

**GEOLOGICAL SECTIONS :**

**NOTES :**

- GROUND PROFILE SHOWN IS THAT CUT ALONG THE SECTION LINE USING THE PUBLISHED TOPOGRAPHIC MAP BY HONG KONG GOVERNMENT.
- INDIVIDUAL BOREHOLE RECORDS SHOULD BE REFERRED TO FOR DETAILS.
- PROJECT SPECIFIC BOREHOLES HAVE BEEN DRAWN USING THE A6S DATA.
- INCLUDED BOREHOLES SHOWN ON THE SECTIONS DO NOT TAKE INTO ACCOUNT ANY DEVIATION AWAY FROM THE SECTION LINE. HENCE CAUTION SHOULD BE ADOPTED WHEN INTERPRETING DETAILS FROM THESE BOREHOLES.

**LEGEND FOR BOREHOLE LOGS**

**LEGEND OF ROD**

- ROD = 100
- ROD = 91 TO 99
- ROD = 76 TO 90
- ROD = 51 TO 75
- ROD = 26 TO 50
- ROD = 0 TO 25

**LEGEND OF LUGEDN TEST RESULTS**

- < 0.05 LU
- 0.05 TO 0.1 LU
- 0.1 TO 0.5 LU
- 0.5 TO 1.0 LU
- 1.0 TO 5.0 LU
- 5.0 TO 10 LU
- 10 TO 50 LU
- > 50 LU

**BEACH DEPOSIT**

- VERY SOFT TO SOFT CLAY
- FIRM TO STIFF CLAY / SILT
- SAND
- COBBLE / GRAVEL / BOULDER

**MARINE DEPOSIT**

- 1 VERY SOFT TO SOFT CLAY
- 2 FIRM TO STIFF CLAY / SILT
- 3 SAND
- 4 COBBLE / GRAVEL / BOULDER

**ROCK DECOMPOSITION**

- COMPLETELY DECOMPOSED
- HIGHLY DECOMPOSED
- MODERATELY DECOMPOSED
- SLIGHTLY DECOMPOSED

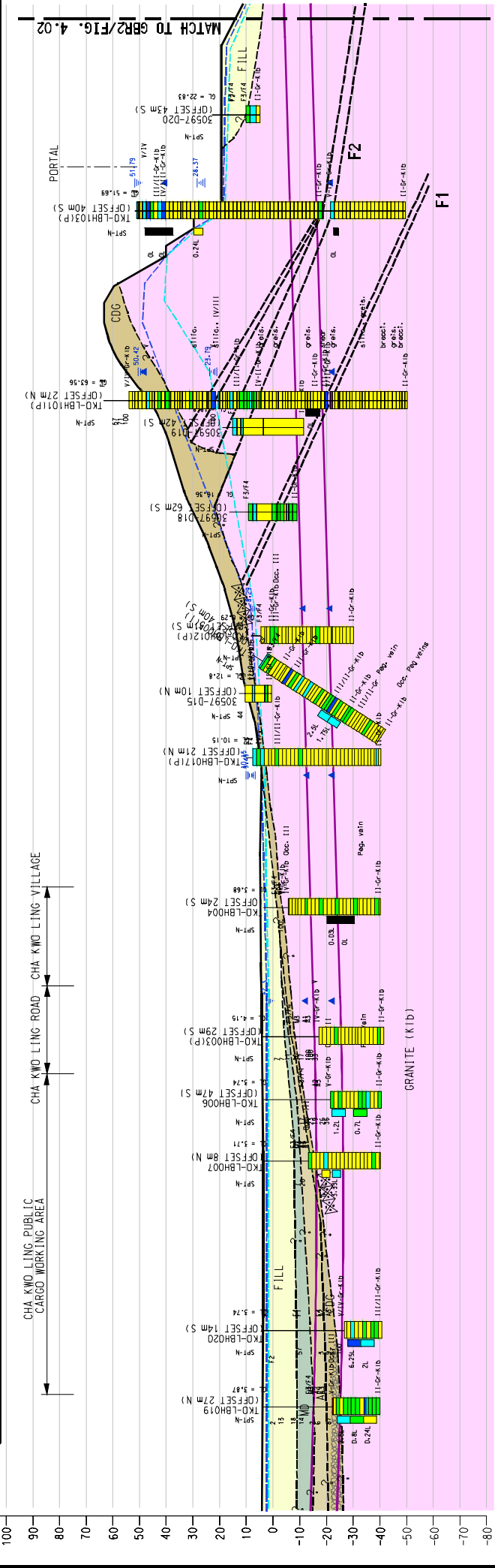
**INFERRED ZONE OF CORESTONE (LOCATION, SIZE AND EXTENT INDICATIVE ONLY)**

**ROCKHEAD**

**GEOLOGICAL FEATURE**

**HIGHEST GROUNDWATER LEVEL USED FOR DESIGN PURPOSES**

**LOWEST PIEZOMETRIC SURFACE IN BEDROCK USED FOR DESIGN PURPOSES**



REF. NO.	DESCR. / EVALUATION, TYPE EXPECTED AND GEOLOGICAL FEATURE	NO.	DEPTH (m)	CHAINAGE (m)	SP. IDENT.
