

Your ref.:

Our ref.: (HY/2009/17)/I.01/0964

1<sup>st</sup> September 2010

**The EIA Ordinance Register Office,**

**By Hand only**

27<sup>th</sup> Floor,

Southern Centre,

130 Hennessy Road,

Wan Chai, Hong Kong

Dear Sirs,

**Contract No. HY/2009/17**

**Central-Wan Chai Bypass -**

**FEHD Whitfield Depot Re-provisioning Works**

**Re: Submission of Layout Plan & Construction Noise Management Plan (FEP-03/364/2009)**

In accordance with Clause 2.8 & 2.9 of General Conditions regarding the captioned subject, we are pleased to submit herewith four hard copies and one electronic copy of the construction noise management plan for your reference and retention. In addition, a layout plan in the scale of 1:1000 was attached in the noise management plan.

Please note that the noise management plan has been certified by the ET Leader and verified by the IEC and their letters were enclosed for your reference.

Should you have any enquiries or request for further information, please feel free to contact our E.O., Mr Andy Mak or the undersigned at telephone no. 6461-3065 and 9220-3273 respectively.

Yours faithfully,

For and or behalf of  
Lam Woo & Co. Ltd.



Daniel Chan  
Site Agent

c.c. CEDD – Mr. Patrick Keung (SE)

Hyd Department – Mr. Jones Lai (SE)

Lam Geotechnics Ltd. – Mr. Raymond Dai (ET)

ENVIRON Hong Kong Ltd. – Mr. Simon Lam (IEC)

AECOM Asia Co. Ltd. – Mr. David Kwan (CRE)

DC/AM/ctm

Encl.



# Lam Geotechnics Limited

Ground Investigation & Instrumentation Professionals

華益土力有限公司

Ref : G1001/CS/L179/FEP-03/364/2009  
Date : 31 August 2010

## Lam Woo & CO., LTD

11/F, Chevalier Engineering Service Centre,  
21 Sheung Yuet Road,  
Kowloon Bay, Hong Kong

**Attn: Site Agent, Mr. Daniel Chan**

Dear Sir,

**Contract No. HY/2009/17**

**Central- Wan Chai Bypass – FEHD Whitfield Depot Re-provisioning Works Advance Piling Works**

**Noise Management Plan (Revision 0)**

Referring to the captioned submission dated 27 August 2010, we have reviewed your submitted details and hereby certified this submission in accordance with Conditions 2.9 of FEP-03/364/2009.

Should you have any enquiry, please feel free to contact the undersigned at 2839 5666.

Yours faithfully,

Raymond Dai  
Environmental Team Leader

c.c.

HyD	- Mr. Jones Lai	(By Fax: 2714 5289)
CEDD	- Mr. Patrick Keung	(By Fax: 2577 5040)
AECOM (CWB)	- David Kwan	(By Fax: 3529 2829)
AECOM (WDII)	- Mr. Frankie Fan	(By Fax: 2587 1877)
ENVIRON	- Mr. David Yeung	(By Fax: 3548 6988)



Ref.: AACWBIECEM00\_0\_0438L.10

31 August 2010

Lam Woo & Co. Ltd  
11/F, Chevalier Engineering Service Centre  
21 Sheung Yuet Road  
Kowloon Bay  
Kowloon

By Post and E-mail

Attention: Mr. Daniel Chan

Dear Sir,

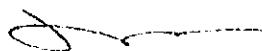
**Re: FEP-03/364/2009**  
**Contract No. HY/2009/17**  
**Central-Wan Chai Bypass – FEHD Whitefield Depot Re-provisioning**  
**Works Advance Piling Works**  
**Noise Management Plan (Revision 0)**

Reference is made to the captioned submission of Noise Management Plan (Revision 0) dated 27 August 2010 for our review and comment.

Please be informed that we have no adverse comments on the captioned submission. We write to verify the captioned submission in accordance with Condition 2.9 of FEP-03/364/2009.

Thank you for your kind attention.

