

Appendix 4-6

Industrial Noise Calculations (Worst Case Scenario, Daytime)

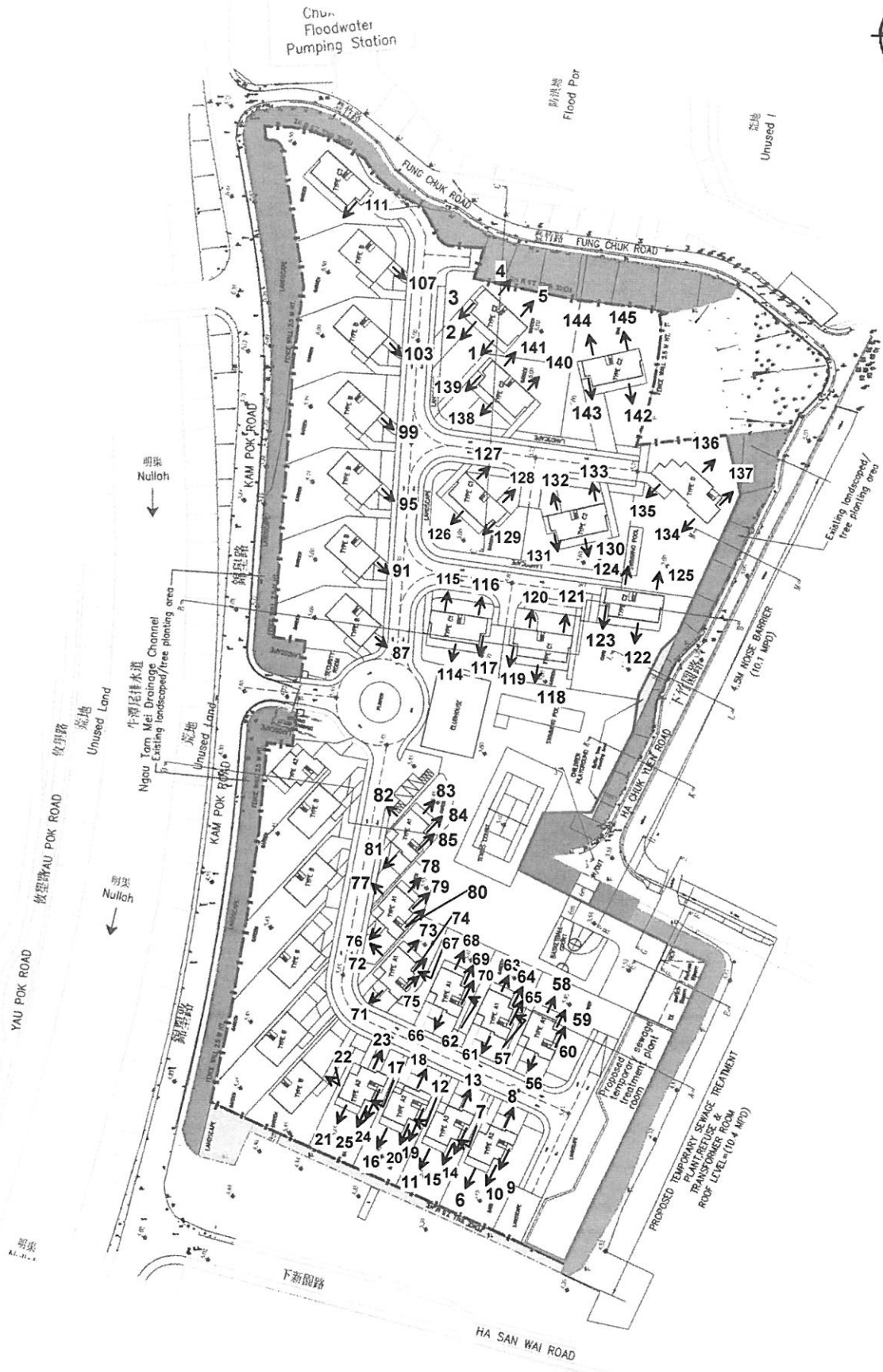


Figure: -

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 Daytime 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)	40.3	40.2	31.5	33.9	39.8				
G/F (House Type C with ground level 6.7mPD)					40.9	40.6	48.1	48.0	
1/F (House Type C with ground level 7.2mPD)	42.5	42.4	36.2	38.8	41.5				
1/F (House Type C with ground level 6.7mPD)					45.0	44.3	51.1	51.4	
Max:	42.5	42.4	36.2	38.8	41.5	45.0	44.3	51.1	51.4
(ANL - 5) Criterion Compliance	YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Daytime 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)	47.7	39.8	39.0	47.3	44.3	41.7	38.8	37.7	45.9
1/F (House Type A with ground level 5.45mPD)	51.0	44.3	42.9	49.7	47.8	46.1	43.3	41.7	47.9
Max:	51.0	44.3	42.9	49.7	47.8	46.1	43.3	41.7	47.9

