

#### Appendix 4.4 Fixed Plant Noise Impact Assessment

The Plant Inventories of Proposed Disinfection Facilities at Stonecutters Island Sewage Treatment Work

Treatment Units	No of item	Reference	SWL, dB(A)	Total SWL , dB(A)
<u>Proposed Dechlorination Plant</u>				
—				
Chemical Feed Pump	2	Ref 1	109	112
Chemical Transfer Pump (20L/s) (from truck to tank)	1	Ref 5	92	92
Tank Transfer Pump (20L/s) (from tank to tank)	1	Ref 5	92	92
Sampling Pump (from chamber 15 to simulation loop)	2	Ref 1	109	112
Ventilation Fan for Plant Room	3	Ref 3	83	88

Sump Pump (2L/s)	2	Ref 5	92	95
Air Conditioner Unit for Control Room	2	Ref 4	78	81
Fume Recovery System	1	Ref 6	96	96
<i><u>Proposed Chlorination Plant</u></i>				
— Chemical Transfer Pump (10L/s) (from truck to tank)	3	Ref 5	100	105
Chemical Transfer Pump (70L/s) (installed on the vessel)	1	Ref 5	92	92
Tank Transfer Pumps (20L/s) (from tank to tank)	1	Ref 5	92	92
Transfer Pump to Day Tank (20L/s)	1	Ref 5	92	92
Sump Pump (2L/s) (sodium hypochlorite tank farm)	2	Ref 5	92	95
Effluent Transfer Pump to Mixing Tank	1	Ref 1	109	109

Chemical Dosing Pumps	2	Ref 1	109	112
Sump Pump (Barge Unloading Area) (2L/s)	1	Ref 5	92	92
Sump Pump (Day Tank Farm) (2L/s)	2	Ref 5	92	95
Air Conditioner Unit for Control Room	2	Ref 4	78	81
Existing Stonecutter Island Sewage Treatment Plant		Ref 2	112	112

Notes:

Ref 1: As the flow rate of the pump is subject to dosing plan which is not available at this stage, the maximum SWL of the pumpset in *Good Practice on Pumping System Noise Control* (GPPSNC) was used in this assessment for the worst case.

Ref 2: The SWL for the operation of the existing sewage treatment plant was backward calculated based on the on-site measured noise level using the standard acoustical principles.

Ref 3: Based on the estimated volume flowrate by DSD, the SWL of the ventilation fan was made reference to *Good Practices on Ventilation System Noise Control*.

Ref 4: Based on on-line searching

(<http://www.fujitsugeneral.co.nz/includes/heat-pumps/conventional-window-wall.pdf>), the SWLs of air conditioner units range from 69 to 78 dB(A) depending on the cooling capacity. The maximum SWL of the air conditioner unit was used

in this assessment for the worst case. It should be noted that Fujitsu air-conditioner was only taken as an example for the purpose of this assessment.

Ref 5: Based on the estimated horsepower and operating speed of pumpset by supplier, the appropriate SWL of the pumps was made

reference to *Good Practice on Pumping System Noise Control* (GPPSNC).

Ref 6: The estimated SWL was made reference to EIA Report on San Wai STW and Ha Tsuen Pumping Station.

**Calculation of Operational Noise Levels at Representative Noise Sensitive Receiver (Unmitigated Scenario)**

**Calculation of Operational Noise Levels at NSR N1**

Treatment Units	No of item	Reference	SWL, dB(A)	Total SWL , dB(A)	Distance in m	Enclosure Reduction, dB(A)	Screening Reduction, dB(A)	SPL , dB(A)	Enclosed	Remark
<u>Proposed Dechlorination Plant</u>										
Chemical Feed Pump	2	Ref 1	109	112	155	20		43	Yes	2duty+1standby
Chemical Transfer Pump (20L/s) (from truck to tank)	1	Ref 3	92	92	140			44	No	1duty+1standby
Tank Transfer Pump (20L/s) (from tank to tank)	1	Ref 3	92	92	150			43	No	1duty+1standby
Sampling Pump (from chamber 15 to simulation loop)	2	Ref 1	109	112	175	20		42	Yes	2duty+2standby

Ventilation Fan for Control Room and Chemical Transfer Pump Room	2	Ref 5	83	86	140		38	No	
Ventilation Fan for Chemical Feed Pump Room	1	Ref 5	83	83	155		34	No	
Sump Pump (2L/s)	2	Ref 3	92	95	140		47	No	
Air Conditioner Unit for Control Room	2	Ref 2	78	81	140		33	No	
Scrubber	1	Ref 4	96	96	130		49	No	
<b>Total SPL, dB(A) at N1</b>							<b>53</b>		

Notes:

GWTM : The assumed SWL of the ventilation fan was made reference to the *Technical Memorandum on Noise From Construction Work Other Than Percussive Piling*.

