Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

HH9 - Harbourfront Horizon

Unmitigated

Package	Construction Activity	Work [1] Site No.	SWL	Dist [2] (m)	SPL [3]	Building Screening
15 HUH SAT	**Demolition of Freight Buidling**					
	Demolition of Freight Buidling	803	121	248	68	0
12 HUH Landfall	**HUH Landfall**					
	Existing Fender Piles Removal, Cofferdam Wall Construction and Shear Pining	80102	118	253	64	0
	Soft Ground Excavation	80102	115	253	62	0
	Excavation Work	80102	127	253	74	0
	Tunnel Box Construction	80102	115	253	62	0
	E&M Installation	80102	114	253	61	0
	Cofferdam Wall Removal and Fender Piles Reinstatement	80102	115	253	62	0
	Backfilling and Reinstatement	80101	116	267	63	0
	HUH Freight Pier					
	Operation of Barging Point [4]	-	-	-	-	-
	Demolition of Existing Freight Pier	804	116	243	64	0
	Piling Construction	804	123	243	70	0
	Concrete Deck Construction and Marine Furniture	804	115	243	62	0
13 NOV	**NOV Construction**					
	Site Clearance, Fencing & Hoarding	802	118	258	65	0
	Excavate Soft Material (+4.0mPD to -17.5mPD)	802	120	258	67	0
	Construct NOV	802	114	258	61	0

2013

Package	Construction Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		1	2	3	4	5	6	7	8	9	10	11	12
15 HUH SAT	Demolition of Freight Buidling												
	Demolition of Freight Buidling												
12 HUH Landfall	HUH Landfall												
	Existing Fender Piles Removal, Cofferdam Wall Construction and Shear Pining												
	Soft Ground Excavation												
	Excavation Work												
	Tunnel Box Construction												
	E&M Installation												
	Cofferdam Wall Removal and Fender Piles Reinstatement												
	Backfilling and Reinstatement												
	HUH Freight Pier												
	Operation of Barging Point [4]												
	Demolition of Existing Freight Pier												
	Piling Construction												
	Concrete Deck Construction and Marine Furniture												
13 NOV	NOV Construction												
	Site Clearance, Fencing & Hoarding												
	Excavate Soft Material (+4.0mPD to -17.5mPD)												
	Construct NOV												
	Overall Noise Level (SCL(HUH-ADM)), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-

2014

Package	Construction Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		13	14	15	16	17	18	19	20	21	22	23	24
15 HUH SAT	Demolition of Freight Buidling												
	Demolition of Freight Buidling											68	68
12 HUH Landfall	HUH Landfall												
	Existing Fender Piles Removal, Cofferdam Wall Construction and Shear Pining												
	Soft Ground Excavation												
	Excavation Work												
	Tunnel Box Construction												
	E&M Installation												
	Cofferdam Wall Removal and Fender Piles Reinstatement												
	Backfilling and Reinstatement												
	HUH Freight Pier												
	Operation of Barging Point [4]												
	Demolition of Existing Freight Pier									64	64	64	64
	Piling Construction												
	Concrete Deck Construction and Marine Furniture												
13 NOV	NOV Construction												
	Site Clearance, Fencing & Hoarding												
	Excavate Soft Material (+4.0mPD to -17.5mPD)												
	Construct NOV												
	Overall Noise Level (SCL(HUH-ADM)), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	64	64	69	69

2015

Package	Construction Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		25	26	27	28	29	30	31	32	33	34	35	36
15 HUH SAT	Demolition of Freight Buidling												
	Demolition of Freight Buidling	68											
12 HUH Landfall	HUH Landfall												
	Existing Fender Piles Removal, Cofferdam Wall Construction and Shear Pining	64	64	64	64	64	64	64	64	64			
	Soft Ground Excavation										62	62	62
	Excavation Work											74	74
	Tunnel Box Construction												
	E&M Installation												
	Cofferdam Wall Removal and Fender Piles Reinstatement												
	Backfilling and Reinstatement												
	HUH Freight Pier												
	Operation of Barging Point [4]												
	Demolition of Existing Freight Pier	64	64										
	Piling Construction												
	Concrete Deck Construction and Marine Furniture												
13 NOV	NOV Construction												
	Site Clearance, Fencing & Hoarding												65
	Excavate Soft Material (+4.0mPD to -17.5mPD)												
	Construct NOV												
	Overall Noise Level (SCL(HUH-ADM)), Leq (30min), dB(A)	71	67	64	64	64	64	64	64	64	62	74	75

2016

Package	Construction Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		37	38	39	40	41	42	43	44	45	46	47	48
15 HUH SAT	Demolition of Freight Buidling												
	Demolition of Freight Buidling												
12 HUH Landfall	HUH Landfall												
	Existing Fender Piles Removal, Cofferdam Wall Construction and Shear Pining												
	Soft Ground Excavation												
	Excavation Work	74	74	74	74								
	Tunnel Box Construction			62	62	62							
	E&M Installation						61						
	Cofferdam Wall Removal and Fender Piles Reinstatement						62						
	Backfilling and Reinstatement							63	63	63	63	63	
	HUH Freight Pier												
	Operation of Barging Point [4]												
	Demolition of Existing Freight Pier												
	Piling Construction												
	Concrete Deck Construction and Marine Furniture												
13 NOV	NOV Construction												
	Site Clearance, Fencing & Hoarding												
	Excavate Soft Material (+4.0mPD to -17.5mPD)	67	67										
	Construct NOV		61	61	61	61							
	Overall Noise Level (SCL(HUH-ADM)), Leq (30min), dB(A)	75	75	74	74	65	65	63	63	63	63	63	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[4] Barging point and rock crushing plant will be used by SCL(MKK-HUH) and SCL(TAW-HUH) during the same period. Operation of barging point and rock-crushing plant has been assessed in SCL(MKK-HUH) EIA Report and will not be assessed in this assessment.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

