

Appendix 4-7

Industrial Noise Calculations (Worst Case Scenario, Nighttime)

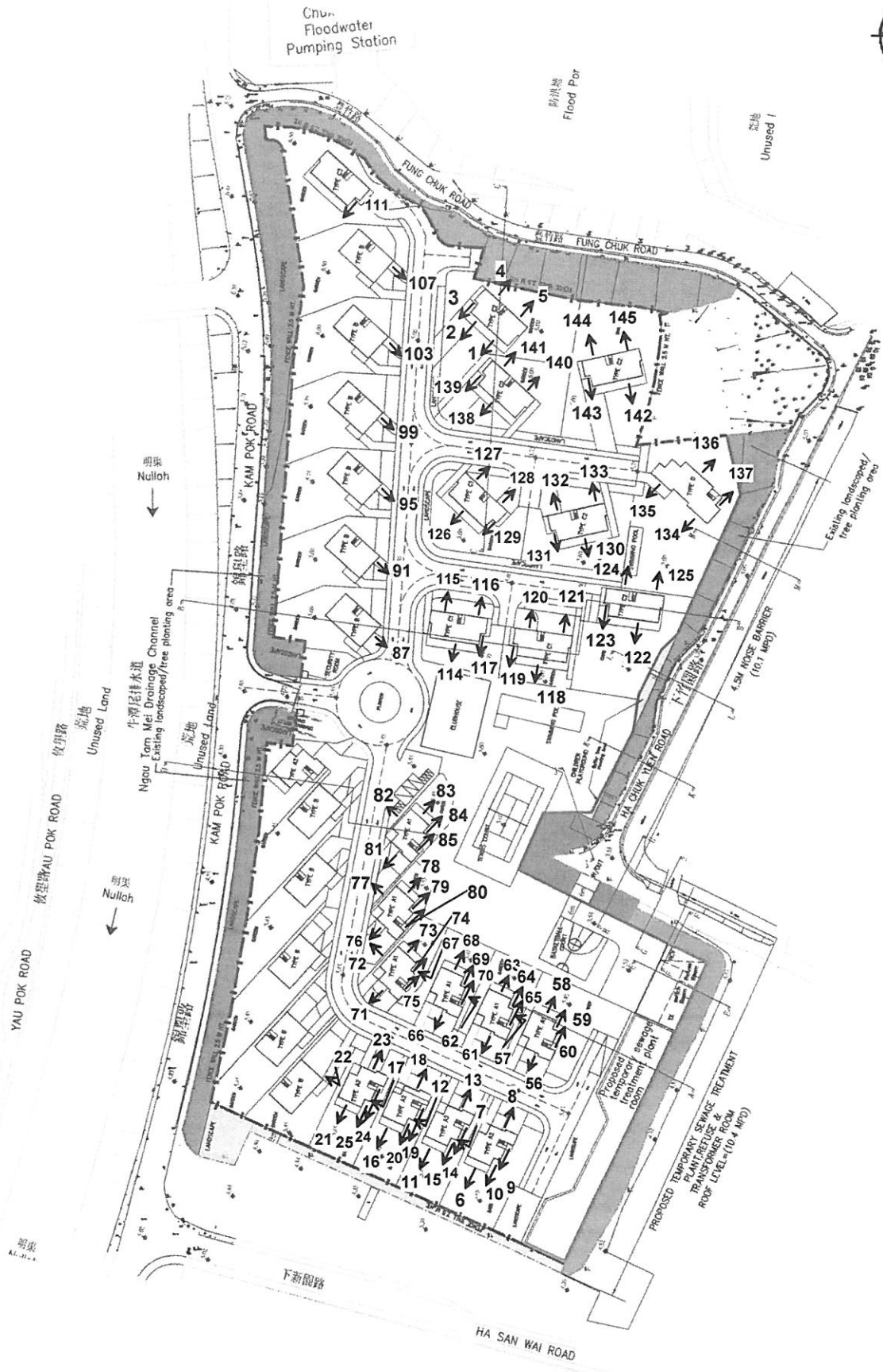


Figure: -

Title: Key of NSRs (Industrial Noise)

Project: EIA for Proposed Low-rise and Low-density Residential Development at Various Lots and Their Adjoining Government Land in D.D. 104, East of Kam Pok Road, Mai Po, Yuen Long, N.T.