(ANL - 5) Criterion Compliance

55.0	YES	55.0	YES	55.0	YES	55.0	YES	55.0	YES
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Predicted Industrial Noise Levels in Daytime 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 19	NSR 20	NSR 21	NSR 22	NSR 23	NSR 24	NSR 25
G/F (House Type A with ground level 5.45mPD)	43.7	40.5	39.3	36.8	45.1	41.4	39.5
1/F (House Type A with ground level 5.45mPD)	46.7	45.0	43.5	41.1	47.0	44.8	44.2
Max:	46.7	45.0	43.5	41.1	47.0	44.8	44.2

(ANL - 5) Criterion
 Compliance

YES YES YES YES YES YES YES

Predicted Industrial Noise Levels in Daytime 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)	47.5	41.6	48.0	48.3	48.6	45.2	39.5	45.8	44.9
1/F (House Type A with ground level 5.45mPD)	50.5	44.8	51.0	51.6	51.9	48.0	43.3	48.5	48.2
Max:	50.5	44.8	51.0	51.6	51.9	48.0	43.3	48.5	48.2
(ANL - 5) Criterion Compliance	YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Daytime 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)	40.2	40.6	37.7	36.4	45.3	45.5	45.3	42.8	35.8
1/F (House Type A with ground level 5.45mPD)	46.5	46.5	42.3	47.4	47.2	45.3	42.3	41.3	46.4
Max:	46.5	46.5	42.3	47.4	47.2	45.5	45.3	42.8	46.4
(ANL - 5) Criterion Compliance	YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Daytime 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)	40.2	40.6	37.7	36.4	45.3	45.5	45.3	42.8	35.8
1/F (House Type A with ground level 5.45mPD)	44.7	44.9	42.5	40.9	47.1	47.4	47.1	44.7	40.3
Max:	44.7	44.9	42.5	40.9	47.1	47.4	47.1	44.7	40.3

(ANL - 5) Criterion
 Compliance

YES YES YES YES YES YES YES YES YES YES

Predicted Industrial Noise Levels in Daytime 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)	44.7	44.9	44.9
1/F (House Type A with ground level 5.45mPD)	46.9	47.1	47.1
	Max: 46.9	47.1	47.1
(ANL - 5) Criterion Compliance	YES	YES	YES

Predicted Industrial Noise Levels in Daytime 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)	40.4	39.9					
G/F (House Type A with ground level 5.75mPD)			39.4	38.9			
G/F (House Type A with ground level 6mPD)					40.0		
G/F (House Type A with ground level 6.5mPD)						39.2	37.1
1/F (House Type A with ground level 5.6mPD)	43.2	42.7					
1/F (House Type A with ground level 5.75mPD)			42.2	41.7			
1/F (House Type A with ground level 6mPD)					41.6		
1/F (House Type A with ground level 6.5mPD)						41.5	39.7

Max:	43.2	42.7	42.2	41.7	41.6	41.5	39.7
(ANL - 5) Criterion	55.0	55.0	55.0	55.0	55.0	55.0	55.0
Compliance	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Daytime 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)	43.0	35.1	35.0	43.9	44.5	35.1	35.8	35.9	43.6
1/F (Houses Type C with ground level 5.6mPD)	45.8	40.1	40.1	46.1	47.4	39.9	40.9	41.1	49.8
	Max: 45.8	40.1	40.1	46.1	47.4	39.9	40.9	41.1	49.8
(ANL - 5) Criterion	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
Compliance	YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Daytime 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)	35.5	35.5	35.8	42.2	39.0	39.1	41.5	40.3	41.6
1/F (House Type C with ground level 5.6mPD)	40.6	40.6	41.0	44.4	41.8	42.2	44.2	44.1	45.2
Max:	40.6	40.6	41.0	44.4	41.8	42.2	44.2	44.1	45.2
(ANL - 5) Criterion	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
Compliance	YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Daytime 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)	34.0	34.1	42.2	43.2	35.4	40.1			
G/F (House Type D with ground level 6mPD)							41.9	32.2	35.3
1/F (House Type C with ground level 5.6mPD)	39.0	39.0	48.4	47.2	40.6	48.6			
1/F (House Type D with ground level 6mPD)							44.4	36.9	39.9
Max:	39.0	39.0	48.4	47.2	40.6	48.6	44.4	36.9	39.9
(ANL - 5) Criterion	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
Compliance	YES	YES	YES	YES	YES	YES	YES	YES	YES

