Appendix 4-4A

Calculation of Construction Noise Impact Assessment (Mitigated Scenario with QPMEs, Movable Noise Barriers and Fixed Temorary Noise Barriers))

Appendix 4-4A-1 Plant Inventory and Calculated SWLs for Northern Portion of Project Site (Mitigated with QPMEs, Movable Noise Barriers and Temp. Fixed Noise Barriers)

			PMEs Inventory - Mitigated (with QPMEs, Movable Noise Barriers and Fixed Noise Barriers)										
Construction Activity	**Sub. Work Group**		**Powered Mechanical Equipment**	**Reference**	**SWL per unit**	**Qty**	**Total, SWL**	**Total SWL, dB(A)**	**At-source Noise Mitigation Measure**	**Noise Barrier Effect ****	**Total SWL (Mitigated)**	**Total SWL, dB(A)**	**Highest SWL of Each Construction Activity, dB(A) @**
(A) Site Formation, Filling and Excavation	A1	Excavation and Filling	Air Compressor	CNP001	100	4	106	115	Movable noise barrier	-10	96	109	109
			Excavator, wheeled/tracked	KATO model HD820V (EPD-01233)	99	6	107		Movable noise barrier	-5	102		
			Generator, super silenced	CNP103	95	6	103		Movable noise barrier	-10	93		
			Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	6	113		Fixed Temp. Noise Barrier	-5	108		
	A2	Breaking excavated hard/ oversize materials	Breaker, mini-robot mounted	EPD *	115	2	118	118	Movable noise barrier and Installation of commercially made sound proof hammer bracket # & ##	-10	108	108	
			Excavator, wheeled/tracked	KATO model HD820V (EPD-01233)	99	1	99		Movable noise barrier	-5	94		
	A3	Ground Compression	Roller, vibratory	SAKAI model SW250-1 (EPD-00509)	95	8	104	112	Fixed Temp. Noise Barrier	-5	99	107	
			Bulldozer	Komatsu modelled D21A-8	102	8	111		Fixed Temp. Noise Barrier	-5	106		
(B) Construction of Underground Services and Utilities	B1	Earthwork	Breaker, mini-robot mounted	EPD *	115	1	115	116	Movable noise barrier and Installation of commercially made sound proof hammer bracket # & ##	-10	105	108	108
			Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	3	110		Fixed Temp. Noise Barrier	-5	105		
			Excavator, mini-robot mounted	EPD *	94	3	99		Movable noise barrier	-5	94		
	B2	Utilities laying	Air Compressor	CNP001	100	2	103	110	Movable noise barrier	-10	93	104	
			Generator, super silenced	CNP103	95	3	100		Movable noise barrier	-10	90		
			Lorry (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	2	108		Fixed Temp. Noise Barrier	-5	103		
			Water Pump, Submersible(electric)	CNP283	85	3	90		Movable noise barrier	-10	80		
	B3	Ground reinstatement	Concrete Lorry Mixer	CNP044	109	2	112	115	Movable noise barrier and fixed Temp. noise barrier	-10	102	105	
			Power rammer (petrol)	Dynapac model LT700 (EPD-00536)	107	2	110		Movable noise barrier	-10	100		
			Poker, vibratory, hand-held (electric)	EPD *	102	2	105		Movable noise barrier	-10	95		
			Roller, vibratory	SAKAI model SW250-1 (EPD-00509)	95	2	98		Fixed Temp. Noise Barrier	-5	93		
(C) Road Works	C1	Earthwork	Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	3	110	110	Fixed Temp. Noise Barrier	-5	105	106	107
			Excavator, wheeled/tracked	KATO model HD820V (EPD-01233)	99	2	102		Movable noise barrier	-5	97		
	C2	Concreting Works	Concrete Lorry Mixer	CNP044	109	2	112	113	Movable noise barrier and fixed Temp. noise barrier	-10	102	103	
			Generator, super silenced	CNP103	95	3	100		Movable noise barrier	-10	90		
			Poker, vibratory, hand-held (electric)	EPD *	102	2	105		Movable noise barrier	-10	95		
	C3	Road Finishing	Air Compressor	CNP001	100	2	103	114	Movable noise barrier	-10	93	107	
			Asphalt Paver	VOLVO model. No. ABG5770 (EPD-01226)	104	2	107		Fixed Temp. Noise Barrier	-5	102		
			Generator, super silenced	CNP103	95	3	100		Movable noise barrier	-10	90		
			Lorry (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	2	108		Fixed Temp. Noise Barrier	-5	103		
			Power rammer (petrol)	Dynapac model LT700 (EPD-00536)	107	2	110		Movable noise barrier	-10	100		
			Road roller	HITACHI model CP220-3 (EPD-01183)	97	2	100		Fixed Temp. Noise Barrier	-5	95		
(D) Foundation	D1	General foundation works	Air Compressor	CNP001	100	4	106	116	Movable noise barrier	-10	96	109	109
			Bar bender and cutter (electric)	CNP021	90	6	98		Movable noise barrier	-10	88		
			Generator, super silenced	CNP103	95	3	100		Movable noise barrier	-10	90		
			Drill/grinder, hand-held (electric)	CNP065	98	6	106		Movable noise barrier	-10	96		
			Saw, circular, wood	CNP201	108	3	113		Movable noise barrier	-10	103		
			Water pump, submersible (electric)	CNP283	85	6	93		Movable noise barrier	-10	83		
			Excavator, wheeled/tracked	KATO model HD820V (EPD-01233)	99	4	105		Movable noise barrier	-5	100		
			Lorry (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	3	110		Fixed Temp. Boundary Noise Barrier	-5	105		