HH9 - Harbourfront Horizon

Unmitigated

Package	Construction Activity	Work [1] Site No.	SWL	Dist [2] (m)	SPL [3]	Building Screening	2017												2018												2019											
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
15 HUH SAT	**Demolition of Freight Buidling**																																									
	Demolition of Freight Buidling	803	121	248	68	0																																				
12 HUH Landfall	**HUH Landfall**																																									
	Existing Fender Piles Removal, Cofferdam Wall Construction and Shear Pining	80102	118	253	64	0																																				
	Soft Ground Excavation	80102	115	253	62	0																																				
	Excavation Work	80102	127	253	74	0																																				
	Tunnel Box Construction	80102	115	253	62	0																																				
	E&M Installation	80102	114	253	61	0																																				
	Cofferdam Wall Removal and Fender Piles Reinstatement	80102	115	253	62	0																																				
	Backfilling and Reinstatement	80101	116	267	63	0																																				
	HUH Freight Pier																																									
	Operation of Barging Point [4]	-	-	-	-	-																																				
	Demolition of Existing Freight Pier	804	116	243	64	0																																				
	Piling Construction	804	123	243	70	0													70	70	70																					
	Concrete Deck Construction and Marine Furniture	804	115	243	62	0																62	62	62	62	62	62															
13 NOV	**NOV Construction**																																									
	Site Clearance, Fencing & Hoarding	802	118	258	65	0																																				
	Excavate Soft Material (+4.0mPD to -17.5mPD)	802	120	258	67	0																																				
	Construct NOV	802	114	258	61	0																																				
	Overall Noise Level (SCL(HUH-ADM)), Leq (30min), dB(A)						-	-	-	-	-	-	-	-	-	-	-	-	70	70	70	62	62	62	62	62	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[4] Barging point and rock crushing plant will be used by SCL(MKK-HUH) and SCL(TAW-HUH) during the same period. Operation of barging point and rock-crushing plant has been assessed in SCL(MKK-HUH) EIA Report and will not be assessed in this assessment.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

CH1 - Hoi Deen Court

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening
	Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)					
10 IMT to SOV POC	Dredging	50103	121	270	67	0
	Rockfill to temporary seawall	50103	121	270	67	0
	Temporary Seawall Construction	50103	121	270	67	0
	Filling behind temporary seawall	50103	121	270	67	0
	Diaphragm Wall Construction	50103	117	270	63	0
	Soil Excavation	50103	116	270	62	0
	Tunnel Box Construction	50103	115	270	62	0
	Backfilling	50103	116	270	63	0
	Diaphragm Wall Removal	50103	116	270	62	0
09 SOV POC	**SOV Construction**					
	Installing Hoarding	401	108	108	63	0
	Demolition of existing POC building	401	126	108	80	0
	Diaphragm Wall Construction	401	123	108	77	0
	Excavation work at SOV	401	127	108	81	0
	Construction of TBM launching shaft / SOV	401	126	108	81	0
	SOV Construction	401	115	108	69	0
	Construction of cut and cover tunnel section (SCL 1.4)					
	Diaphragm Wall Construction	50105	117	101	72	0
	Excavation Works	50105	127	101	81	0
	Tunnel Box Construction	50105	115	101	70	0
	Backfilling	50105	116	101	71	0
	Diaphragm Wall Removal	50105	116	101	71	0
	New POC Construction					
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)	401	113	108	67	0
	Construction of new POC building	401	115	108	69	0
	E&M Installation	401	110	108	64	0
	Dismantle Hoarding	401	113	108	67	0
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**					
	Site clearance and hoarding and utility diversion	302	114	173	64	0
	Construction of temporary footbridge	301	104	209	52	0
	Demolish of portion of existing footbridge	302	121	173	71	0
	Removal of clased and potential clased piles	302	116	173	66	0
	Reconstruction of permanent footbridge	302	110	173	60	0
	Temporary bridge removal and reinstate landscaping	301	117	209	66	0
	Underpinning of Canal Road Flyover					
	Site clearance and hoarding and utility diversion	303	114	353	58	0
	Excavation and construction of pre-bored H-piles	303	120	353	64	0
	Construct new pile cap and ground beams	303	114	353	58	0
	Backfill and reinstatement	303	108	353	52	0
	Diversion of Canal Road Culvert & Removal of Piles					
	Site clearance and hoarding and utility diversion	310	112	320	57	0
	Culvert diversion	310	112	320	57	0
	Remove of piles	310	115	320	60	0
	Pile Removal at Wan Shing Street Footbridge					
	Site clearance and hoarding and utility diversion	305	114	398	57	0
	Construction of new footbridge					
	SubArea 1 (Work Site 30401)	30401	117	391	60	0
	SubArea 2 (Work Site 30402)	30402	117	438	59	0
	Demolition of existing footbridge	305	121	398	64	0
	Removal of piles for existing footbridge & abandoned box culvert	305	121	398	64	0
	Reinstatement	305	111	398	54	0
	Underpinning of Pier of Causeway Flyover					
	Site clearance and hoarding and utility diversion	306	114	186	64	0
	Excavation and construction of new piles	306	119	186	69	0
	Construct pile cap	306	114	186	63	0
	Remove piles	306	115	186	65	0
	Backfill and reinstatement	306	103	186	53	0
	Underpinning of Abutment of Causeway Flyover					
	Site clearance and hoarding and utility diversion	307	114	138	66	0
	Excavation and construction of new piles	307	119	138	71	0
	Construct pile cap	307	114	138	66	0
	Remove piles	307	115	138	68	0
	Backfill and reinstatement	307	103	138	55	0
	Grouting Work for DSD 1.8m Truck Sewers					
	Site clearance and hoarding and utility diversion	308	116	442	58	0
	Temp Access Shaft - Diaphragm wall	308	115	442	57	0
	Temp Access Shaft - Excavation	308	112	442	54	0
	Grouting from within the shaft	308	102	442	44	0
	Backfilling and Reinstatement	308	114	442	56	0
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge					
	Site clearance and hoarding and utility diversion	309	112	142	64	0
	Construction of temporary footbridge	309	104	142	56	0
	Demolish of existing footbridge	309	121	142	73	0
	TBM Assemble, First and Second Drive and Retrieval					
	TBM Assembly	401	117	108	71	0
	1st Retrieval and reasseambly TBM	401	118	108	73	0
	2nd Retrieval of TBM	401	118	108	73	0