1	WATER TABLE IN BEDROCK	1	1.0	8700	111/11-gr-41b
2	WATER TABLE IN BEDROCK	2	1.0	8700	111/11-gr-41b
3	WATER TABLE IN BEDROCK	3	1.0	8700	111/11-gr-41b
4	WATER TABLE IN BEDROCK	4	1.0	8700	111/11-gr-41b
5	WATER TABLE IN BEDROCK	5	1.0	8700	111/11-gr-41b
6	WATER TABLE IN BEDROCK	6	1.0	8700	111/11-gr-41b
7	WATER TABLE IN BEDROCK	7	1.0	8700	111/11-gr-41b
8	WATER TABLE IN BEDROCK	8	1.0	8700	111/11-gr-41b
9	WATER TABLE IN BEDROCK	9	1.0	8700	111/11-gr-41b
10	WATER TABLE IN BEDROCK	10	1.0	8700	111/11-gr-41b
11	WATER TABLE IN BEDROCK	11	1.0	8700	111/11-gr-41b
12	WATER TABLE IN BEDROCK	12	1.0	8700	111/11-gr-41b
13	WATER TABLE IN BEDROCK	13	1.0	8700	111/11-gr-41b
14	WATER TABLE IN BEDROCK	14	1.0	8700	111/11-gr-41b
15	WATER TABLE IN BEDROCK	15	1.0	8700	111/11-gr-41b
16	WATER TABLE IN BEDROCK	16	1.0	8700	111/11-gr-41b
17	WATER TABLE IN BEDROCK	17	1.0	8700	111/11-gr-41b
18	WATER TABLE IN BEDROCK	18	1.0	8700	111/11-gr-41b
19	WATER TABLE IN BEDROCK	19	1.0	8700	111/11-gr-41b
20	WATER TABLE IN BEDROCK	20	1.0	8700	111/11-gr-41b
21	WATER TABLE IN BEDROCK	21	1.0	8700	111/11-gr-41b
22	WATER TABLE IN BEDROCK	22	1.0	8700	111/11-gr-41b
23	WATER TABLE IN BEDROCK	23	1.0	8700	111/11-gr-41b
24	WATER TABLE IN BEDROCK	24	1.0	8700	111/11-gr-41b