Yours sincerely,



David Yeung  
Independent Environmental Checker

c.c.	HyD	Mr. Jones Lai	by fax: 2714 5289
	CEDD	Mr. Patrick Keung	by fax: 2577 5040
	AECOM (CWB)	Mr. David Kwan	by fax: 3529 2829
	AECOM (WDII)	Mr. Frankie Fan	by fax: 2587 1877
	LAM	Mr. Raymond Dai (ETL)	by fax: 2882 3331

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**Lam Woo & Co. Ltd**

**Noise Management Plan  
for  
Contract No. : HY/2009/17**

**Central-Wan Chai Bypass-  
FEHD Whitfield Depot Re-provisioning Works  
Advance Piling Works**

**Revision No.: 0  
27<sup>th</sup> August 2010**

Prepared by:	Approved by:
	
Andy Mak Environmental Officer	Daniel Chan Site Agent

## Noise Management Plan

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## **1. Introduction**

1.1 The Works to be executed under this Project are mainly located at No.11 King Ming Road, Food & Environmental Hygiene Department, Transport Section (Hong Kong) Whitefield, North Point.

The major works under this contract include the construction of bored piles or pre-bored H-piles for the future contract of Tunnel (North Point section) and Island Eastern Corridor Link.

### 1.2 Objective of the Noise Management Plan (NMP)

This NMP provide an evaluation of the potential noise impacts arising during construction and operation phases. The construction noise levels have been predicted based on the estimate of the construction plants used and assessed against the EIAO-TM noise criteria. Appropriate mitigation measures have been recommended where adverse impacts are predicted.

## **2. Environmental legislation, Policies, Plans, Standards and Criteria**

2.1 Noise impacts have been assessed in accordance with the criteria and methodology given in the Technical memoranda (TM) made under the Noise Control Ordinance (NCO) and the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM).

2.2 The Noise Control Ordinance (NCO) provides the statutory framework for noise control. Assessment procedures and standards are set out in the following Technical Memoranda:

- EIAO-TM;
- TM on Noise from Construction Work other than Percussive Piling (GW-TM);
- TM on Noise from Construction Work in Designated Areas (DA-TM);
- TM on Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM);

**Noise Management Plan**

**3. Construction Noise**

3.1 The NCO provides the statutory framework for noise control of construction work other than percussive piling using powered mechanical equipment (PME) between the hours of 1900 and 0700 or at any time on Sundays and a general holiday (that is, restricted hours). Noise control on construction activities taking place at other times is subject to the Criteria for Evaluating Noise Impact stated in Table 1B of Annex 5 in the EIAO-TM. The noise limit is 75 dB(A)  $L_{eq}$  (30 minutes) at the facades of dwellings and 70 dB(A)  $L_{eq}$  (30 minutes) at the facades of schools (65 dB(A) during examinations). The construction noise criteria are summarised in Table 1.

**Table 1 Daytime Construction Noise Criteria**

<b>Uses</b>	<b>Noise Level in <math>L_{eq}</math>(30-minutes), dB(A)</b>
Domestic premises	75
Educational Institution	70
Educational Institution (during examination)	65

3.2 Between 1900 and 0700 hours and all day on Sundays and public holidays, activities involving the use of powered mechanical equipment (PME) for the purpose of carrying out construction work is prohibited unless a Construction Noise Permit (CNP) has been obtained. A CNP may be granted provided that the Acceptable Noise Level (ANL) for the noise sensitive receivers (NSRs) can be complied with. ANLs are assigned depending upon the Area Sensitivity Ratings (ASRs). The corresponding basic noise levels (BNLs) for evening and night time periods are given in Table 2.

**Table 2 Construction Noise Criteria for Activity other than Percussive Piling**

<b>Time Period</b>	<b>Basic Noise Level (BNLs)</b>		
	<b>ASR A</b>	<b>ASR B</b>	<b>ASR C</b>
Evening (1900 to 2300 hours) <sup>(1)</sup>	60	65	70
Night (2300 to 0700 hours)	45	50	55

**Noise Management Plan**

**4. Noise Sensitive Receivers**

4.1 In order to evaluate the construction and operation noise impacts from the project, representative existing noise sensitive receivers (NSRs) within the Study Area are identified for assessment. In accordance with Section 3 of Annex 13 of EIAO-TM, the NSRs within 300m of the Study Area have been identified and are summarized in Table 3.