Package	Construction Activity	2013 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		1	2	3	4	5	6	7	8	9	10	11	12
10 IMT to SOV POC	Dredging												
	Rockfill to temporary seawall												
	Temporary Seawall Construction												
	Filling behind temporary seawall												
	Diaphragm Wall Construction												
	Soil Excavation												
	Tunnel Box Construction												
	Backfilling												
	Diaphragm Wall Removal												
09 SOV POC	**SOV Construction**												
	Installing Hoarding												
	Demolition of existing POC building												
	Diaphragm Wall Construction												
	Excavation work at SOV												
	Construction of TBM launching shaft / SOV												
	SOV Construction												
	Construction of cut and cover tunnel section (SCL 1.4)												
	Diaphragm Wall Construction												
	Excavation Works												
	Tunnel Box Construction												
	Backfilling												
	Diaphragm Wall Removal												
	New POC Construction												
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
	Construction of new POC building												
	E&M Installation												
	Dismantle Hoarding												
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**												
	Site clearance and hoarding and utility diversion												
	Construction of temporary footbridge												
	Demolish of portion of existing footbridge												
	Removal of clased and potential clased piles												
	Reconstruction of permanent footbridge												
	Temporary bridge removal and reinstate landscaping												
	Underpinning of Canal Road Flyover												
	Site clearance and hoarding and utility diversion												
	Excavation and construction of pre-bored H-piles												
	Construct new pile cap and ground beams												
	Backfill and reinstatement												
	Diversion of Canal Road Culvert & Removal of Piles												
	Site clearance and hoarding and utility diversion												
	Culvert diversion												
	Remove of piles												
	Pile Removal at Wan Shing Street Footbridge												
	Site clearance and hoarding and utility diversion												
	Construction of new footbridge												
	SubArea 1 (Work Site 30401)												
	SubArea 2 (Work Site 30402)												
	Demolition of existing footbridge												
	Removal of piles for existing footbridge & abandoned box culvert												
	Reinstatement												
	Underpinning of Pier of Causeway Flyover												
	Site clearance and hoarding and utility diversion												
	Excavation and construction of new piles												
	Construct pile cap												
	Remove piles												
	Backfill and reinstatement												
	Underpinning of Abutment of Causeway Flyover												
	Site clearance and hoarding and utility diversion												
	Excavation and construction of new piles												
	Construct pile cap												
	Remove piles												
	Backfill and reinstatement												
	Grouting Work for DSD 1.8m Truck Sewers												
	Site clearance and hoarding and utility diversion												
	Temp Access Shaft - Diaphragm wall												
	Temp Access Shaft - Excavation												
	Grouting from within the shaft												
	Backfilling and Reinstatement												
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
	Site clearance and hoarding and utility diversion												
	Construction of temporary footbridge												
	Demolish of existing footbridge												
	TBM Assemble, First and Second Drive and Retrieval												
	TBM Assembly												
	1st Retrieval and reasseambly TBM												
	2nd Retrieval of TBM												
	Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-

Package	Construction Activity	2014 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		13	14	15	16	17	18	19	20	21	22	23	24
10 IMT to SOV POC	Dredging												
	Rockfill to temporary seawall												
	Temporary Seawall Construction												
	Filling behind temporary seawall												
	Diaphragm Wall Construction												
	Soil Excavation												
	Tunnel Box Construction												
	Backfilling												
	Diaphragm Wall Removal												
09 SOV POC	**SOV Construction**												
	Installing Hoarding										63	63	63
	Demolition of existing POC building										80	80	80
	Diaphragm Wall Construction												
	Excavation work at SOV												
	Construction of TBM launching shaft / SOV												
	SOV Construction												
	Construction of cut and cover tunnel section (SCL 1.4)												
	Diaphragm Wall Construction												
	Excavation Works												
	Tunnel Box Construction												
	Backfilling												
	Diaphragm Wall Removal												
	New POC Construction												
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
	Construction of new POC building												
	E&M Installation												
	Dismantle Hoarding												
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**												
	Site clearance and hoarding and utility diversion												
	Construction of temporary footbridge			52									
	Demolish of portion of existing footbridge				71	71	71	71					
	Removal of clased and potential clased piles								66	66			
	Reconstruction of permanent footbridge										60	60	60
	Temporary bridge removal and reinstate landscaping												
	Underpinning of Canal Road Flyover												
	Site clearance and hoarding and utility diversion												
	Excavation and construction of pre-bored H-piles												
	Construct new pile cap and ground beams												
	Backfill and reinstatement												
	Diversion of Canal Road Culvert & Removal of Piles												
	Site clearance and hoarding and utility diversion		-	-									
	Culvert diversion												
	Remove of piles												
	Pile Removal at Wan Shing Street Footbridge												
	Site clearance and hoarding and utility diversion		-	-									
	Construction of new footbridge												
	SubArea 1 (Work Site 30401)												
	SubArea 2 (Work Site 30402)												
	Demolition of existing footbridge												
	Removal of piles for existing footbridge & abandoned box culvert												
	Reinstatement												
	Underpinning of Pier of Causeway Flyover												
	Site clearance and hoarding and utility diversion												
	Excavation and construction of new piles												
	Construct pile cap												
	Remove piles												
	Backfill and reinstatement												
	Underpinning of Abutment of Causeway Flyover												
	Site clearance and hoarding and utility diversion												
	Excavation and construction of new piles												
	Construct pile cap												
	Remove piles												
	Backfill and reinstatement												
	Grouting Work for DSD 1.8m Truck Sewers												
	Site clearance and hoarding and utility diversion												
	Temp Access Shaft - Diaphragm wall												
	Temp Access Shaft - Excavation												
	Grouting from within the shaft												
	Backfilling and Reinstatement												
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
	Site clearance and hoarding and utility diversion										64	64	64
	Construction of temporary footbridge												
	Demolish of existing footbridge												
	TBM Assemble, First and Second Drive and Retrieval												
	TBM Assembly												
	1st Retrieval and reasseambly TBM												
	2nd Retrieval of TBM												
	Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	52	71	71	71	71	66	66	80	80	80

Package	Construction Activity	2015 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		25	26	27	28	29	30	31	32	33	34	35	36
10 IMT to SOV POC	Dredging												
	Rockfill to temporary seawall												
	Temporary Seawall Construction												
	Filling behind temporary seawall												
	Diaphragm Wall Construction												
	Soil Excavation												
	Tunnel Box Construction												
	Backfilling												
	Diaphragm Wall Removal												
09 SOV POC	**SOV Construction**												
	Installing Hoarding												
	Demolition of existing POC building												
	Diaphragm Wall Construction	77	77	77	77								
	Excavation work at SOV					81	81	81	81	81			
	Construction of TBM launching shaft / SOV										81	81	81
	SOV Construction												
	Construction of cut and cover tunnel section (SCL 1.4)												
	Diaphragm Wall Construction			72	72	72							
	Excavation Works						81	81	81	81			
	Tunnel Box Construction										70	70	70
	Backfilling												
	Diaphragm Wall Removal												
	New POC Construction												
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
	Construction of new POC building												
	E&M Installation												
	Dismantle Hoarding												
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**												
	Site clearance and hoarding and utility diversion												
	Construction of temporary footbridge												
	Demolish of portion of existing footbridge												
	Removal of clased and potential clased piles												
	Reconstruction of permanent footbridge	60	60	60									
	Temporary bridge removal and reinstate landscaping				66	66	66	66	66	66			
	Underpinning of Canal Road Flyover												
	Site clearance and hoarding and utility diversion												
	Excavation and construction of pre-bored H-piles												
	Construct new pile cap and ground beams												
	Backfill and reinstatement												
	Diversion of Canal Road Culvert & Removal of Piles												
	Site clearance and hoarding and utility diversion												
	Culvert diversion												
	Remove of piles												
	Pile Removal at Wan Shing Street Footbridge												
	Site clearance and hoarding and utility diversion												
	Construction of new footbridge												
	SubArea 1 (Work Site 30401)												
	SubArea 2 (Work Site 30402)												
	Demolition of existing footbridge												
	Removal of piles for existing footbridge & abandoned box culvert												
	Reinstatement												
	Underpinning of Pier of Causeway Flyover												
	Site clearance and hoarding and utility diversion					64							
	Excavation and construction of new piles						69	69	69	69	69	69	69
	Construct pile cap									63	63	63	63
	Remove piles												
	Backfill and reinstatement												
	Underpinning of Abutment of Causeway Flyover												
	Site clearance and hoarding and utility diversion					66							
	Excavation and construction of new piles						71	71	71	71	71	71	71
	Construct pile cap									66	66	66	66
	Remove piles												
	Backfill and reinstatement												
	Grouting Work for DSD 1.8m Truck Sewers												
	Site clearance and hoarding and utility diversion												
	Temp Access Shaft - Diaphragm wall												
	Temp Access Shaft - Excavation												
	Grouting from within the shaft												
	Backfilling and Reinstatement												
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
	Site clearance and hoarding and utility diversion												
	Construction of temporary footbridge	56	56	56									
	Demolish of existing footbridge				73								
	TBM Assemble, First and Second Drive and Retrieval												
	TBM Assembly												
	1st Retrieval and reasseambly TBM												
	2nd Retrieval of TBM												
	Overall Noise Level (Phase II), Leq (30min), dB(A)	77	77	78	80	82	84	84	84	85	82	82	82

