

Annex 5-G

# Operational Noise Assessment

Annex 5-G - Operational Noise Impact Assessment																	
BLACK POINT OPTION																	
NSR:	Village House at Lung Kwu Sheung Tan																
Octave and Center Frequency Hz																	
		63	125	250	500	1000	2000	4000	8000								
A-Weighted Correction		26.2	16.1	8.6	3.2	0.0	-1.2	-1.0	1.1								
Atmospheric absorption (dB/km) (at 20 °C & 80%RH) <sup>(1)</sup> (ref. ISO 9613-1:1993(E))		0.079	0.3	1.04	2.77	5.15	8.98	21.3	68.6								
Distance from NSR to Source		1.6	km to the nearest site boundary														
Atmospheric absorption (dB)		0.1	0.5	1.7	4.4	8.2	14.4	34.1	109.8								
			Octave and Center Frequency Hz								Overall SWL		Correction, dB(A)				SPL at NSR
		Data Source <sup>(3)</sup>	63	125	250	500	1000	2000	4000	8000	dB(A)	No. of plant	No. of Plant	Distance	Barrier <sup>(2)</sup>	Facade	dB(A)
<b>Heat Exchangers</b>																	
E-301A-D	LNG Seawater Vaporizers (& Spare)	F	105	103	97	88	85	85	82	74	91	4	6.0	-72.1	-20	3	8
E-302 A-C	LNG Submerged Combustion Vaporizer	M	97	107	113	121	116	113	108	100	115	3	4.8	-72.1	-20	3	31
<b>Blowers, Compressors and Generator (Note 9)</b>																	
K-301 A/B	Boil-off Gas Compressors (450 kW)	E	101	101	101	101	103	99	95	92	98	2	3.0	-72.1	-20	3	12
K-302	Ship Unloading Compressor (900 kW)	E	107	107	107	107	109	105	101	98	104	1	0.0	-72.1	-20	3	15
K-303	Pipeline Compressor (800 kW)	E	101	101	101	101	103	99	95	92	98	1	0.0	-72.1	-20	3	9
K-401 A/B	Instrument/Plant Air Compressor & spare	M	59	73	83	88	89	86	81	74	84	2	3.0	-72.1	-20	3	0
G-402	Emergency Generator-Diesel Driven	M	80	84	86	87	86	92	94	85	84	1	0.0	-72.1	-20	3	0
<b>Pumps</b>																	
P-201 A-D	LNG Send-out Pumps – in LNG Tank (two per tank)	M	94	96	97	96	95	94	91	88	93	4	6.0	-72.1	-20	3	10
P-301 A-D	HP LNG Booster Pumps (& Spare)	F	90	92	93	93	93	98	88	81	91	4	6.0	-72.1	-20	3	8
P-401 A-C	Seawater Pumps (& Spare)	M	80	84	86	87	86	92	94	85	84	3	4.8	-72.1	-20	3	0
P-402 A-D	Firewater Pumps – 2 Electric & 2 Diesel	M	80	84	86	87	86	92	94	85	84	4	6.0	-72.1	-20	3	1
P-403 A/B	Firewater Jockey Pump (& Spare)	M	51	62	72	80	82	81	77	70	77	2	3.0	-72.1	-20	3	0
P-404 A/B	Service Water Pump (& Spare)	M	51	62	72	80	82	81	77	70	77	2	3.0	-72.1	-20	3	0
P-405 A/B	Drinking Water Pump (& spare)	M	51	62	72	80	82	81	77	70	77	2	3.0	-72.1	-20	3	0
P-406	Submerged Combustion Vaporizer Water Overflow Pump	M	87	89	90	89	88	87	84	81	86	1	0.0	-72.1	-20	3	0
P-407	CPI Oily Water Sump Pump	M	87	89	90	89	88	87	84	81	86	1	0.0	-72.1	-20	3	0
P-408 A/B	Process Area Sump Pumps, 2 x 100%	M	87	89	90	89	88	87	84	81	86	2	3.0	-72.1	-20	3	0
<b>Special Equipment</b>																	
N-101 A-D	LNG Unloading Arms (& Spare)	M	65	68	69	69	71	66	60	52	66	4	6.0	-72.1	-20	3	0
N-102	LNG Vapor Return Arm	M	65	68	69	69	71	66	60	52	66	1	0.0	-72.1	-20	3	0
N-401	Nitrogen Package for Terminal	M	70	76	82	88	94	98	94	88	89	1	0.0	-72.1	-20	3	0
N-402	Instrument Air Drier and Package	M	79	83	85	77	75	74	74	71	77	1	0.0	-72.1	-20	3	0
<b>Expansion Case - 1000 MSCFD</b>																	
E-301 E/F	LNG Seawater Vaporizer	F	105	103	97	88	85	85	82	74	91	2	3.0	-72.1	-20	3	5
E-302 D/E	LNG Submerged Combustion Vaporizer	M	97	107	113	121	116	113	108	100	115	2	3.0	-72.1	-20	3	29
P-201 E/F	LNG Send-out Pumps - in T-201 C	M	94	96	97	96	95	94	91	88	93	2	3.0	-72.1	-20	3	7
P-301 H-J	HP LNG Booster Pumps	F	90	92	93	93	93	98	88	81	91	2	3.0	-72.1	-20	3	5
P-401 D	Seawater Pump	M	80	84	86	87	86	92	94	85	84	1	0.0	-72.1	-20	3	0
<b>TOTAL SPL at NSR</b>																	<b>33</b>
Note:																	
(1) Atmospheric attenuation coefficients at 20°C and RH 80% are applied in the calculation with reference to the "The Year's Weather - 2005" issued by Hong Kong Observatory.																	
(2) As a conservative assessment, the screening effect by the building in which the equipment located has been omitted. All the noise sources will be located behind the high headland and the N1 will have no direct line of sight to the Project due to the highest floor of village house (N1) screened by the Black Point Headland (Annex 5B).																	
A 20 dB(A) screening effect is taken into account for the NSR due to topography shielding by the headland and no direct line of sight to the Project, according to Maekawa equation for path different of 17.5m. It should be noted that the screening effect for octave band could be larger than 20 dB(A) based on Maekawa Equation with 17.5m path different.																	
(3) F indicates noise data obtained from the field measurement conducted at other LNG Terminal, and M indicates the noise data provided by Manufacturers.																	