RAMBOLL ENVIRON

Drawn by: CC

Checked by: KW

Rev.: -

Date: November 2015

Predicted Industrial Noise Levels in Night-time Period

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 30/11/2015
 Scenario: Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 1	NSR 2	NSR 3	NSR 4	NSR 5	NSR 6	NSR 7	NSR 8	NSR 9
G/F (House Type C with ground level 7.2mPD)	31.1	30.9	25.6	26.6	30.6				
G/F (House Type C with ground level 6.7mPD)					37.7	37.8	41.9	41.7	
1/F (House Type C with ground level 7.2mPD)	32.9	32.8	28.0	29.8	32.1				
1/F (House Type C with ground level 6.7mPD)					38.9	38.8	43.3	43.4	
Max:	32.9	32.8	28.0	29.8	32.1	38.9	38.8	43.3	43.4
(ANL - 5) Criterion	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Compliance	YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Night-time Period

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 30/11/2015
 Scenario: Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 10	NSR 11	NSR 12	NSR 13	NSR 14	NSR 15	NSR 16	NSR 17	NSR 18
G/F (House Type A with ground level 5.45mPD)	40.7	36.1	35.8	40.0	38.7	37.2	34.5	34.1	38.2
1/F (House Type A with ground level 5.45mPD)	42.6	37.6	36.9	41.4	40.3	38.9	36.2	35.4	39.5
Max:	42.6	37.6	36.9	41.4	40.3	38.9	36.2	35.4	39.5
(ANL - 5) Criterion	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Compliance	YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Night-time Period

Job Title:
 Job No.:
 Date:
 Scenario:

Kam Pok Road
 22080
 30/11/2015

Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 19	NSR 20	NSR 21	NSR 22	NSR 23	NSR 24	NSR 25
G/F (House Type A with ground level 5.45mPD)	37.1	35.6	33.7	32.7	37.0	35.1	34.1
1/F (House Type A with ground level 5.45mPD)	38.8	37.5	35.7	34.2	38.3	36.9	36.3
	Max:	37.5	35.7	34.2	38.3	36.9	36.3
	(ANL - 5) Criterion	45.0	45.0	45.0	45.0	45.0	45.0
	Compliance	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Night-time Period

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 30/11/2015
 Scenario: Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 56	NSR 57	NSR 58	NSR 59	NSR 60	NSR 61	NSR 62	NSR 63	NSR 64
G/F (House Type A with ground level 5.45mPD)	43.0	39.4	41.6	42.7	43.8	39.4	36.5	38.9	39.2
1/F (House Type A with ground level 5.45mPD)	44.0	40.0	43.1	44.1	45.0	40.7	37.5	40.4	40.7

Max:
(ANL - 5) Criterion
Compliance

44.0	40.0	43.1	44.1	45.0	40.7	37.5	40.4	40.7
45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Night-time Period

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 30/11/2015
 Scenario: Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 65	NSR 66	NSR 67	NSR 68	NSR 69	NSR 70	NSR 71	NSR 72	NSR 73
G/F (House Type A with ground level 5.45mPD)	34.5	34.8	32.6	31.7	36.6	36.8	36.7	34.6	30.7
1/F (House Type A with ground level 5.45mPD)	40.3	38.6	35.8	38.9	39.0	38.1	35.2	34.4	37.7

Max: 40.3 38.6 35.8 38.9 39.0 38.1 36.7 34.6 37.7
(ANL - 5) Criterion
Compliance
 YES YES YES YES YES YES YES YES YES

Predicted Industrial Noise Levels in Night-time Period

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 30/11/2015

Scenario: Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 74	NSR 75	NSR 76	NSR 77	NSR 78	NSR 79	NSR 80	NSR 81	NSR 82
G/F (House Type A with ground level 5.45mPD)	34.5	34.8	32.6	31.7	36.6	36.8	36.7	34.6	30.7
1/F (House Type A with ground level 5.45mPD)	36.7	36.9	34.8	33.6	37.9	38.3	38.0	35.9	32.7

Max: 36.7 36.9 34.8 33.6 37.9 38.3 38.0 35.9 32.7
 (ANL - 5) Criterion
 Compliance YES YES YES YES YES YES YES YES YES