Package	Construction Activity	2016 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		37	38	39	40	41	42	43	44	45	46	47	48
10 IMT to SOV POC	Dredging												
	Rockfill to temporary seawall												
	Temporary Seawall Construction												
	Filling behind temporary seawall												
	Diaphragm Wall Construction												
	Soil Excavation												
	Tunnel Box Construction												
	Backfilling												
	Diaphragm Wall Removal												
09 SOV POC	**SOV Construction**												
	Installing Hoarding												
	Demolition of existing POC building												
	Diaphragm Wall Construction												
	Excavation work at SOV												
	Construction of TBM launching shaft / SOV	81	81	81	81								
	SOV Construction					69	69	69	69	69	69	69	69
	Construction of cut and cover tunnel section (SCL 1.4)												
	Diaphragm Wall Construction												
	Excavation Works												
	Tunnel Box Construction												
	Backfilling	71											
	Diaphragm Wall Removal		71	71	71								
	New POC Construction												
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
	Construction of new POC building												
	E&M Installation												
	Dismantle Hoarding												
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**												
	Site clearance and hoarding and utility diversion												
	Construction of temporary footbridge												
	Demolish of portion of existing footbridge												
	Removal of clased and potential clased piles												
	Reconstruction of permanent footbridge												
	Temporary bridge removal and reinstate landscaping	66	66	66	66	66	66	66	66	66			
	Underpinning of Canal Road Flyover												
	Site clearance and hoarding and utility diversion												
	Excavation and construction of pre-bored H-piles												
	Construct new pile cap and ground beams			69	69	69	69	69	69	69			
	Backfill and reinstatement										53		
	Diversion of Canal Road Culvert & Removal of Piles												
	Site clearance and hoarding and utility diversion												
	Culvert diversion												
	Remove of piles												
	Pile Removal at Wan Shing Street Footbridge												
	Site clearance and hoarding and utility diversion												
	Construction of new footbridge												
	SubArea 1 (Work Site 30401)												
	SubArea 2 (Work Site 30402)												
	Demolition of existing footbridge												
	Removal of piles for existing footbridge & abandoned box culvert												
	Reinstatement												
	Underpinning of Pier of Causeway Flyover												
	Site clearance and hoarding and utility diversion												
	Excavation and construction of new piles	69	69	69	69	69	69	69					
	Construct pile cap	63	63	63	63	63	63	63	63				
	Remove piles				65	65	65	65	65	65			
	Backfill and reinstatement										53		
	Underpinning of Abutment of Causeway Flyover												
	Site clearance and hoarding and utility diversion												
	Excavation and construction of new piles	71	71	71	71	71	71						
	Construct pile cap	66	66	66	66	66	66	66					
	Remove piles				68	68	68	68	68	68			
	Backfill and reinstatement										55		
	Grouting Work for DSD 1.8m Truck Sewers												
	Site clearance and hoarding and utility diversion												
	Temp Access Shaft - Diaphragm wall												
	Temp Access Shaft - Excavation												
	Grouting from within the shaft												
	Backfilling and Reinstatement												
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
	Site clearance and hoarding and utility diversion												
	Construction of temporary footbridge												
	Demolish of existing footbridge												
	TBM Assemble, First and Second Drive and Retrieval												
	TBM Assembly							71	71	71	71		
	1st Retrieval and reasseambly TBM												
	2nd Retrieval of TBM												
	Overall Noise Level (Phase II), Leq (30min), dB(A)	82	82	82	82	82	76	76	74	75	75	73	73	69

