for Channels/ Chambers (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	400 From Engineer Note (1) 8.79 3516.0 10000 8 0.6649 8 90 One Stage odour treatment (90% for biofilter)
DO for Drop Shaft Source ID (Model ID): F-WC-DO2 (F2)	OU/s 3.5160E+01	Odour Emission Rate for Channels/ Chambers & Drop Shafts (OU/m2/s) Cross Sectional Area of Channels/ Chambers (m2) Odour Emission Rate for Drop Shaft (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	8.79 Note (1) 40 From Engineer 351.6 4700 8 0.4558 4 90 One Stage odour treatment (90% for biofilter)
DO for Existing Facilities Source ID (Model ID): E-WC-DO1 (E1)	OU/s 8.7900E+01	Surface Area of Channels (m2) Odour Emission Rate for Channels/ Chambers (OU/m2/s) Odour Emission Rate for Channels/ Chambers (OU/s) Surface Area of Solids Handling Areas (m2) Odour Emission Rate for Solids Handling Areas (OU/m2/s) Odour Emission Rate for Solids Handling Areas (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	50 From Engineer Note (1) 8.79 439.5 0 From Engineer 19.28 Emission rate is based on the baseline odour survey results. 0.0 7895 8 0.5908 9.1 80
DO for Existing Facilities Source ID (Model ID): E-WC-DO2 (E2)	OU/s 2.7334E+02	Surface Area of Channels (m2) Odour Emission Rate for Channels/ Chambers (OU/m2/s) Odour Emission Rate for Channels/ Chambers (OU/s) Surface Area of Solids Handling Areas (m2) Odour Emission Rate for Solids Handling Areas (OU/m2/s) Odour Emission Rate for Solids Handling Areas (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	300 From Engineer Note (1) 8.79 2637.0 5 From Engineer 19.28 Emission rate is based on the baseline odour survey results. 96.4 24560 8 1.0420 9.1 90 One Stage odour treatment (90% for biofilter)
DO for Existing Facilities Source ID (Model ID): E-WC-DO3 (E3)	OU/s 6.2919E+02	Surface Area of Channels (m2) Odour Emission Rate for Channels/ Chambers (OU/m2/s) Odour Emission Rate for Channels/ Chambers (OU/s) Surface Area of Solids Handling Areas (m2) Odour Emission Rate for Solids Handling Areas (OU/m2/s) Odour Emission Rate for Solids Handling Areas (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	650 From Engineer Note (1) 8.79 5713.5 30 From Engineer 19.28 Emission rate is based on the baseline odour survey results. 578.4 23651 8 1.0225 9.1 90 One Stage odour treatment (90% for biofilter)

Notes:

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Calculation of Odour Emission Rate in PTWs

Central PTW

Source	Emission Factors	Parameters	Remarks	
DO for New Facilities	OU/s	7.2020E+02		
Source ID (Model ID): F-CE-DO1 (F1)		Surface Area of Channels/ Chambers (m2) Odour Emission Rate for Channels/ Chambers (OU/m2/s) Odour Emission Rate for Channels/ Chambers (OU/s) Surface Area of Solids Handling Areas (m2) Odour Emission Rate for Solids Handling Areas (OU/m2/s) Odour Emission Rate for Solids Handling Areas (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	600 <i>From Engineer</i> 8.79 <i>Note (1)</i> 5274.0 100 <i>From Engineer</i> 19.28 <i>Emission rate is based on the baseline odour survey results.</i> 1928.0 53800 8 1.5422 10 90 <i>One Stage odour treatment (90% for biofilter)</i>	
DO for Drop Shaft	OU/s	3.5160E+01		
Source ID (Model ID): F-CE-DO2 (F2)		Odour Emission Rate for Channels/ Chambers & Drop Shafts (OU/m2/s) Cross Sectional Area of Channels/ Chambers (m2) Odour Emission Rate for Drop Shaft (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	8.79 <i>Note (1)</i> 40 351.6 5200 8 0.4795 4 90 <i>One Stage odour treatment (90% for biofilter)</i>	
DO for Existing Facilities	OU/s	5.2002E+02		
Source ID (Model ID): E-CE-DO1 (E1)		Surface Area of Channels (m2) Odour Emission Rate for Channels/ Chambers (OU/m2/s) Odour Emission Rate for Channels/ Chambers (OU/s) Surface Area of Solids Handling Areas (m2) Odour Emission Rate for Solids Handling Areas (OU/m2/s) Odour Emission Rate for Solids Handling Areas (OU/s) For Source ID: E-CE-DO1 Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m)	230 <i>From Engineer</i> 8.79 <i>Note (1)</i> 2021.7 30 <i>From Engineer</i> 19.28 <i>Emission rate is based on the baseline odour survey results.</i> 578.4 35467 10 1.1200 13	
E-CE-DO2-1 (E2) E-CE-DO2-2 (E3)		2.7763E+02 1.2120E+02 (each stack)	For Source ID: E-CE-DO2-1 & E-CE-DO2-2 Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	30966 <i>Total Air Flow Rate for all 2 stacks</i> 10 0.7400 13 80