Ref 1: As the flow rate of the pump is subject to dosing plan that is not available at this stage, the maximum SWL of the pumpset in Good Practice on Pumping System Noise Control (GPPSNC) was used in this assessment for the worst case.

Ref 2: Based on on-line searching (<http://www.fujitsugeneral.co.nz/includes/heat-pumps/conventional-window-wall.pdf>), the SWLs of air conditioner units range from 69 to 78 dB(A)

depending on the cooling capacity. The maximum SWL of the air conditioner unit was used in this assessment for the worst case. It should be noted that Fujitsu air-conditioner was only

taken as an example for the purpose of this assessment.

Ref 3: Based on the estimated horsepower and operating speed of pumpset by supplier, the SWL of the pumps was made reference to Good Practice on Pumping System Noise Control (GPPSNC).

Ref 4: The estimated SWL was made reference to EIA Report on *San Wai STW and Ha Tsuen Pumping Station*.

Ref 5: Based on the estimated volume flowrate by DSD, the SWL of the ventilation fan was made reference to *Good Practices on Ventilation System Noise Control*.

Enclosure Reduction: Reduction of SWL due to the enclosure for the equipment

\* Standby item was not included in the noise assessment

**Calculation of Operational Noise Levels at Representative Noise Sensitive Receiver (Unmitigated Scenario)**

**Calculation of Operational Noise Levels at NSR P1**

Treatment Units	No of item	Reference	SWL, dB(A)	Total SWL , dB(A)	Distance in m	Enclosure Reduction, dB(A)	Screening Reduction, dB(A)	SPL , dB(A)	Enclosed	Remark
<i>Proposed Chlorination Plant</i>										
Chemical Transfer Pump (10L/s) (from truck to tank)	3	Ref 4	100	105	330		10	39	No	3duty+3standby
Chemical Transfer Pump (70L/s) (installed on the vessel)	1	Ref 4	92	92	230		10	30	No	
Tank Transfer Pumps (20L/s) (from tank to tank)	1	Ref 4	92	92	315		10	27	No	1duty+1standby
Transfer Pump to Day Tank (20L/s)	1	Ref 4	92	92	315		10	27	No	1duty+1standby



Sump Pump (sodium hypochlorite tank farm)	2	Ref 4	92	95	315		10	30	No	2duty+2standby
Effluent Transfer Pump to Mixing Tank	1	Ref 1	109	109	520	20	10	20	Yes	1duty+1standby
Chemical Dosing Pumps	2	Ref 1	109	112	520	20	10	23	Yes	2duty+1standby
Sump Pump (Barge Unloading Area)	1	Ref 4	92	92	240		10	29	No	
Sump Pump (Day Tank Farm)	2	Ref 4	92	95	520		10	26	No	
Air Conditioner Unit for Control Room	1	Ref 3	78	78	305		10	13	No	
Existing Stonecutter Island Sewage Treatment Plant		Ref 2	112	112	330		10	47		

**Total SPL, dB(A) at P1    48**

Notes:

GWTM : The assumed SWL of the ventilation fan and actuator was made reference to the *Technical Memorandum on Noise From Construction Work*

*Other Than Percussive Piling.*

Ref 1: As the flow rate of the pump is subject to dosing plan that is not available at this stage, the maximum SWL of the pumpset in Good Practice on Pumping System Noise Control (GPPSNC) was used in this assessment for the worst case.

Ref 2: The SWL for the operation of the existing sewage treatment plant was backward calculated based on the on-site measured noise level using the standard acoustical principles.

Ref 3: Based on on-line searching (<http://www.fujitsugeneral.co.nz/includes/heat-pumps/conventional-window-wall.pdf>), the SWLs of air conditioner units range from 69 to 78 dB(A)

depending on the cooling capacity. The maximum SWL of the air conditioner unit was used in this assessment for the worst case. It should be noted that Fujitsu air-conditioner was only

taken as an example for the purpose of this assessment.

Ref 4: Based on the estimated horsepower and operating speed of pumpset by supplier, the SWL of the pumps was made reference to Good Practice on Pumping System Noise Control (GPPSNC).

Enclosure Reduction: Reduction of SWL due to the enclosure for the equipment

Screening Reduction: Reduction of SWL due to the screening of line of sight by the structure of FSD diving training centre itself.

\* Standby item was not included in the noise assessment