25	WATER TABLE IN BEDROCK	25	1.0	8700	111/11-gr-41b
26	WATER TABLE IN BEDROCK	26	1.0	8700	111/11-gr-41b
27	WATER TABLE IN BEDROCK	27	1.0	8700	111/11-gr-41b
28	WATER TABLE IN BEDROCK	28	1.0	8700	111/11-gr-41b
29	WATER TABLE IN BEDROCK	29	1.0	8700	111/11-gr-41b
30	WATER TABLE IN BEDROCK	30	1.0	8700	111/11-gr-41b
31	WATER TABLE IN BEDROCK	31	1.0	8700	111/11-gr-41b
32	WATER TABLE IN BEDROCK	32	1.0	8700	111/11-gr-41b
33	WATER TABLE IN BEDROCK	33	1.0	8700	111/11-gr-41b
34	WATER TABLE IN BEDROCK	34	1.0	8700	111/11-gr-41b
35	WATER TABLE IN BEDROCK	35	1.0	8700	111/11-gr-41b
36	WATER TABLE IN BEDROCK	36	1.0	8700	111/11-gr-41b
37	WATER TABLE IN BEDROCK	37	1.0	8700	111/11-gr-41b
38	WATER TABLE IN BEDROCK	38	1.0	8700	111/11-gr-41b
39	WATER TABLE IN BEDROCK	39	1.0	8700	111/11-gr-41b
40	WATER TABLE IN BEDROCK	40	1.0	8700	111/11-gr-41b
41	WATER TABLE IN BEDROCK	41	1.0	8700	111/11-gr-41b
42	WATER TABLE IN BEDROCK	42	1.0	8700	111/11-gr-41b
43	WATER TABLE IN BEDROCK	43	1.0	8700	111/11-gr-41b
44	WATER TABLE IN BEDROCK	44	1.0	8700	111/11-gr-41b
45	WATER TABLE IN BEDROCK	45	1.0	8700	111/11-gr-41b
46	WATER TABLE IN BEDROCK	46	1.0	8700	111/11-gr-41b
47	WATER TABLE IN BEDROCK	47	1.0	8700	111/11-gr-41b
48	WATER TABLE IN BEDROCK	48	1.0	8700	111/11-gr-41b
49	WATER TABLE IN BEDROCK	49	1.0	8700	111/11-gr-41b
50	WATER TABLE IN BEDROCK	50	1.0	8700	111/11-gr-41b