			PMEs Inventory - Mitigated (with QPMEs, Movable Noise Barriers and Fixed Noise Barriers)										
Construction Activity	**Sub. Work Group**		**Powered Mechanical Equipment**	**Reference**	**SWL per unit**	**Qty**	**Total, SWL**	**Total SWL, dB(A)**	**At-source Noise Mitigation Measure**	**Noise Barrier Effect ****	**Total SWL (Mitigated)**	**Total SWL, dB(A)**	**Highest SWL of Each Construction Activity, dB(A) @**
			Mobile Crane	Hitachi Sumitomo SCX700, 132kW	101	2	104		Movable noise barrier and Fixed Temp. Boundary Noise Barrier	-10	94		
	D2	Piling works	Generator, super silenced	CNP103	95	3	100	119	Movable noise barrier	-10	90	109	
			Continuous Flight Auger (CFA) piles (piling, earth auger)	CNP167	114	3	119		Fixed Temp. Noise Barrier and provision of Acoustic Shielding material	-10	109		
	D3	Concreting Works	Concrete Lorry Mixer	CNP044	109	3	114	115	Movable noise barrier and fixed Temp. noise barrier	-10	104	105	
			Generator, super silenced	CNP103	95	3	100		Movable noise barrier	-10	90		
			Poker, vibratory, hand-held	EPD *	102	3	107		Movable noise barrier	-10	97		
(E) Superstructure	E1	General construction works	Air Compressor	CNP001	100	4	106	119	Movable noise barrier	-10	96	109	109
			Bar bender and cutter (electric)	CNP021	90	6	98		Movable noise barrier	-10	88		
			Mobile Crane	Hitachi Sumitomo SCX700, 132kW	101	2	104		Movable noise barrier and Fixed Temp. Boundary Noise Barrier	-10	94		
			Drill/grinder, hand-held (electric)	CNP065	98	6	106		Movable noise barrier	-10	96		
			Generator, super silenced	CNP103	95	4	101		Movable noise barrier	-10	91		
			Saw, circular, wood	CNP201	108	10	118		Movable noise barrier	-10	108		
	E2	Concreting works	Concrete Lorry Mixer	CNP044	109	4	115	117	Movable noise barrier and fixed Temp. noise barrier	-10	105	107	
			Concrete Pump	CNP047	109	2	112		Movable noise barrier	-10	102		
			Generator, super silenced	CNP103	95	4	101		Movable noise barrier	-10	91		
			Poker, vibratory, hand-held (electric)	EPD *	102	3	107		Movable noise barrier	-10	97		
(G) Dump Trucks Travelling on Haul Road During Site	G	Dump Trucks Travelling on Haul Road	Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	10	115	115	Fixed Temp. Noise Barrier	-5	110	110	110

Note:

Noise levels of the above construction plants are based on the "Technical Memorandum on Noise From Construction Work Other Than Percussive Piling" and EPD's QPMEs database (available at: http://www.epd.gov.hk/cgi-bin/npg/qpme/index.pl?lang=eng)

* EPD website: http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf

** According to EIAO Guidance Note No. 9/2010, with provision of noise barriers, a 5dB(A) noise reduction for movable plant, 10 dB(A) for stationary plant and 15 dB(A) for enclosed ones can be assumed.