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

CH1 - Hoi Deen Court

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening	2017												2018												2019											
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
	Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)																																									
10 IMT to SOV POC	Dredging	50103	121	270	67	0			67																																	
	Rockfill to temporary seawall	50103	121	270	67	0				67																																
	Temporary Seawall Construction	50103	121	270	67	0					67	67																														
	Filling behind temporary seawall	50103	121	270	67	0							67																													
	Diaphragm Wall Construction	50103	117	270	63	0								63	63	63	63																									
	Soil Excavation	50103	116	270	62	0												62	62																							
	Tunnel Box Construction	50103	115	270	62	0														62	62	62	62																			
	Backfilling	50103	116	270	63	0																		63	63	63																
	Diaphragm Wall Removal	50103	116	270	62	0																		62	62	62																
09 SOV POC	**SOV Construction**																																									
	Installing Hoarding	401	108	108	63	0																																				
	Demolition of existing POC building	401	126	108	80	0																																				
	Diaphragm Wall Construction	401	123	108	77	0																																				
	Excavation work at SOV	401	127	108	81	0																																				
	Construction of TBM launching shaft / SOV	401	126	108	81	0																																				
	SOV Construction	401	115	108	69	0	69	69	69	69	69	69	69	69	69	69	69	69																								
	Construction of cut and cover tunnel section (SCL 1.4)																																									
	Diaphragm Wall Construction	50105	117	101	72	0																																				
	Excavation Works	50105	127	101	81	0																																				
	Tunnel Box Construction	50105	115	101	70	0																																				
	Backfilling	50105	116	101	71	0																																				
	Diaphragm Wall Removal	50105	116	101	71	0																																				
	New POC Construction																																									
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)	401	113	108	67	0													67	67	67	67																				
	Construction of new POC building	401	115	108	69	0																	69	69	69	69	69	69	69														
	E&M Installation	401	110	108	64	0																							64	64	64	64	64	64	64	64	64					
	Dismantle Hoarding	401	113	108	67	0																																67				
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**																																									
	Site clearance and hoarding and utility diversion	302	114	173	64	0																																				
	Construction of temporary footbridge	301	104	209	52	0																																				
	Demolish of portion of existing footbridge	302	121	173	71	0																																				
	Removal of clased and potential clased piles	302	116	173	66	0																																				
	Reconstruction of permanent footbridge	302	110	173	60	0																																				
	Temporary bridge removal and reinstate landscaping	301	117	209	66	0																																				
	Underpinning of Canal Road Flyover																																									
	Site clearance and hoarding and utility diversion	303	114	353	58	0																																				
	Excavation and construction of pre-bored H-piles	303	120	353	64	0																																				
	Construct new pile cap and ground beams	303	114	353	58	0																																				
	Backfill and reinstatement	303	108	353	52	0																																				
	Diversion of Canal Road Culvert & Removal of Piles																																									
	Site clearance and hoarding and utility diversion	310	112	320	57	0																																				
	Culvert diversion	310	112	320	57	0																																				
	Remove of piles	310	115	320	60	0																																				
	Pile Removal at Wan Shing Street Footbridge																																									
	Site clearance and hoarding and utility diversion	305	114	398	57	0																																				
	Construction of new footbridge																																									
	SubArea 1 (Work Site 30401)	30401	117	391	60	0																																				
	SubArea 2 (Work Site 30402)	30402	117	438	59	0																																				
	Demolition of existing footbridge	305	121	398	64	0																																				
	Removal of piles for existing footbridge & abandoned box culvert	305	121	398	64	0																																				
	Reinstatement	305	111	398	54	0																																				
	Underpinning of Pier of Causeway Flyover																																									
	Site clearance and hoarding and utility diversion	306	114	186	64	0																																				
	Excavation and construction of new piles	306	119	186	69	0																																				
	Construct pile cap	306	114	186	63	0																																				
	Remove piles	306	115	186	65	0																																				
	Backfill and reinstatement	306	103	186	53	0																																				
	Underpinning of Abutment of Causeway Flyover																																									
	Site clearance and hoarding and utility diversion	307	114	138	66	0																																				
	Excavation and construction of new piles	307	119	138	71	0																																				
	Construct pile cap	307	114	138	66	0																																				
	Remove piles	307	115	138	68	0																																				
	Backfill and reinstatement	307	103	138	55	0																																				
	Grouting Work for DSD 1.8m Truck Sewers																																									
	Site clearance and hoarding and utility diversion	308	116	442	58	0																																				
	Temp Access Shaft - Diaphragm wall	308	115	442	57	0																																				
	Temp Access Shaft - Excavation	308	112	442	54	0																																				
	Grouting from within the shaft	308	102	442	44	0																																				
	Backfilling and Reinstatement	308	114	442	56	0																																				
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge																																									
	Site clearance and hoarding and utility diversion	309	112	142	64	0																																				
	Construction of temporary footbridge	309	104	142	56	0																																				
	Demolish of existing footbridge	309	121	142	73	0																																				
	TBM Assemble, First and Second Drive and Retrieval																																									
	TBM Assembly	401	117	108	71	0																																				
	1st Retrieval and reasseambly TBM	401	118	108	73	0			73	73	73	73	73																													
	2nd Retrieval of TBM	401	118	108	73	0											73	73																								
	Overall Noise Level (Phase II), Leq (30min), dB(A)						69	69	75	75	75	75	75	70	70	70	75	75	68	68	68	68	70	71	71	71	69	69	70	64	64	64	64	64	64	64	64	67	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

CH2 - Hoi Kung Court

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening
	Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)					
10 IMT to SOV POC	Dredging	50103	121	305	66	0
	Rockfill to temporary seawall	50103	121	305	66	0
	Temporary Seawall Construction	50103	121	305	66	0
	Filling behind temporary seawall	50103	121	305	66	0
	Diaphragm Wall Construction	50103	117	305	62	0
	Soil Excavation	50103	116	305	61	0
	Tunnel Box Construction	50103	115	305	61	0
	Backfilling	50103	116	305	62	0
	Diaphragm Wall Removal	50103	116	305	61	0
09 SOV POC	**SOV Construction**					
	Installing Hoarding	401	108	81	65	0
	Demolition of existing POC building	401	126	81	83	0
	Diaphragm Wall Construction	401	123	81	80	0
	Excavation work at SOV	401	127	81	83	0
	Construction of TBM launching shaft / SOV	401	126	81	83	0
	SOV Construction	401	115	81	72	0
	Construction of cut and cover tunnel section (SCL 1.4)					
	Diaphragm Wall Construction	50105	117	103	72	0
	Excavation Works	50105	127	103	81	0
	Tunnel Box Construction	50105	115	103	70	0
	Backfilling	50105	116	103	71	0
	Diaphragm Wall Removal	50105	116	103	71	0
	New POC Construction					
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)	401	113	81	70	0
	Construction of new POC building	401	115	81	72	0
	E&M Installation	401	110	81	67	0
	Dismantle Hoarding	401	113	81	69	0
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**					
	Site clearance and hoarding and utility diversion	302	114	115	67	0
	Construction of temporary footbridge	301	104	152	55	0
	Demolish of portion of existing footbridge	302	121	115	75	0
	Removal of clased and potential clased piles	302	116	115	69	0
	Reconstruction of permanent footbridge	302	110	115	64	0
	Temporary bridge removal and reinstate landscaping	301	117	152	68	0
	Underpinning of Canal Road Flyover					
	Site clearance and hoarding and utility diversion	303	114	294	60	0
	Excavation and construction of pre-bored H-piles	303	120	294	65	0
	Construct new pile cap and ground beams	303	114	294	60	0
	Backfill and reinstatement	303	108	294	53	0
	Diversion of Canal Road Culvert & Removal of Piles					
	Site clearance and hoarding and utility diversion	310	112	261	59	0
	Culvert diversion	310	112	261	59	0
	Remove of piles	310	115	261	62	0
	Pile Removal at Wan Shing Street Footbridge					
	Site clearance and hoarding and utility diversion	305	114	339	58	0
	Construction of new footbridge					
	SubArea 1 (Work Site 30401)	30401	117	330	62	0
	SubArea 2 (Work Site 30402)	30402	117	378	61	0
	Demolition of existing footbridge	305	121	339	65	0
	Removal of piles for existing footbridge & abandoned box culvert	305	121	339	65	0
	Reinstatement	305	111	339	55	0
	Underpinning of Pier of Causeway Flyover					
	Site clearance and hoarding and utility diversion	306	114	132	67	0
	Excavation and construction of new piles	306	119	132	72	0
	Construct pile cap	306	114	132	66	0
	Remove piles	306	115	132	68	0
	Backfill and reinstatement	306	103	132	56	0
	Underpinning of Abutment of Causeway Flyover					
	Site clearance and hoarding and utility diversion	307	114	82	71	0
	Excavation and construction of new piles	307	119	82	76	0
	Construct pile cap	307	114	82	70	0
	Remove piles	307	115	82	72	0
	Backfill and reinstatement	307	103	82	60	0
	Grouting Work for DSD 1.8m Truck Sewers					
	Site clearance and hoarding and utility diversion	308	116	385	59	0
	Temp Access Shaft - Diaphragm wall	308	115	385	58	0
	Temp Access Shaft - Excavation	308	112	385	56	0
	Grouting from within the shaft	308	102	385	45	0
	Backfilling and Reinstatement	308	114	385	57	0
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge					
	Site clearance and hoarding and utility diversion	309	112	91	68	0
	Construction of temporary footbridge	309	104	91	60	0
	Demolish of existing footbridge	309	121	91	77	0
	TBM Assemble, First and Second Drive and Retrieval					
	TBM Assembly	401	117	81	74	0
	1st Retrieval and reasseambly TBM	401	118	81	75	0
	2nd Retrieval of TBM	401	118	81	75	0
	Overall Noise Level (Phase II), Leq (30min), dB(A)					