**AECOM**

TSUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

AGREEMENT NO. CE 42/2008 (CE)

GEOTECHNICAL PROFILE

SCALE: 1 : 1500 A3

CHECK: GCYN

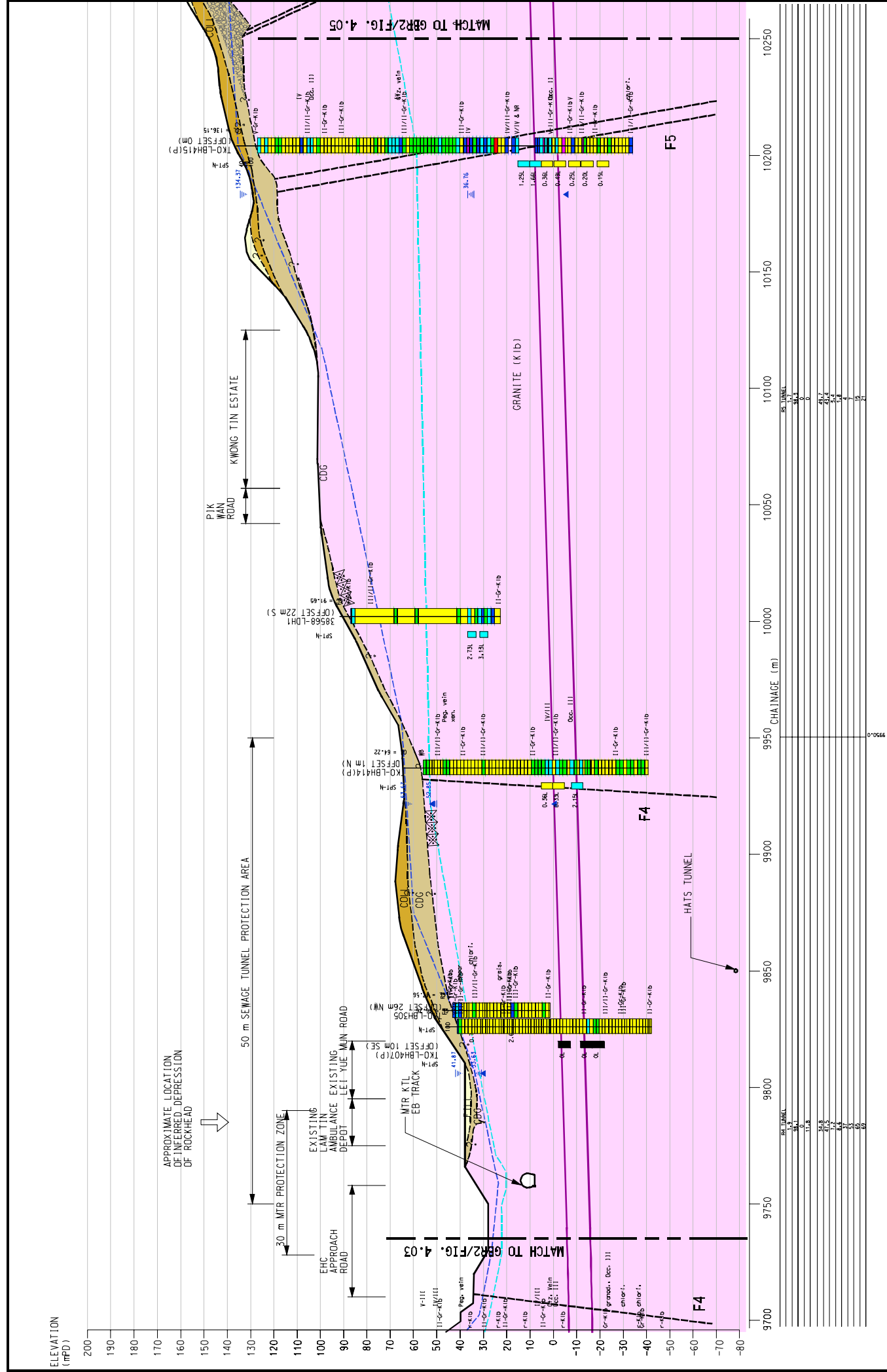
DRAWN: ATCL

DATE: SEP 2012

JOB NO.: 60097697

DRAWING NO.: Appendix 4.5

REV: -



Scale: 1 : 1500 A3  
 Check: GCYN  
 Job No.: 60097697  
 Date: SEP 2012  
 Drawn: ATCL  
 Revision: Appendix 4.5

AGREEMENT NO. CE 42/2008 (CE)  
 TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION  
 GEOTECHNICAL PROFILE

REV	DESCRIPTION	DATE
1	Issue for tender	04/08/2008
2	Issue for contract	12/08/2008
3	Issue for construction	02/09/2008
4	Issue for final report	15/09/2008
5	Issue for final report	22/09/2008
6	Issue for final report	29/09/2008
7	Issue for final report	06/10/2008
8	Issue for final report	13/10/2008
9	Issue for final report	20/10/2008
10	Issue for final report	27/10/2008
11	Issue for final report	03/11/2008
12	Issue for final report	10/11/2008
13	Issue for final report	17/11/2008
14	Issue for final report	24/11/2008
15	Issue for final report	01/12/2008
16	Issue for final report	08/12/2008
17	Issue for final report	15/12/2008
18	Issue for final report	22/12/2008
19	Issue for final report	29/12/2008
20	Issue for final report	05/01/2009
21	Issue for final report	12/01/2009