According to "A Practical Guide for the Reduction of Noise from Construction Works" (page 11), published by HKSAR Gov. Environmental Protection Department, July 1989, excavated-mounted breaker with sound proof hammer bracket installed could achieve a noise reduction up to 10dB(A).

According to the "Best Practice Guide for Environmental Protection on Construction Sites", page 6-9, published by Hong Kong Construction Association, January 2009, excavator-mounted breaker with sound proof hammer bracket can achieve a noise reduction of up to 10dB(A). (Doc. Available at: http://www.hkca.com.hk/front/20090306bpg.pdf)

@ The highest SWL calculated for each Construction Activity for construction noise impact assessment. Each Construction Activity has been divided into several sub. work groups based on the sequence of construction works. The respective sub-work groups of each Construction Activity will not overlap with one another.

Appendix 4-4A-2 Plant Inventory and Calculated SWLs for Southern Portion of Project Site (Mitigated with QPMEs, Movable Noise Barriers and Temp. Fixed Noise Barrier)

			PMEs Inventory - Mitigated (with QPMEs, Movable Barriers and Fixed Noise Barriers)										
Construction Activity	**Sub. Work Group**		**Powered Mechanical Equipment**	**Reference**	**SWL per unit**	**Qty**	**Total, SWL**	**Total SWL, dB(A)**	**At-source Noise Mitigation Measure**	**Noise Barrier Effect ****	**Total SWL (Mitigated)**	**Total SWL, dB(A)**	**Highest SWL of Each Construction Activity, dB(A) @**
(A) Site Formation, Filling and Excavation	A1	Excavation and Filling	Air Compressor	CNP001	100	3	105	113	Movable noise barrier	-10	95	107	107
			Excavator, wheeled/tracked	KATO model HD820V (EPD-01233)	99	4	105		Movable noise barrier	-5	100		
			Generator, super silenced	CNP103	95	3	100		Movable noise barrier	-10	90		
			Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	4	111		Fixed Temp. Boundary Noise Barrier	-5	106		
	A2	Breaking excavated hard/ oversize materials	Breaker, mini-robot mounted	EPD *	115	1	115	115	Movable noise barrier and Installation of commercially made sound proof hammer bracket # & ##	-10	105	105	
			Excavator, wheeled/tracked	KATO model HD820V (EPD-01233)	99	1	99		Movable noise barrier	-5	94		
	A3	Ground Compression	Roller, vibratory	SAKAI model SW250-1 (EPD-00509)	95	4	101	109	Fixed Temp. Boundary Noise Barrier	-5	96	104	
			Bulldozer	Komatsu modelled D21A-8	102	4	108		Fixed Temp. Boundary Noise Barrier	-5	103		
(B) Construction of Underground Services and Utilities	B1	Earthwork	Breaker, mini-robot mounted	EPD *	115	1	115	116	Movable noise barrier and Installation of commercially made sound proof hammer bracket # & ##	-10	105	107	107
			Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	2	108		Fixed Temp. Boundary Noise Barrier	-5	103		
			Excavator, mini-robot mounted	EPD *	94	2	97		Movable noise barrier	-5	92		
	B2	Utilities laying	Air Compressor	CNP001	100	3	105	110	Movable noise barrier	-10	95	104	
			Generator, super silenced	CNP103	95	4	101		Movable noise barrier	-10	91		
			Lorry (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	2	108		Fixed Temp. Boundary Noise Barrier	-5	103		
			Water Pump, Submersible(electric)	CNP283	85	2	88		Movable noise barrier	-10	78		
	B3	Ground reinstatement	Concrete Lorry Mixer	CNP044	109	2	112	115	Movable noise barrier and fixed Temp. noise barrier	-10	102	105	
			Power rammer (petrol)	Dynapac model LT700 (EPD-00536)	107	2	110		Movable noise barrier	-10	100		
			Poker, vibratory, hand-held (electric)	EPD *	102	2	105		Movable noise barrier	-10	95		
			Roller, vibratory	SW250-1 (EPD-00509)	95	2	98		Fixed Temp. Boundary Noise Barrier	-5	93		
(C) Road Works	C1	Earthwork	Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	4	111	112	Fixed Temp. Boundary Noise Barrier	-5	106	107	108
			Excavator, wheeled/tracked	KATO model HD820V (EPD-01233)	99	3	104		Movable noise barrier	-5	99		
	C2	Concreting Works	Concrete Lorry Mixer	CNP044	109	3	114	115	Movable noise barrier and fixed Temp. noise barrier	-10	104	105	
			Generator, super silenced	CNP103	95	4	101		Movable noise barrier	-10	91		
			Poker, vibratory, hand-held (electric)	EPD *	102	2	105		Movable noise barrier	-10	95		
	C3	Road Finishing	Air Compressor	CNP001	100	3	105	115	Movable noise barrier	-10	95	108	
			Asphalt Paver	VOLVO model. No. ABG5770 (EPD-01226)	104	3	109		Fixed Temp. Boundary Noise Barrier	-5	104		
			Generator, super silenced	CNP103	95	3	100		Movable noise barrier	-10	90		
			Lorry (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	2	108		Fixed Temp. Boundary Noise Barrier	-5	103		
			Power rammer (petrol)	Dynapac model LT700 (EPD-00536)	107	2	110		Movable noise barrier	-10	100		
			Road roller	HITACHI model CP220-3 (EPD-01183)	97	2	100		Fixed Temp. Boundary Noise Barrier	-5	95		
(D) Foundation	D1	General foundation works	Air Compressor	CNP001	100	6	108	118	Movable noise barrier	-10	98	109	
			Bar bender and cutter (electric)	CNP021	90	6	98		Movable noise barrier	-10	88		
			Generator, super silenced	CNP103	95	4	101		Movable noise barrier	-10	91		
			Drill/grinder, hand-held (electric)	CNP065	98	6	106		Movable noise barrier	-10	96		
			Saw, circular, wood	CNP201	108	5	115		Movable noise barrier	-10	105		
			Water pump, submersible (electric)	CNP283	85	6	93		Movable noise barrier	-10	83		