Notes:

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Calculation of Odour Emission Rate in PTWs

Sai Ying Pun (Fung Mat Road site)

Source	Emission Factors		Parameters	Remarks
DO for Drop Shaft	OU/s	1.7580E+02	Odour Emission Rate for Channels/ Chambers & Drop Shafts (OU/m ² /s)	8.79 <i>Note (1)</i>
Source ID (Model ID): F-FM-DO2 (F1)			Cross Sectional Area of Channels/ Chambers (m ²)	200
			Odour Emission Rate for Drop Shaft (OU/s)	1758.0
			Total Air Flow Rate (m ³ /hr)	31000
			Stack Velocity (m/s)	8
			Effective Stack Diameter (m)	1.1707
			Stack Height (m)	4
			Removal efficiency %	90 <i>One Stage odour treatment (90% for biofilter)</i>

Notes:

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Calculation of Odour Emission Rate in PTWs

Sandy Bay PTW

Source	Emission Factors	Parameters	Remarks
DO for New Transfer P/S Source ID (Model ID): F-SB-DO1 (F1)	OU/s 3.5160E+02	Surface Area of Channels/ Chambers (m ²) Odour Emission Rate for Channels/ Chambers (OU/m ² /s) Odour Emission Rate for Channels/ Chambers (OU/s) Total Air Flow Rate (m ³ /hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	400 <i>From Engineer</i> 8.79 <i>Note (1)</i> 3516.0 10000 8 0.6649 8 90 <i>One Stage odour treatment (90% for biofilter)</i>
DO for Drop Shaft Source ID (Model ID): F-SB-DO2 (F2)	OU/s 3.5160E+01	Odour Emission Rate for Channels/ Chambers & Drop Shafts (OU/m ² /s) Cross Sectional Area of Channels/ Chambers (m ²) Odour Emission Rate for Drop Shaft (OU/s) Total Air Flow Rate (m ³ /hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	8.79 <i>Note (1)</i> 40 351.6 3500 8 0.3934 4 90 <i>One Stage odour treatment (90% for biofilter)</i>
DO for Existing Facilities Source ID (Model ID): E-SB-DO1 (E1)	OU/s 2.8439E+02	Surface Area of Channels (m ²) Odour Emission Rate for Channels/ Chambers (OU/m ² /s) Odour Emission Rate for Channels/ Chambers (OU/s) Surface Area of Solids Handling Areas (m ²) Odour Emission Rate for Solids Handling Areas (OU/m ² /s) Odour Emission Rate for Solids Handling Areas (OU/s) Total Air Flow Rate (m ³ /hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	170 <i>From Engineer</i> 8.79 <i>Note (1)</i> 1494.3 70 <i>From Engineer</i> 19.28 <i>Emission rate is based on the baseline odour survey results.</i> 1349.6 25531 8 1.0624 10 90 <i>One Stage odour treatment (90% for biofilter)</i>

Notes:

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Calculation of Odour Emission Rate in PTWs

Cyberport PTW

Source	Emission Factors	Parameters	Remarks
DO for New Transfer P/S Source ID (Model ID): F-CB-DO1 (F1)	OU/s 3.5160E+02	Surface Area of Channels/ Chambers (m2) Odour Emission Rate for Channels/ Chambers (OU/m2/s) Odour Emission Rate for Channels/ Chambers (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	400 From Engineer Note (1) 8.79 3516.0 10000 8 0.6649 13 90 One Stage odour treatment (90% for biofilter)
DO for Drop Shaft Source ID (Model ID): F-CB-DO2 (F2)	OU/s 3.5160E+01	Odour Emission Rate for Channels/ Chambers & Drop Shafts (OU/m2/s) Cross Sectional Area of Channels/ Chambers (m2) Odour Emission Rate for Drop Shaft (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	8.79 Note (1) 40 351.6 2900 8 0.3581 4 90 One Stage odour treatment (90% for biofilter)
DO for Existing Facilities Source ID (Model ID): E-CB-DO1 (E1)	OU/s 4.4572E+02	Surface Area of Channels (m2) Odour Emission Rate for Channels/ Chambers (OU/m2/s) Odour Emission Rate for Channels/ Chambers (OU/s) Surface Area of Solids Handling Areas (m2) Odour Emission Rate for Solids Handling Areas (OU/m2/s) Odour Emission Rate for Solids Handling Areas (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	100 From Engineer Note (1) 8.79 879.0 70 From Engineer 19.28 Emission rate is based on the baseline odour survey results. 1349.6 11790 13.10 0.5642 5 80

Notes:

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Calculation of Odour Emission Rate in PTWs