**Table 3 Summary of Identified Existing Noise Sensitive Receivers**

Tin Hau	Viking Garden	Residential
	Victoria Court	Residential
	Mayson Garden	Residential
	Gorden House	Residential
	Belle House	Residential
	Hoi Tao Building	Residential
	Deport of Food and Environment Hygiene Department (FEHD)	Government quarters and office
	Victoria Centre	Residential
	Harbour Heights Tower	Residential

Based on the above summary, Victoria Centre have been selected as a representative NSR to evaluate the construction noise impacts as it located the closest to our construction site. A detail of the representative is given below:

NSR	Section	Location	Use	Slant Distance from Closest Piling Works(m)	No. of Floors
N1	Tin Hau	Victoria Centre (Block 1)	Residential	48	35



## Noise Management Plan

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### 5. Assessment Methodology

- 5.1 In accordance with the EIAO, the methodology outlined in the GW-TM has been used for the assessment of construction noise (excluding percussive piling). Sound Power Levels (SWLs) of the equipment were taken from Table 3 of this TM.
- 5.2 A negative correction of 10dB(A) was made to the calculated result as all items of PME to be used on the construction site will be totally screened by Island Eastern Corridor such that none will be visible when viewed from any opening in façade of the NSR. (Refer to Appendix B)
- 5.3 A positive correction of 3dB(A) was made to the calculated result in order to allow for façade effect.

### 6. Prediction and Evaluation of Environmental Impacts

- 6.1 For normal daytime working hours, the construction noise are predicted to be lower than the Leq,(30 minutes) 75dB(A) noise limit for residential uses in the absence of mitigation measures.
- 6.2 Details of construction noise calculations and results are presented in Appendix D. Results showed that the predicted noise levels for pre-bored H-piles or bored piles at the representative NSR during the piling works were between 65dB(A) – 69dB(A).
- 6.3 In Appendix E, it was assumed that some portions of Area B may be partially visible from windows at 25<sup>th</sup> floor or up in Victoria Centre. Therefore, we calculate the predicted noise level at 25<sup>th</sup> floor to demonstrate that it would comply with the daytime construction noise criteria of 75dB(A) even without screened by Island Eastern Corridor. The predicted noise levels for pre-bored H-piles or bored piles were 71.3dB(A) & 72.8dB(A) respectively.

### 7 Mitigation of Environmental Impacts

- 7.1 In order to further reduce the noise impacts to NSRs during normal daytime working hours, it is still recommended that the following noise reduction measures shall be considered as far as practicable during construction :

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## Noise Management Plan

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- All plant and equipment to be used on site shall be properly maintained;
- Mobile plant shall be sited as far as away from sensitive receivers as possible; and
- Install direct noise mitigation measures including silencers, acoustic louvers and movable acoustic enclosure where necessary
- Machines and plant that maybe in intermittent use should be shut down between work periods.
- Plant known to emit noise strongly in one direction should, where possible, be orientated so that the noise is directed away from the nearby NSRs.

### 8 Conclusion

8.1 This assessment has predicted the construction noise impacts associated with the construction works of our piling works. The noise level for pre-bored H-piles or bored piles were predicted to be lower than the Leq(30 minutes) 75dB(A) noise limit for residential uses as stipulated under the Environmental Impact Assessment Ordinance. If we assumed the site area can be visible from the 25<sup>th</sup> floor or up in Victoria Building, the predicted cumulative sound level were still compliances with the EIAO. Therefore, either method can be used for the piling works.

Noise Management Plan

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APPENDIX A  
Site Layout Plan



1 Co-ordinates are relative to Hong Kong Metric Grid (1980)

Legend:


REV.	DATE	DESCRIPTION	CHK.BY	AUTH.BY

Highways Department 路政署  
Major Works Project Management Office

CENTRAL - WAN CHAI BYPASS AND IEG LIN

PWP ITEM NO. 579 TH  
T 務計劃項目編號

Project:  
CENTRAL - WAN CHAI BYPASS - FEED WHITFIELD DEPOT RE-PROVISIONING WORKS



Drawing Title  
PILING PLAN FOR MODIFIED ICE BRIDGE

Contractor  
**LAM WOO & COMPANY LIMITED**

DRAWING NO. 0020

SURVEY DATE 12-06-2010

DRAWN BY KENG

CHECKED BY

SCALE 1:1000

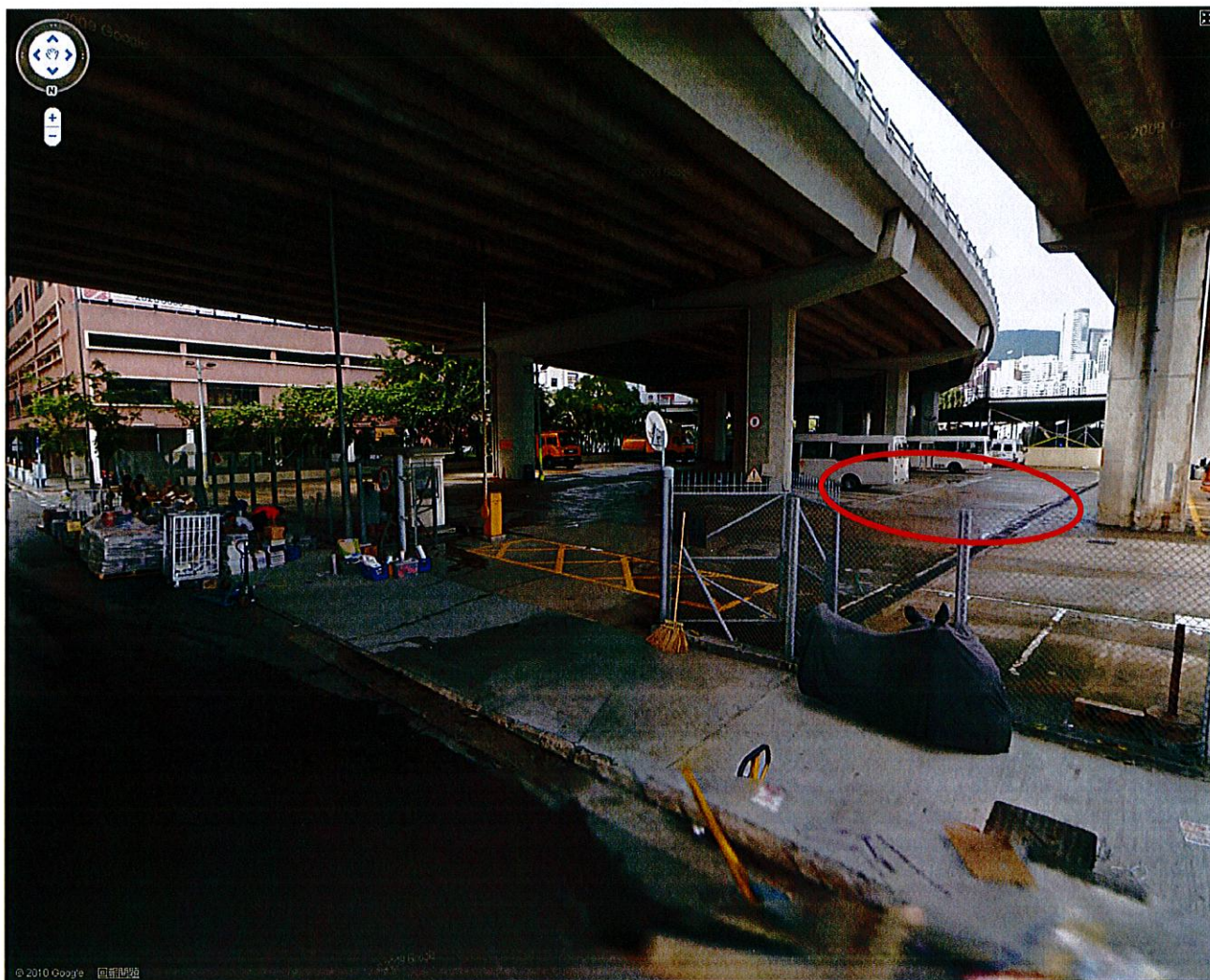
SHEET 1

## Noise Management Plan

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APPENDIX B  
Location of Piling Works

### Noise Management Plan



 = Location of Piling Works

**Noise Management Plan**

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APPENDIX C  
Line of Sight from  
Victoria Centre