			PMEs Inventory - Mitigated (with QPMEs, Movable Barriers and Fixed Noise Barriers)										
Construction Activity	**Sub. Work Group**		**Powered Mechanical Equipment**	**Reference**	**SWL per unit**	**Qty**	**Total, SWL**	**Total SWL, dB(A)**	**At-source Noise Mitigation Measure**	**Noise Barrier Effect ****	**Total SWL (Mitigated)**	**Total SWL, dB(A)**	**Highest SWL of Each Construction Activity, dB(A) @**
			Excavator, wheeled/tracked	KATO model HD820V (EPD-01233)	99	3	104		Movable noise barrier	-5	99		109
			Lorry (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	3	110		Fixed Temp. Boundary Noise Barrier	-5	105		
			Mobile Crane	Hitachi Sumitomo SCX700, 132kW	101	3	106		Movable noise barrier and Fixed Temp. Boundary Noise Barrier	-10	96		
	D2	Piling works	Generator, super silenced	CNP103	95	4	101	119	Movable noise barrier	-10	91	109	
			Continuous Flight Auger (CFA) piles (piling, earth auger)	CNP167	114	3	119		Fixed Temp. Noise Barrier and provision of Acoustic Shielding material	-10	109		
	D3	Concreting Works	Concrete Lorry Mixer	CNP044	109	4	115	116	Movable noise barrier and fixed Temp. noise barrier	-10	105	106	
			Generator, super silenced	CNP103	95	4	101		Movable noise barrier	-10	91		
			Poker, vibratory, hand-held (electric)	EPD *	102	4	108		Movable noise barrier	-10	98		
(E) Superstructure	E1	General construction works	Air Compressor	CNP001	100	7	108	120	Movable noise barrier	-10	98	109	109
			Bar bender and cutter (electric)	CNP021	90	11	100		Movable noise barrier	-10	90		
			Mobile Crane	Hitachi Sumitomo SCX700, 132kW	101	5	108		Movable noise barrier and Fixed Temp. Boundary Noise Barrier	-10	98		
			Drill/grinder, hand-held (electric)	CNP065	98	11	108		Movable noise barrier	-10	98		
			Generator, super silenced	CNP103	95	7	103		Movable noise barrier	-10	93		
			Saw, circular, wood	CNP201	108	11	118		Movable noise barrier	-10	108		
	E2	Concreting works	Concrete Lorry Mixer	CNP044	109	4	115	117	Movable noise barrier and fixed Temp. noise barrier	-10	105	107	
			Concrete Pump	CNP047	109	2	112		Movable noise barrier	-10	102		
			Generator, super silenced	CNP103	95	6	103		Movable noise barrier	-10	93		
			Poker, vibratory, hand-held (electric)	EPD *	102	3	107		Movable noise barrier	-10	97		
(F) Sub-structure (Pile Cap)	F1	General pile cap construction	Bar bender and cutter (electric)	CNP021	90	10	100	109	Movable noise barrier	-10	90	104	107
			Generator, super silenced	CNP103	95	5	102		Movable noise barrier	-10	92		
			Lorry (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	2	108		Fixed Temp. Boundary Noise Barrier	-5	103		
	F2	Concreting works	Concrete Lorry Mixer	CNP044	109	4	115	117	Movable noise barrier and fixed Temp. noise barrier	-10	105	107	
			Concrete Pump	CNP047	109	2	112		Movable noise barrier	-10	102		
			Generator, super silenced	CNP103	95	6	103		Movable noise barrier	-10	93		
			Poker, vibratory, hand-held (electric)	EPD *	102	3	107		Movable noise barrier	-10	97		
	F3	Backfill and reinstate	Excavator, wheeled/tracked	KATO model HD820V (EPD-01233)	99	2	102	103	Movable noise barrier	-5	97	98	
			Roller, vibratory	SAKAI model SW250-1 (EPD-00509)	95	1	95		Fixed Temp. Boundary Noise Barrier	-5	90		
(G) Dump Trucks Travelling on Haul Road During Site	G	Dump Trucks Travelling on Haul Road	Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne)	EPD *	105	10	115	115	Fixed Temp. Boundary Noise Barrier	-5	110	110	110