Aberdeen PTW

Source	Emission Factors	Parameters	Remarks
DO for New Facilities Source ID (Model ID): F-AB-DO1 (F1)	OU/s 5.0754E+02	Surface Area of Channels/ Chambers (m2) Odour Emission Rate for Channels/ Chambers (OU/m2/s) Odour Emission Rate for Channels/ Chambers (OU/s) Surface Area of Solids Handling Areas (m2) Odour Emission Rate for Solids Handling Areas (OU/m2/s) Odour Emission Rate for Solids Handling Areas (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	380 From Engineer Note (1) 8.79 3340.2 90 19.28 1735.2 39500 8 1.3215 12 90 One Stage odour treatment (90% for biofilter)
DO for Drop Shaft Source ID (Model ID): F-AB-DO2 (F2)	OU/s 3.5160E+01	Odour Emission Rate for Channels/ Chambers & Drop Shafts (OU/m2/s) Cross Sectional Area of Channels/ Chambers (m2) Odour Emission Rate for Drop Shaft (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	8.79 Note (1) 40 351.6 1600 8 0.2660 4 90 One Stage odour treatment (90% for biofilter)
DO for Existing Facilities Source ID (Model ID): E-AB-DO1 (E1)	OU/s 3.9696E+02	Surface Area of Channels (m2) Odour Emission Rate for Channels/ Chambers (OU/m2/s) Odour Emission Rate for Channels/ Chambers (OU/s) Surface Area of Solids Handling Areas (m2) Odour Emission Rate for Solids Handling Areas (OU/m2/s) Odour Emission Rate for Solids Handling Areas (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	160 From Engineer Note (1) 8.79 1406.4 30 From Engineer 19.28 578.4 39132 10 1.1764 12 80 Emission rate is based on the baseline odour survey results.

Notes:

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Calculation of Odour Emission Rate in PTWs

Wah Fu PTW

Source	Emission Factors	Parameters	Remarks
DO for New Facilities	OU/s	1.9479E+02	
Source ID (Model ID): F-WF-DO1 (F1A)		Surface Area of Channels/ Chambers (m2) Odour Emission Rate for Channels/ Chambers (OU/m2/s) Odour Emission Rate for Channels/ Chambers (OU/s) Surface Area of Solids Handling Areas (m2) Odour Emission Rate for Solids Handling Areas (OU/m2/s) Odour Emission Rate for Solids Handling Areas (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	90 <i>From Engineer</i> 8.79 <i>Note (1)</i> 791.1 60 19.28 <i>Emission rate is based on the baseline odour survey results.</i> 1156.8 21000 8 0.9635 9.5 90 <i>One Stage odour treatment (90% for biofilter)</i>
DO for Drop Shaft	OU/s	1.7580E+01	
Source ID (Model ID): F-WF-DO2 (F2B)		Odour Emission Rate for Channels/ Chambers & Drop Shafts (OU/m2/s) Cross Sectional Area of Channels/ Chambers (m2) Odour Emission Rate for Drop Shaft (OU/s) Total Air Flow Rate (m3/hr) Stack Velocity (m/s) Effective Stack Diameter (m) Stack Height (m) Removal efficiency %	8.79 <i>Note (1)</i> 20 175.8 1000 8 0.2103 4 90 <i>One Stage odour treatment (90% for biofilter)</i>

Notes:

(1) The odour strength at PTWs is not expected to be worse than that in SCISTW since the sewage in the PTWs is fresh sewage. For conservative analysis, the emission rate at SCISTW distribution channel (8.79 ou/m²/s) was adopted which is determined from the baseline odour survey carried out at SCISTW.

Calculation of Odour Emission Rate in PTWs

Ap Lei Chau PTW

Source	Emission Factors		Parameters	Remarks					
DO for New Facilities	OU/s	3.9009E+02	Surface Area of Channels/ Chambers (m ²)	290	<i>From engineer. Night soil disposal area included.</i> <i>Note (1)</i> <i>Emission rate is based on the baseline odour survey results.</i>				
Source ID (Model ID): F-AL-DO1 (F1)			Odour Emission Rate for Channels/ Chambers (OU/m ² /s)	8.79					
			Odour Emission Rate for Channels/ Chambers (OU/s)	2551.3					
			Surface Area of Solids Handling Areas (m ²)	70					
			Odour Emission Rate for Solids Handling Areas (OU/m ² /s)	19.28					
			Odour Emission Rate for Solids Handling Areas (OU/s)	1349.6					
			Total Air Flow Rate (m ³ /hr)	37900					
			Stack Velocity (m/s)	8					
			Effective Stack Diameter (m)	1.2944					
			Stack Height (m)	11					
			Removal efficiency %	90		<i>One Stage odour treatment (90% for biofilter)</i>			
			DO for Drop Shaft	OU/s		1.7580E+01	Odour Emission Rate for Channels/ Chambers & Drop Shafts (OU/m ² /s)	8.79	<i>Note (1)</i>
			Source ID (Model ID): F-AL-DO2 (F2)				Cross Sectional Area of Channels/ Chambers (m ²)	20	
Odour Emission Rate for Drop Shaft (OU/s)	175.8								
Total Air Flow Rate (m ³ /hr)	300								
Stack Velocity (m/s)	8								
Effective Stack Diameter (m)	0.1152								
Stack Height (m)	4								
Removal efficiency %	90	<i>One Stage odour treatment (90% for biofilter)</i>							

Notes:

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