Victoria Centre

Total height of Victoria Centre (Residential + Commercial) = 113.6m

Height of Commercial = 35m

Height of Residential = 78.60m

🌿 = Location of Piling Works

→ = Line of sight from Victoria Center

→ = Slant Distance from Piling Works to NSR

Residential

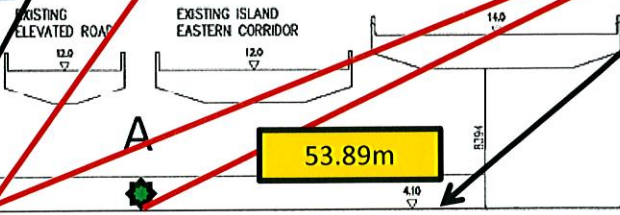
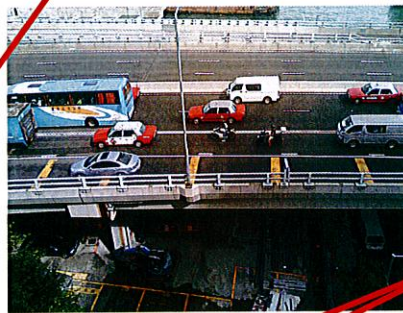
Height at  
25/F  
= 84.5m

98.7m

68.20m

53.89m

Commercial





Calculation for the slant distance from NSR to piling works areas

NSR to Area A :  $\tan \theta = \text{Height of Commercial} / \text{horizontal distance between NSR to Area A}$

$$\tan \theta = 35.0 / 41$$

$$\theta = 40.5^\circ$$

$$\text{Slant Distance} : \sin 40.5^\circ = 35 / y$$

$$y = \underline{\underline{53.89\text{m}}}$$

NSR to Area B :  $\tan \theta = \text{Height of Commercial} / \text{horizontal distance between NSR to Area A}$

$$\tan \theta = 35.0 / 58.5$$

$$\theta = 30.9^\circ$$

$$\text{Slant Distance} : \sin 30.9^\circ = 35.0 / y$$

$$y = \underline{\underline{68.2\text{m}}}$$

$$\underline{\underline{\text{Height (G/F - 25th Floor)}}} : (78.6 / 27) \times 17 + 35$$
$$\underline{\underline{84.5\text{m}}}$$

NSR (25th Floor to Area B)  $\tan \theta = \text{Height of 25th Floor} / \text{horizontal distance between NSR to Area A}$

$$\tan \theta = 84.5 / 58.5$$

$$\theta = 55.3^\circ$$

$$\text{Slant Distance} : \sin 55.3^\circ = 81.14 / y$$

$$y = \underline{\underline{98.7\text{m}}}$$

APPENDIX D

Power Mechanical Equipment  
for Construction Noise  
Assessment (Without Mitigation)

**NSR - FEHD Whitfield Depot (Pre-bored H-piles)**

Area	Plant Item	Plant Code	Sound Level dB(A)	No. of Plant	Total Sound Level, dB(A)	Notional Distance, m	Correction, dB(A)			Corrected Sound Level For Each Equipment, dB(A)	Cumulative Sound Level For All Equipment, dB(A)
							Distance Attenuation, dB(A)	Façade Effect, dB(A)	Total Screened by Island Eastern Corridor, dB(A)		
A	Air Compressor	CNP 002	102	4	108.0	54	-43	3	-10.0	58.0	66.3
	Crawler Crane	CNP 048	112	1	112.0	54	-43	3	-10.0	62.0	
	Backhoe	CNP 081	112	1	112.0	54	-43	3	-10.0	62.0	
	Generator	CNP 102	100	1	100.0	54	-43	3	-10.0	50.0	
	Piling Rig	CNP 166	100	2	103.0	54	-43	3	-10.0	53.0	
	Welding Machines	CNP 168	100	2	103.0	54	-43	3	-10.0	53.0	

B	Air Compressor	CNP 002	102	4	108.0	68	-45	3	-10.0	56.0	64.3
	Crawler Crane	CNP 048	112	1	112.0	68	-45	3	-10.0	60.0	
	Backhoe	CNP 081	112	1	112.0	68	-45	3	-10.0	60.0	
	Generator	CNP 102	100	1	100.0	68	-45	3	-10.0	48.0	
	Piling Rig	CNP 166	100	2	103.0	68	-45	3	-10.0	51.0	
	Welding Machines	CNP 168	100	2	103.0	68	-45	3	-10.0	51.0	

Distance Attenuation = Slant Distance from Piling Works to Podium of Victoria Centre

The cumulative sound level should be lower as the slant distance increase.