## Detailed Calculation of Ground-borne Noise Impacts from PME

AP ID N3105  
Name Cha Kwo Ling Village

### PME Excavator Mounted Breaker

Item	Description							Assumption
	Octave Band Frequency	16	31.5	63	125	250	500 Hz	
	rms velocity	0.06	0.07	0.06	0.05	0.06	0.12 mm/s	Adopted from KSL EIA Appendix 7-1, Site Vibration Measurement
1	Vibration Velocity, ref 10 <sup>-6</sup> mm/s	95	97	96	94	96	102 dB(V)	
2	Ro R Distance Attenuation	5.5 10 -5	5.5 10 -5	5.5 10 -5	5.5 10 -5	5.5 10 -5	5.5 10 -5 m	Site measurement of breaker operation at distance = 5.5m Shortest distance from the site to the NSR
3	Soil / Rock Damping	-0.7	-1.4	-2.9	-5.7	-11.4	-22.7 dB	Assume 5m clay soil from the house to the bed rock
4	Building Coupling Loss	-7	-7	-7	-7	-7	-7 dB	7 dB reduction for 1-2 storey Masonry
5	Floor to Floor Attenuation	0	0	0	0	0	0 dB	
6	Conversion from Vibration to Noise	-27	-27	-27	-27	-27	-27 dB	Adopted from KSL EIA Table 7-4
7	Conversion to A-weighted Noise	-56.7	-39.4	-26.2	-16.1	-8.6	-3.2 dB(A)	Standard acoustic principal
	Individual Groundborne Noise	-1	17	28	33	37	37 dB(A)	Standard acoustic principal
	Predicted Groundborne Noise for Hydraulic Breaker Operation						<b>41 dB(A)</b>	

### PME Drill Rig

Using the calculated hydraulic breaker noise to correct to Rock Drill Noise	5.1 dB(A)	20log(0.536/0.298)	Site measurement in KSL EIA Appendix 7-1
Predicted groundborne noise for drill rig operation	<b>46 dB(A)</b>		

### PME Pile Rig

Using the calculated hydraulic breaker noise to correct to pipepile noise	6.6 dB(A)	20log(0.638/0.298)	Site measurement in KSL EIA Appendix 7-1
Predicted groundborne noise for pile rig operation	<b>47 dB(A)</b>		

## Detailed Calculation of Ground-borne Noise Impacts from PME

AP ID N3201  
Name Kwong Ching House, Kwong Tin Estate

### PME Excavator Mounted Breaker

Item	Description								Assumption
	Octave Band Frequency	16	31.5	63	125	250	500	Hz	
	rms velocity	0.06	0.07	0.06	0.05	0.06	0.12	mm/s	Adopted from KSL EIA Appendix 7-1, Site Vibration Measurement
1	Vibration Velocity, ref 10 <sup>-6</sup> mm/s	95	97	96	94	96	102	dB(V)	
2	Ro R Distance Attenuation	5.5 95 -25	5.5 95 -25	5.5 95 -25	5.5 95 -25	5.5 95 -25	5.5 95 -25	m m dB	Site measurement of breaker operation at distance = 5.5m Shortest distance from the site to the NSR
3	Soil / Rock Damping	0	-0.1	-0.1	-0.2	-0.5	-1	dB	Vibration will be transmitted from the rock breaking to the pile of the building. The whole transmission path is assumed to be rock
4	Building Coupling Loss	-7	-7	-10	-13	-14	-14	dB	Transportation Noise Reference Book, EIA Report Section 4.40
5	Floor to Floor Attenuation	-1	-1	-1	-1	-1	-1	dB	Assume -1 dB per floor and the first living level at 1/F
6	Conversion from Vibration to Noise	-27	-27	-27	-27	-27	-27	dB	Adopted from KSL EIA Table 7-4
7	Conversion to A-weighted Noise	-56.7	-39.4	-26.2	-16.1	-8.6	-3.2	dB(A)	Standard acoustic principal
	Individual Groundborne Noise	-21	-3	7	12	20	31	dB(A)	Standard acoustic principal
	Predicted Groundborne Noise for Hydraulic Breaker Operation							<b>31 dB(A)</b>	

### PME Drill Rig

Using the calculated hydraulic breaker noise to correct to Rock Drill Noise	5.1 dB(A)	20log(0.536/0.298)	Site measurement in KSL EIA Appendix 7-1
Predicted groundborne noise for drill rig operation	<b>36 dB(A)</b>		

### PME Pile Rig

Using the calculated hydraulic breaker noise to correct to pipepile noise	6.6 dB(A)	20log(0.638/0.298)	Site measurement in KSL EIA Appendix 7-1
Predicted groundborne noise for pile rig operation	<b>38 dB(A)</b>		