Construction Activity	2013 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	1	2	3	4	5	6	7	8	9	10	11	12
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-

Construction Activity	2014 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	13	14	15	16	17	18	19	20	21	22	23	24
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding										65	65	65
Demolition of existing POC building										83	83	83
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge			55									
Demolish of portion of existing footbridge				75	75	75	75					
Removal of clased and potential clased piles								69	69			
Reconstruction of permanent footbridge										64	64	64
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion		59	59									
Culvert diversion				59	59	59	59	59	59	59	59	59
Remove of piles									62	62	62	62
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion										68	68	68
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	59	60	75	75	75	75	69	70	83	83	83	83

Construction Activity	2015 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	25	26	27	28	29	30	31	32	33	34	35	36
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction	80	80	80	80								
Excavation work at SOV					83	83	83	83	83			
Construction of TBM launching shaft / SOV										83	83	83
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction			72	72	72							
Excavation Works						81	81	81	81			
Tunnel Box Construction										70	70	70
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge	64	64	64									
Temporary bridge removal and reinstate landscaping				68	68	68	68	68	68			
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion					60							
Excavation and construction of pre-bored H-piles						65	65	65	65	65	65	65
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion	59	59	59	59								
Remove of piles	62	62										
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion					67							
Excavation and construction of new piles						72	72	72	72	72	72	72
Construct pile cap									66	66	66	66
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion					71							
Excavation and construction of new piles						76	76	76	76	76	76	76
Construct pile cap									70	70	70	70
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge	60	60	60									
Demolish of existing footbridge				77								
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	80	80	81	82	84	86	86	86	86	85	85	85

Construction Activity	2016 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	37	38	39	40	41	42	43	44	45	46	47	48
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV	83	83	83	83								
SOV Construction					72	72	72	72	72	72	72	72
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling	71											
Diaphragm Wall Removal		71	71	71								
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles	65	65										
Construct new pile cap and ground beams			60	60	60	60	60	60	60			
Backfill and reinstatement										53		
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles	72	72	72	72	72	72						
Construct pile cap	66	66	66	66	66	66	66					
Remove piles												
Backfill and reinstatement										56		
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles	76	76	76	76	76	76						
Construct pile cap	70	70	70	70	70	70	70	70	70			
Remove piles	72	72	72	72	72	72						
Backfill and reinstatement										60		
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly							74	74	74	74		
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	85	85	85	85	85	85	77	78	78	76	76	72

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

CH2 - Hoi Kung Court

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening
	Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)					
10 IMT to SOV POC	Dredging	50103	121	305	66	0
	Rockfill to temporary seawall	50103	121	305	66	0
	Temporary Seawall Construction	50103	121	305	66	0
	Filling behind temporary seawall	50103	121	305	66	0
	Diaphragm Wall Construction	50103	117	305	62	0
	Soil Excavation	50103	116	305	61	0
	Tunnel Box Construction	50103	115	305	61	0
	Backfilling	50103	116	305	62	0
	Diaphragm Wall Removal	50103	116	305	61	0
09 SOV POC	**SOV Construction**					
	Installing Hoarding	401	108	81	65	0
	Demolition of existing POC building	401	126	81	83	0
	Diaphragm Wall Construction	401	123	81	80	0
	Excavation work at SOV	401	127	81	83	0
	Construction of TBM launching shaft / SOV	401	126	81	83	0
	SOV Construction	401	115	81	72	0
	Construction of cut and cover tunnel section (SCL 1.4)					
	Diaphragm Wall Construction	50105	117	103	72	0
	Excavation Works	50105	127	103	81	0
	Tunnel Box Construction	50105	115	103	70	0
	Backfilling	50105	116	103	71	0
	Diaphragm Wall Removal	50105	116	103	71	0
	New POC Construction					
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)	401	113	81	70	0
	Construction of new POC building	401	115	81	72	0
	E&M Installation	401	110	81	67	0
	Dismantle Hoarding	401	113	81	69	0
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**					
	Site clearance and hoarding and utility diversion	302	114	115	67	0
	Construction of temporary footbridge	301	104	152	55	0
	Demolish of portion of existing footbridge	302	121	115	75	0
	Removal of clased and potential clased piles	302	116	115	69	0
	Reconstruction of permanent footbridge	302	110	115	64	0
	Temporary bridge removal and reinstate landscaping	301	117	152	68	0
	Underpinning of Canal Road Flyover					
	Site clearance and hoarding and utility diversion	303	114	294	60	0
	Excavation and construction of pre-bored H-piles	303	120	294	65	0
	Construct new pile cap and ground beams	303	114	294	60	0
	Backfill and reinstatement	303	108	294	53	0
	Diversion of Canal Road Culvert & Removal of Piles					
	Site clearance and hoarding and utility diversion	310	112	261	59	0
	Culvert diversion	310	112	261	59	0
	Remove of piles	310	115	261	62	0
	Pile Removal at Wan Shing Street Footbridge					
	Site clearance and hoarding and utility diversion	305	114	339	58	0
	Construction of new footbridge					
	SubArea 1 (Work Site 30401)	30401	117	330	62	0
	SubArea 2 (Work Site 30402)	30402	117	378	61	0
	Demolition of existing footbridge	305	121	339	65	0
	Removal of piles for existing footbridge & abandoned box culvert	305	121	339	65	0
	Reinstatement	305	111	339	55	0
	Underpinning of Pier of Causeway Flyover					
	Site clearance and hoarding and utility diversion	306	114	132	67	0
	Excavation and construction of new piles	306	119	132	72	0
	Construct pile cap	306	114	132	66	0
	Remove piles	306	115	132	68	0
	Backfill and reinstatement	306	103	132	56	0
	Underpinning of Abutment of Causeway Flyover					
	Site clearance and hoarding and utility diversion	307	114	82	71	0
	Excavation and construction of new piles	307	119	82	76	0
	Construct pile cap	307	114	82	70	0
	Remove piles	307	115	82	72	0
	Backfill and reinstatement	307	103	82	60	0
	Grouting Work for DSD 1.8m Truck Sewers					
	Site clearance and hoarding and utility diversion	308	116	385	59	0
	Temp Access Shaft - Diaphragm wall	308	115	385	58	0
	Temp Access Shaft - Excavation	308	112	385	56	0
	Grouting from within the shaft	308	102	385	45	0
	Backfilling and Reinstatement	308	114	385	57	0
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge					
	Site clearance and hoarding and utility diversion	309	112	91	68	0
	Construction of temporary footbridge	309	104	91	60	0
	Demolish of existing footbridge	309	121	91	77	0
	TBM Assemble, First and Second Drive and Retrieval					
	TBM Assembly	401	117	81	74	0
	1st Retrieval and reasseambly TBM	401	118	81	75	0
	2nd Retrieval of TBM	401	118	81	75	0
	Overall Noise Level (Phase II), Leq (30min), dB(A)					