Predicted Industrial Noise Levels in Night-time Period

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 30/11/2015
 Scenario: Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 83	NSR 84	NSR 85
G/F (House Type A with ground level 5.45mPD)	35.8	36.0	36.1
1/F (House Type A with ground level 5.45mPD)	37.5	37.8	37.8

Max: 37.5 37.8 37.8
(ANL - 5) Criterion 45.0 45.0 45.0
Compliance YES YES YES

Predicted Industrial Noise Levels in Night-time Period

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 30/11/2015
 Scenario: Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 87	NSR 91	NSR 95	NSR 99	NSR 103	NSR 107	NSR 111
G/F (House Type A with ground level 5.6mPD)	31.7	31.1					
G/F (House Type A with ground level 5.75mPD)			30.6	30.1			
G/F (House Type A with ground level 6mPD)					30.8	30.1	28.3
G/F (House Type A with ground level 6.5mPD)							
1/F (House Type A with ground level 5.6mPD)	34.0	33.4					
1/F (House Type A with ground level 5.75mPD)			32.8	32.3			
1/F (House Type A with ground level 6mPD)					32.2		
1/F (House Type A with ground level 6.5mPD)						32.0	30.4

Max: 34.0 33.4 32.8 32.3 32.2 32.0 30.4
(ANL - 5) Criterion 45.0 45.0 45.0 45.0 45.0 45.0
Compliance YES YES YES YES YES YES

Predicted Industrial Noise Levels in Night-time Period

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 30/11/2015
 Scenario: Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 114	NSR 115	NSR 116	NSR 117	NSR 118	NSR 119	NSR 120	NSR 121	NSR 122
G/F (Houses Type C with ground level 5.6mPD)	33.8	28.6	28.7	34.6	35.2	29.2	29.2	29.3	34.4
1/F (Houses Type C with ground level 5.6mPD)	36.2	31.5	31.6	36.5	37.8	31.7	32.2	32.4	40.0
	36.2	31.5	31.6	36.5	37.8	31.7	32.2	32.4	40.0
Max:									
(ANL - 5) Criterion	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Compliance	YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Night-time Period

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 30/11/2015
 Scenario: Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 123	NSR 124	NSR 125	NSR 126	NSR 127	NSR 128	NSR 129	NSR 130	NSR 131
G/F (House Type C with ground level 5.6mPD)	29.0	28.8	29.0	32.9	30.3	30.5	32.4	31.5	32.6
1/F (House Type C with ground level 5.6mPD)	32.0	31.9	32.2	34.8	32.5	32.9	34.6	34.6	35.6
Max:	32.0	31.9	32.2	34.8	32.5	32.9	34.6	34.6	35.6
(ANL - 5) Criterion	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Compliance	YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Night-time Period

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 30/11/2015
 Scenario: Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 132	NSR 133	NSR 134	NSR 135	NSR 136	NSR 137	NSR 138	NSR 139	NSR 140
G/F (House Type C with ground level 5.6mPD)	27.7	27.7	33.0	33.7	28.1	31.2			
G/F (House Type D with ground level 6mPD)						32.5	26.1		27.6
1/F (House Type C with ground level 5.6mPD)	30.5	30.4	38.6	37.4	31.5	38.8			
1/F (House Type D with ground level 6mPD)						34.7	28.7		30.8
Max:	30.5	30.4	38.6	37.4	31.5	38.8	34.7	28.7	30.8
(ANL - 5) Criterion	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Compliance	YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Night-time Period

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 30/11/2015
 Scenario: Noise Barrier (North: 4.5m, South: Sewage Treatment Plant only)

Floor	NSR 141	NSR 142	NSR 143	NSR 144	NSR 145
G/F (House Type D with ground level 6mPD)	31.3	32.3	29.5	26.2	26.2
1/F (House Type D with ground level 6mPD)	33.0	35.3	32.0	28.8	28.9

Max:	33.0	35.3	32.0	28.8	28.9
(ANL - 5) Criterion	45.0	45.0	45.0	45.0	45.0
Compliance	YES	YES	YES	YES	YES

Calculation of Industrial Noise Levels (Night-time Period)

Westwood Hong & Associates Ltd.