Note:

Noise levels of the above construction plants are based on the "Technical Memorandum on Noise From Construction Work Other Than Percussive Piling" and EPD's QPMEs database (available at: http://www.epd.gov.hk/cgi-bin/npg/qpme/index.pl?lang=eng)

* EPD website: http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf

** According to EIAO Guidance Note No. 9/2010, with provision of noise barriers, a 5dB(A) noise reduction for movable plant, 10 dB(A) for stationary plant and 15 dB(A) for enclosed ones can be assumed.

\# According to "A Practical Guide for the Reduction of Noise from Construction Works" (page 11), published by HKSAR Gov. Environmental Protection Department, July 1989, excavated-mounted breaker with sound proof hammer bracket installed could achieve a noise reduction up to 10dB(A).

\## According to the "Best Practice Guide for Environmental Protection on Construction Sites", page 6-9, published by Hong Kong Construction Association, January 2009, excavator-mounted breaker with sound proof hammer bracket can achieve a noise reduction of up to 10dB(A). (Doc. Available at: http://www.hkca.com.hk/front/20090306bpg.pdf)

@ The highest SWL calculated for each Construction Activity for construction noise impact assessment. Each Construction Activity has been divided into several sub. work groups based on the sequence of construction works. Construction activities of respective sub-work groups under each Construction Activity will not overlap with one another.

Appendix 4-4A-3 Calculation of Construction Noise Level (Northern Portion) (Mitigated Scenario with QPMEs, Movable Noise Barriers, and Fixed Temp. Noise Barriers)

NSR		Construction Activity	Total SWL, dB(A)	Dist. (NSR to Site Boundary) (A), m **	Dist. (Site Boundary to Notional Source) (B), m ** & #	Horz. Distance (= A+B), m **	Dist. Corr., dB(A)	Façade Corr., dB(A)	CNL, dB(A)
N3	A	Site Formation, Filling and Excavation	109	164	50	214	-54.6	3.0	57
	B	Construction of Underground Services and Utilities	108	164	50	214	-54.6	3.0	56
	C	Road works	107	164	50	214	-54.6	3.0	55
	D	Foundation	109	164	50	214	-54.6	3.0	57
	E	Superstructure	109	164	50	214	-54.6	3.0	57
N10	A	Site Formation, Filling and Excavation	109	205	50	255	-56.1	3.0	56
	B	Construction of Underground Services and Utilities	108	205	50	255	-56.1	3.0	55
	C	Road works	107	205	50	255	-56.1	3.0	54
	D	Foundation	109	205	50	255	-56.1	3.0	56
	E	Superstructure	109	205	50	255	-56.1	3.0	56

Remark: ** Distance is based on shortest horizontal distance.

The notional noise source location is assumed based on the methodology listed in the statutory Technical Memorandum on Noise from Construction work other than Percussive Piling and that used in the approved EIA report for Wo Shan Wai. It has been assumed that all PME items are operating and gathered within a worksite for a conservative assessment.