Construction Activity	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	49	50	51	52	53	54	55	56	57	58	59	60
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction	72	72	72	72	72	72	72	72	72	72	72	72
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM			75	75	75	75	75					
2nd Retrieval of TBM											75	75
Overall Noise Level (Phase II), Leq (30min), dB(A)	72	72	77	77	77	77	77	72	72	72	77	77

Construction Activity	2018 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	61	62	63	64	65	66	67	68	69	70	71	72
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)	70	70	70	70								
Construction of new POC building					72	72	72	72	72	72	72	
E&M Installation											67	67
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	70	70	70	70	72	72	72	72	72	72	73	67

Construction Activity	2019 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	73	74	75	76	77	78	79	80	81	82	83	84
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation	67	67	67	67	67	67	67					
Dismantle Hoarding								69				
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	67	67	67	67	67	67	67	69	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

CH3 - Elizabeth House, Block C

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening
	Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)					
10 IMT to SOV POC	Dredging	50103	121	417	63	0
	Rockfill to temporary seawall	50103	121	417	63	0
	Temporary Seawall Construction	50103	121	417	63	0
	Filling behind temporary seawall	50103	121	417	63	0
	Diaphragm Wall Construction	50103	117	417	59	0
	Soil Excavation	50103	116	417	58	0
	Tunnel Box Construction	50103	115	417	58	0
	Backfilling	50103	116	417	59	0
	Diaphragm Wall Removal	50103	116	417	59	0
09 SOV POC	**SOV Construction**					
	Installing Hoarding	401	108	151	60	0
	Demolition of existing POC building	401	126	151	77	0
	Diaphragm Wall Construction	401	123	151	74	0
	Excavation work at SOV	401	127	151	78	0
	Construction of TBM launching shaft / SOV	401	126	151	78	0
	SOV Construction	401	115	151	66	0
	Construction of cut and cover tunnel section (SCL 1.4)					
	Diaphragm Wall Construction	50105	117	204	66	0
	Excavation Works	50105	127	204	75	0
	Tunnel Box Construction	50105	115	204	64	0
	Backfilling	50105	116	204	65	0
	Diaphragm Wall Removal	50105	116	204	65	0
	New POC Construction					
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)	401	113	151	64	0
	Construction of new POC building	401	115	151	66	0
	E&M Installation	401	110	151	62	0
	Dismantle Hoarding	401	113	151	64	0
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**					
	Site clearance and hoarding and utility diversion	302	114	64	72	0
	Construction of temporary footbridge	301	104	78	61	0
	Demolish of portion of existing footbridge	302	121	64	80	0
	Removal of clased and potential clased piles	302	116	64	74	0
	Reconstruction of permanent footbridge	302	110	64	69	0
	Temporary bridge removal and reinstate landscaping	301	117	78	74	0
	Underpinning of Canal Road Flyover					
	Site clearance and hoarding and utility diversion	303	114	177	64	0
	Excavation and construction of pre-bored H-piles	303	120	177	70	0
	Construct new pile cap and ground beams	303	114	177	64	0
	Backfill and reinstatement	303	108	177	58	0
	Diversion of Canal Road Culvert & Removal of Piles					
	Site clearance and hoarding and utility diversion	310	112	142	64	0
	Culvert diversion	310	112	142	64	0
	Remove of piles	310	115	142	67	0
	Pile Removal at Wan Shing Street Footbridge					
	Site clearance and hoarding and utility diversion	305	114	213	63	0
	Construction of new footbridge					
	SubArea 1 (Work Site 30401)	30401	117	196	66	0
	SubArea 2 (Work Site 30402)	30402	117	252	64	0
	Demolition of existing footbridge	305	121	213	69	0
	Removal of piles for existing footbridge & abandoned box culvert	305	121	213	69	0
	Reinstatement	305	111	213	59	0
	Underpinning of Pier of Causeway Flyover					
	Site clearance and hoarding and utility diversion	306	114	88	70	0
	Excavation and construction of new piles	306	119	88	75	0
	Construct pile cap	306	114	88	70	0
	Remove piles	306	115	88	72	0
	Backfill and reinstatement	306	103	88	59	0
	Underpinning of Abutment of Causeway Flyover					
	Site clearance and hoarding and utility diversion	307	114	85	70	0
	Excavation and construction of new piles	307	119	85	76	0
	Construct pile cap	307	114	85	70	0
	Remove piles	307	115	85	72	0
	Backfill and reinstatement	307	103	85	60	0
	Grouting Work for DSD 1.8m Truck Sewers					
	Site clearance and hoarding and utility diversion	308	116	270	62	0
	Temp Access Shaft - Diaphragm wall	308	115	270	61	0
	Temp Access Shaft - Excavation	308	112	270	59	0
	Grouting from within the shaft	308	102	270	48	0
	Backfilling and Reinstatement	308	114	270	60	0
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge					
	Site clearance and hoarding and utility diversion	309	112	102	67	0
	Construction of temporary footbridge	309	104	102	59	0
	Demolish of existing footbridge	309	121	102	76	0
	TBM Assemble, First and Second Drive and Retrieval					
	TBM Assembly	401	117	151	68	0
	1st Retrieval and reasseambly TBM	401	118	151	70	0
	2nd Retrieval of TBM	401	118	151	70	0