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 09/08/16

Code	Description	SWL	Source location & distance			Corrections					CNL dB(A)	
			Xs	Ys	Hs	Lsr	Cno	CLsr	Catm	Csri		Cfac
S2-2	Mobile Crane (Fan Keung Kee)	97	823530	837121.2	4.5	148.2	0	-51.4	0.0	-13.3	3	0.0
S2-1	Lorry (Fan Keung Kee)	99	823530	837121.2	4.5	148.2	0	-51.4	0.0	-13.3	3	0.0
S1-1	Operating Noise (Fan Keung Kee)	94	823530	837121.2	4.5	148.2	0	-51.4	0.0	-13.3	3	32.3
S2-3	Forklift (Fan Keung Kee)	91	823530	837121.2	4.5	148.2	0	-51.4	0.0	-13.3	3	0.0
S10-1	Forklift (Shing Fat Logistics Ltd.)	91	823601	837190.9	4.5	182.5	3	-53.2	0.0	-22.5	3	21.3
S10-2	Lorry (Shing Fat Logistics Ltd.)	99	823601	837190.9	4.5	182.5	0	-53.2	0.0	-22.5	3	0.0
S3-1	Sewage Treatment Plant	74	823477	837149.7	5.4	91.4	0	-47.2	0.0	0.0	3	29.8
TOTAL											34.6	

Xr: 823421
 Yr: 837223
 Hr: 6.70

Definition of terms:

- SWL - the sound power level of a source, dB(A)
- LAeq - the equivalent continuous noise level over a 30 minute period, dB(A)
- No. - the number of items of plant operating simultaneously
- Xr, Yr, Hr - the coordinates of the NSR, m
- Xs, Ys, Hs - the coordinates of the source, m
- Lsr - the horizontal distance between the source and NSR, m

- Cno - correction for no. of plant items
- CLsr - the correction for slant distance between the source and the NSR, dB(A)
- Catm - the air absorption using CONCAWE methodology
- Cfac - the facade correction, dB(A)
- Csri - the sound reduction provided by the building envelope, dB(A)
- CNL - the corrected noise level, dB(A)(30 minutes)

Calculation of Industrial Noise Levels (Night-time Period)

Westwood Hong & Associates Ltd.

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 09/08/16

NSR	NSR 81			Source location & distance										Corrections			CNL dB(A)
	1/F	Xr : 823421	Yr : 837223	SWL	No.	Xs	Ys	Hs	Lsr	Cno	CLsr	Catm	Csri	Cfac			
S2-2	Mobile Crane (Fan Keung Kee)	97	0	823530	837121.2	4.5	148.3	0	-51.4	0.0	-11.8	3	0.0				
S2-1	Lorry (Fan Keung Kee)	99	0	823530	837121.2	4.5	148.3	0	-51.4	0.0	-11.8	3	0.0				
S1-1	Operating Noise (Fan Keung Kee)	94	1	823530	837121.2	4.5	148.3	0	-51.4	0.0	-11.8	3	33.8				
S2-3	Forklift (Fan Keung Kee)	91	0	823530	837121.2	4.5	148.3	0	-51.4	0.0	-11.8	3	0.0				
S10-1	Forklift (Shing Fat Logistics Ltd.)	91	2	823601	837190.9	4.5	182.5	3	-53.2	0.0	-16.8	3	27.0				
S10-2	Lorry (Shing Fat Logistics Ltd.)	99	0	823601	837190.9	4.5	182.5	0	-53.2	0.0	-16.8	3	0.0				
S3-1	Sewage Treatment Plant	74	1	823477	837149.7	5.4	91.5	0	-47.2	0.0	0.0	3	29.8				
												TOTAL	35.9				

Definition of terms:

- SWL - the sound power level of a source, dB(A)
- LAeq - the equivalent continuous noise level over a 30 minute period, dB(A)
- No. - the number of items of plant operating simultaneously
- Xr, Yr, Hr - the coordinates of the NSR, m
- Xs, Ys, Hs - the coordinates of the source, m
- Lsr - the horizontal distance between the source and NSR, m

- Cno - correction for no. of plant items
- CLsr - the correction for slant distance between the source and the NSR, dB(A)
- Catm - the air absorption using CONCAWE methodology
- Cfac - the facade correction, dB(A)
- Csri - the sound reduction provided by the building envelope, dB(A)
- CNL - the corrected noise level, dB(A)(30 minutes)

Calculation of Industrial Noise Levels (Night-time Period)

Westwood Hong & Associates Ltd.