Calculation of Noise Level Due to Travelling of Dump Truck within the Project Construction Area During Site Formation, Filling and Excavation Stage

NSR		Construction Activity	No. of Trucks/ hr.	SWL per Unit, dB(A)	Horz. Distance From NSR, m	Average Speed, km/hr	Calculated LAeq Due to Travelling of Dump Truck, dB(A) @
N3	G	Dump Trucks Travelling on Haul Road	10	110	214	10	54
N10	G	Dump Trucks Travelling on Haul Road	10	110	255	10	53

Remark: * According to information available at EPD website: http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf

@ Based on equation in the British Standard "Noise Control on Construction and Open Sites, BS 5228: Part 1: 2009": LAeq = SWL – 33 + 10log10 Q – 10 Log10 V – 10log10d

Where,

SWL = Sound Power Level of the dump truck

Q is the number of vehicles per hour

V is the average speed (10 km/hr)

D is the distance of receiver position from the haul road (m) (the horizontal distance between the receiver position and the construction notional noise source is taken in this noise assessment)

Appendix 4-4A-4 Calculation of Construction Noise Level (Southern Portion) (Mitigated Scenario with QPMEs, Movable Noise Barriers and Fixed Temp. Noise Barriers)

NSR		Construction Activity	Total SWL, dB(A)	Dist. (NSR to Site Boundary) (A), m **	Dist. (Site Boundary to Notional Source) (B), m **& #	Horz. Distance (= A+B), m **	Dist. Corr., dB(A)	Façade Corr., dB(A)	CNL, dB(A)
N3	A	Site Formation, Filling and Excavation	107	17	50	67	-44.5	3.0	66
	B	Construction of Underground Services and Utilities	107	17	50	67	-44.5	3.0	66
	C	Road works	108	17	50	67	-44.5	3.0	67
	D	Foundation	109	17	50	67	-44.5	3.0	68
	E	Superstructure	109	17	50	67	-44.5	3.0	68
	F	Sub-structure (pile cap)	107	17	50	67	-44.5	3.0	66
N4	A	Site Formation, Filling and Excavation	107	11	50	61	-43.7	3.0	66
	B	Construction of Underground Services and Utilities	107	11	50	61	-43.7	3.0	66
	C	Road works	108	11	50	61	-43.7	3.0	67
	D	Foundation	109	11	50	61	-43.7	3.0	68
	E	Superstructure	109	11	50	61	-43.7	3.0	68
	F	Sub-structure (pile cap)	107	11	50	61	-43.7	3.0	66
N10	A	Site Formation, Filling and Excavation	107	15	50	65	-44.2	3.0	66
	B	Construction of Underground Services and Utilities	107	15	50	65	-44.2	3.0	66
	C	Road works	108	15	50	65	-44.2	3.0	67
	D	Foundation	109	15	50	65	-44.2	3.0	68
	E	Superstructure	109	15	50	65	-44.2	3.0	68
	F	Sub-structure (pile cap)	107	15	50	65	-44.2	3.0	66

Remark: ** Distance is based on shortest horizontal distance.

The notional noise source location is assumed based on the methodology listed in the statutory Technical Memorandum on Noise from Construction work other than Percussive Piling and that used in the approved EIA report for Wo Shan Wai. It has been assumed that all PME items are operating and gathered within a worksite for a conservative assessment.

Calculation of Noise Level Due to Travelling of Dump Truck within the Project Construction Area During Site Formation, Filling and Excavation Stage

NSR		Construction Activity	No. of Trucks/ hr.	SWL per Unit, dB(A)	Horz. Distance From NSR, m	Average Speed, km/hr	Calculated LAeq Due to Travelling of Dump Truck, dB(A) @
N3	G	Dump Trucks Travelling on Haul Road	10	110	67	10	59
N4	G	Dump Trucks Travelling on Haul Road	10	110	61	10	59
N10	G	Dump Trucks Travelling on Haul Road	10	110	65	10	59

Remark: * According to information available at EPD website: http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf

@ Based on equation in the British Standard "Noise Control on Construction and Open Sites, BS 5228: Part 1: 2009": LAeq = SWL – 33 + 10log10 Q – 10 Log10 V – 10log10d
Where,
SWL = Sound Power Level of the dump truck
Q is the number of vehicles per hour
V is the average speed (10 km/hr)
D is the distance of receiver position from the haul road (m) (the horizontal distance between the receiver position and the construction notional noise source is taken in this noise assessment)