**NSR - FEHD Whitfield Depot (Bored Pile)**

Area	Plant Item	Plant Code	Sound Level dB(A)	No. of Plant	Total Sound Level, dB(A)	Notional Distance, m	Correction, dB(A)			Corrected Sound Level For Each Equipment, dB(A)	Cumulative Sound Level For All Equipment, dB(A)
							Distance Attenuation, dB(A)	Façade Effect, dB(A)	Total Screened by Island Eastern Corridor, dB(A)		
A	Air Compressor	CNP 002	102	2	105.0	54	-43	3	-10.0	55.0	67.8
	Crawler Crane	CNP 048	112	1	112.0	54	-43	3	-10.0	62.0	
	Piling, Oscillator	CNP 165	115	1	115.0	54	-43	3	-10.0	65.0	
	Piling, Reverse Circulation Drill	CNP 166	100	1	100.0	54	-43	3	-10.0	50.0	
	Water Pump, Submersible (Electric)	CNP 283	85	1	85.0	54	-43	3	-10.0	35.0	
	Concrete Lorry Mixer	CNP 044	109	1	109.0	54	-43	3	-10.0	59.0	

B	Air Compressor	CNP 002	102	2	105.0	68	-45	3	-10.0	53.0	65.8
	Crawler Crane	CNP 048	112	1	112.0	68	-45	3	-10.0	60.0	
	Piling, Oscillator	CNP 165	115	1	115.0	68	-45	3	-10.0	63.0	
	Piling, Reverse Circulation Drill	CNP 166	100	1	100.0	68	-45	3	-10.0	48.0	
	Water Pump, Submersible (Electric)	CNP 283	85	1	85.0	68	-45	3	-10.0	33.0	
	Concrete Lorry Mixer	CNP 044	109	1	109.0	68	-45	3	-10.0	57.0	

Distance Attenuation = Slant: Distance from Piling Works to Podium of Victoria Centre

The cumulative sound level should be lower as the slant distance increase.

APPENDIX E  
Power Mechanical Equipment  
for Construction Noise  
Assessment  
(Without Mitigation & Substantial Barrier)

**NSR - FEHD Winfield Depot (Pre-bored H-Pile)**

Area	Plant Item	Plant Code	Sound Level dB(A)	No. of Plant	Total Sound Level, dB(A)	Notional Distance, m	Correction, dB(A)			Corrected Sound Level For Each Equipment, dB(A)	Cumulative Sound Level For All Equipment, dB(A)
							Distance Attenuation, dB(A)	Façade Effect, dB(A)	Total Screened by Island Eastern Corridor, dB(A)		
B	Air Compressor	CNP 002	102	4	108.0	99	-48	3	63.0	71.3	
	Crawler Crane	CNP 048	112	1	112.0	99	-48	3	67.0		
	Backhoe	CNP 081	112	1	112.0	99	-48	3	67.0		
	Generator	CNP 102	100	1	100.0	99	-48	3	55.0		
	Piling Rig	CNP 166	100	2	103.0	99	-48	3	58.0		
	Welding Machines	CNP 168	100	2	103.0	99	-48	3	58.0		

**NSR - FEHD Winfield Depot (Bored Pile)**

B	Air Compressor	CNP 002	102	2	105.0	99	-48	3	60.0	72.8
	Crawler Crane	CNP 048	112	1	112.0	99	-48	3	67.0	
	Piling, Oscillator	CNP 165	115	1	115.0	99	-48	3	70.0	
	Piling, Reverse Circulation Drill	CNP 166	100	1	100.0	99	-48	3	55.0	
	Water Pump, Submersible (Electric)	CNP 283	85	1	85.0	99	-48	3	40.0	
	Concrete Lorry Mixer	CNP 044	109	1	109.0	99	-48	3	64.0	

Victoria Building is a 35 storey high building

Distance Attenuation = Slant Distance from Piling Works to the 25<sup>th</sup> Floor  
The cumulative sound level should be lower as the slant distance increase.