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 09/08/16

NSR	NSR 122 G/F			Xr: 823490 Yr: 837285 Hr: 6.80			Source location & distance						Corrections				CNL dB(A)
	No.	SWL	No.	Xs	Ys	Hs	Lsr	Cno	CLsr	Catm	Csri	Cfac	TOTAL				
S2-2	0	97	0	823530	837121	4.5	168.9	0	-52.6	0.0	-14.4	3	0.0	0.0	3	0.0	
S2-1	0	99	0	823530	837121	4.5	168.9	0	-52.6	0.0	-14.4	3	0.0	0.0	3	0.0	
S1-1	1	94	1	823530	837121	4.5	168.9	0	-52.6	0.0	-14.4	3	0.0	0.0	3	30.0	
S2-3	0	91	0	823530	837121	4.5	168.9	0	-52.6	0.0	-14.4	3	0.0	0.0	3	0.0	
S10-1	2	91	2	823601	837191	4.5	146.2	3	-51.3	0.0	-14.9	3	0.0	0.0	3	30.8	
S10-2	0	99	0	823601	837191	4.5	146.2	0	-51.3	0.0	-14.9	3	0.0	0.0	3	0.0	
S3-1	1	74	1	823477	837150	5.4	136.2	0	-50.7	0.0	0.0	3	0.0	0.0	3	26.3	
														TOTAL		34.4	

Definition of terms:

- SWL - the sound power level of a source, dB(A)
- L_{Aeq} - the equivalent continuous noise level over a 30 minute period, dB(A)
- No. - the number of items of plant operating simultaneously
- Xr, Yr, Hr - the coordinates of the NSR, m
- Xs, Ys, Hs - the coordinates of the source, m
- Lsr - the horizontal distance between the source and NSR, m

- Cno - correction for no. of plant items
- CLsr - the correction for slant distance between the source and the NSR, dB(A)
- Catm - the air absorption using CONCAWE methodology
- Cfac - the facade correction, dB(A)
- Csri - the sound reduction provided by the building envelope, dB(A)
- CNL - the corrected noise level, dB(A)(30 minutes)

Calculation of Industrial Noise Levels (Night-time Period)

Westwood Hong & Associates Ltd.

Job Title.: Kam Pok Road
 Job No.: 22080
 Date: 09/08/16

Code	Description	SWL	Source location & distance			Corrections						CNL dB(A)
			Xs	Ys	Hs	Lsr	Cno	CLsr	Catm	Csri	Cfac	
NSR 122 1/F Xr: 823490 Yr: 837285 Hr: 10.30												
S2-2	Mobile Crane (Fan Keung Kee)	97	823530	837121	4.5	169.0	0	-52.6	0.0	-7.2	3	0.0
S2-1	Lorry (Fan Keung Kee)	99	823530	837121	4.5	169.0	0	-52.6	0.0	-7.2	3	0.0
S1-1	Operating Noise (Fan Keung Kee)	94	823530	837121	4.5	169.0	0	-52.6	0.0	-7.2	3	37.2
S2-3	Forklift (Fan Keung Kee)	91	823530	837121	4.5	169.0	0	-52.6	0.0	-7.2	3	0.0
S10-1	Forklift (Shing Fat Logistics Ltd.)	91	823601	837191	4.5	146.3	3	-51.3	0.0	-9.5	3	36.2
S10-2	Lorry (Shing Fat Logistics Ltd.)	99	823601	837191	4.5	146.3	0	-51.3	0.0	-9.5	3	0.0
S3-1	Sewage Treatment Plant	74	823477	837150	5.4	136.3	0	-50.7	0.0	0.0	3	26.3
TOTAL											40.0	

Definition of terms:

- SWL - the sound power level of a source, dB(A)
- LAeq - the equivalent continuous noise level over a 30 minute period, dB(A)
- No. - the number of items of plant operating simultaneously
- Xr, Yr, Hr - the coordinates of the NSR, m
- Xs, Ys, Hs - the coordinates of the source, m
- Lsr - the horizontal distance between the source and NSR, m

- Cno - correction for no. of plant items
- CLsr - the correction for slant distance between the source and the NSR, dB(A)
- Catm - the air absorption using CONCAWE methodology
- Cfac - the facade correction, dB(A)
- Csri - the sound reduction provided by the building envelope, dB(A)
- CNL - the corrected noise level, dB(A)(30 minutes)