Predicted Industrial Noise Levels in Daytime 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)	40.5	41.7	38.1	32.5	32.6
1/F (House Type D with ground level 6mPD)	42.5	45.0	41.3	37.2	37.3
	Max: 42.5	45.0	41.3	37.2	37.3
(ANL - 5) Criterion	55.0	55.0	55.0	55.0	55.0
Compliance	YES	YES	YES	YES	YES

Calculation of Industrial Noise Levels (Daytime 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	4.5	148.2	0	-51.4	0.0	-13.3	3	35.3
S2-1	Lorry (Fan Keung Kee)	99	823530	837121	4.5	148.2	3	-51.4	0.0	-13.3	3	40.3
S1-1	Operating Noise (Fan Keung Kee)	94	823530	837121	4.5	148.2	0	-51.4	0.0	-13.3	3	32.3
S2-3	Forklift (Fan Keung Kee)	91	823530	837121	4.5	148.2	0	-51.4	0.0	-13.3	3	29.3
S10-1	Forklift (Shing Fat Logistics Ltd.)	91	823601	837191	4.5	182.5	3	-53.2	0.0	-22.5	3	21.3
S10-2	Lorry (Shing Fat Logistics Ltd.)	99	823601	837191	4.5	182.5	5	-53.2	0.0	-22.5	3	31.0
S3-1	Sewage Treatment Plant	74	823477	837150	5.4	91.4	0	-47.2	0.0	0.0	3	29.8
TOTAL											42.8	

Xr : 823421
 Yr : 837223
 Hr : 6.7

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 (Daytime 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)			
			No.	Xs	Ys	Hs	Lsr	Cno	CLsr		Catm	Csri	Cfac
NSR 81 1/F Xr: 823421 Yr: 837223 Hr: 10.2													
S2-2	Mobile Crane (Fan Keung Kee)	97	1	823530	837121	4.5	148.3	0	-51.4	0.0	-11.8	3	36.8
S2-1	Lorry (Fan Keung Kee)	99	2	823530	837121	4.5	148.3	3	-51.4	0.0	-11.8	3	41.8
S1-1	Operating Noise (Fan Keung Kee)	94	1	823530	837121	4.5	148.3	0	-51.4	0.0	-11.8	3	33.8
S2-3	Forklift (Fan Keung Kee)	91	1	823530	837121	4.5	148.3	0	-51.4	0.0	-11.8	3	30.8
S10-1	Forklift (Shing Fat Logistics Ltd.)	91	2	823601	837191	4.5	182.5	3	-53.2	0.0	-16.8	3	27.0
S10-2	Lorry (Shing Fat Logistics Ltd.)	99	3	823601	837191	4.5	182.5	5	-53.2	0.0	-16.8	3	36.7
S3-1	Sewage Treatment Plant	74	1	823477	837150	5.4	91.5	0	-47.2	0.0	0.0	3	29.8
TOTAL												44.7	

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 (Daytime 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)
			No.	Xs	Ys	Hs	Lsr	Cno	CLsr	Catm	Csri	Cfac	
S2-2	Mobile Crane (Fan Keung Kee)	97	1	823530	837121	4.5	168.9	0	-52.6	0.0	-14.4	3	33.0
S2-1	Lorry (Fan Keung Kee)	99	2	823530	837121	4.5	168.9	3	-52.6	0.0	-14.4	3	38.1
S1-1	Operating Noise (Fan Keung Kee)	94	1	823530	837121	4.5	168.9	0	-52.6	0.0	-14.4	3	30.0
S2-3	Forklift (Fan Keung Kee)	91	1	823530	837121	4.5	168.9	0	-52.6	0.0	-14.4	3	27.0
S10-1	Forklift (Shing Fat Logistics Ltd.)	91	2	823601	837191	4.5	146.2	3	-51.3	0.0	-14.9	3	30.8
S10-2	Lorry (Shing Fat Logistics Ltd.)	99	3	823601	837191	4.5	146.2	5	-51.3	0.0	-14.9	3	40.6
S3-1	Sewage Treatment Plant	74	1	823477	837150	5.4	136.2	0	-50.7	0.0	0.0	3	26.3
TOTAL												43.6	

Definition of terms:

SWL - the sound power level of a source, dB(A)
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 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 (Daytime 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: 10.3												
S2-2	Mobile Crane (Fan Keung Kee)	97	823530	837121	4.5	169.0	0	-52.6	0.0	-7.2	3	40.2
S2-1	Lorry (Fan Keung Kee)	99	823530	837121	4.5	169.0	3	-52.6	0.0	-7.2	3	45.3
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	34.2
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	5	-51.3	0.0	-9.5	3	46.0
S3-1	Sewage Treatment Plant	74	823477	837150	5.4	136.3	0	-50.7	0.0	0.0	3	26.3
TOTAL											49.8	

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)