Construction Activity	2013 Jan (1)	Feb (2)	Mar (3)	Apr (4)	May (5)	Jun (6)	Jul (7)	Aug (8)	Sep (9)	Oct (10)	Nov (11)	Dec (12)
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-

Construction Activity	2014 Jan (13)	Feb (14)	Mar (15)	Apr (16)	May (17)	Jun (18)	Jul (19)	Aug (20)	Sep (21)	Oct (22)	Nov (23)	Dec (24)
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding										60	60	60
Demolition of existing POC building										77	77	77
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge			61									
Demolish of portion of existing footbridge				80	80	80	80					
Removal of clased and potential clased piles								74	74			
Reconstruction of permanent footbridge										69	69	69
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion		64	64									
Culvert diversion				64	64	64	64	64	64	64	64	64
Remove of piles									67	67	67	67
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion		63	63									
Construction of new footbridge												
SubArea 1 (Work Site 30401)				66	66	66	66	66	66	66	66	66
SubArea 2 (Work Site 30402)				64	64	64	64	64	64	64	64	64
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion									62			
Temp Access Shaft - Diaphragm wall										61	61	61
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion										67	67	67
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	67	68	80	80	80	80	75	76	79	79	79	79

Construction Activity	2015 Jan (25)	Feb (26)	Mar (27)	Apr (28)	May (29)	Jun (30)	Jul (31)	Aug (32)	Sep (33)	Oct (34)	Nov (35)	Dec (36)
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction	74	74	74	74								
Excavation work at SOV					78	78	78	78	78			
Construction of TBM launching shaft / SOV										78	78	78
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction			66	66	66							
Excavation Works						75	75	75	75			
Tunnel Box Construction										64	64	64
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge	69	69	69									
Temporary bridge removal and reinstate landscaping				74	74	74	74	74	74			
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion					64							
Excavation and construction of pre-bored H-piles						70	70	70	70	70	70	70
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion	64	64	64	64								
Remove of piles	67	67										
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)	66	66	66	66								
SubArea 2 (Work Site 30402)	64	64	64	64								
Demolition of existing footbridge						69						
Removal of piles for existing footbridge & abandoned box culvert							69	69	69			
Reinstatement										59		
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion					70							
Excavation and construction of new piles						75	75	75	75	75	75	75
Construct pile cap									70	70	70	70
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion					70							
Excavation and construction of new piles						76	76	76	76	76	76	76
Construct pile cap									70	70	70	70
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall	61	61										
Temp Access Shaft - Excavation			59	59								
Grouting from within the shaft					48	48						
Backfilling and Reinstatement							60	60				
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge	59	59	59									
Demolish of existing footbridge				76								
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	77	77	77	80	81	83	83	83	84	82	82	82

Construction Activity	2016 Jan (37)	Feb (38)	Mar (39)	Apr (40)	May (41)	Jun (42)	Jul (43)	Aug (44)	Sep (45)	Oct (46)	Nov (47)	Dec (48)
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV	78	78	78	78								
SOV Construction					66	66	66	66	66	66	66	66
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling	65											
Diaphragm Wall Removal		65	65	65								
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles	70	70										
Construct new pile cap and ground beams			64	64	64	64	64	64	64			
Backfill and reinstatement										58		
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles	75	75	75	75	75							
Construct pile cap	70	70	70	70	70	70	70					
Remove piles					72	72	72	72	72	72		
Backfill and reinstatement										59		
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles	76	76	76	76	76	76	76					
Construct pile cap	70	70	70	70	70	70	70					
Remove piles					72	72	72	72	72	72		
Backfill and reinstatement										60		
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly								68	68	68	68	
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	83	81	81	78	76	76	71	70	66			

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

CH3 - Elizabeth House, Block C

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening
	Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)					
10 IMT to SOV POC	Dredging	50103	121	417	63	0
	Rockfill to temporary seawall	50103	121	417	63	0
	Temporary Seawall Construction	50103	121	417	63	0
	Filling behind temporary seawall	50103	121	417	63	0
	Diaphragm Wall Construction	50103	117	417	59	0
	Soil Excavation	50103	116	417	58	0
	Tunnel Box Construction	50103	115	417	58	0
	Backfilling	50103	116	417	59	0
	Diaphragm Wall Removal	50103	116	417	59	0
09 SOV POC	**SOV Construction**					
	Installing Hoarding	401	108	151	60	0
	Demolition of existing POC building	401	126	151	77	0
	Diaphragm Wall Construction	401	123	151	74	0
	Excavation work at SOV	401	127	151	78	0
	Construction of TBM launching shaft / SOV	401	126	151	78	0
	SOV Construction	401	115	151	66	0
	Construction of cut and cover tunnel section (SCL 1.4)					
	Diaphragm Wall Construction	50105	117	204	66	0
	Excavation Works	50105	127	204	75	0
	Tunnel Box Construction	50105	115	204	64	0
	Backfilling	50105	116	204	65	0
	Diaphragm Wall Removal	50105	116	204	65	0
	New POC Construction					
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)	401	113	151	64	0
	Construction of new POC building	401	115	151	66	0
	E&M Installation	401	110	151	62	0
	Dismantle Hoarding	401	113	151	64	0
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**					
	Site clearance and hoarding and utility diversion	302	114	64	72	0
	Construction of temporary footbridge	301	104	78	61	0
	Demolish of portion of existing footbridge	302	121	64	80	0
	Removal of clased and potential clased piles	302	116	64	74	0
	Reconstruction of permanent footbridge	302	110	64	69	0
	Temporary bridge removal and reinstate landscaping	301	117	78	74	0
	Underpinning of Canal Road Flyover					
	Site clearance and hoarding and utility diversion	303	114	177	64	0
	Excavation and construction of pre-bored H-piles	303	120	177	70	0
	Construct new pile cap and ground beams	303	114	177	64	0
	Backfill and reinstatement	303	108	177	58	0
	Diversion of Canal Road Culvert & Removal of Piles					
	Site clearance and hoarding and utility diversion	310	112	142	64	0
	Culvert diversion	310	112	142	64	0
	Remove of piles	310	115	142	67	0
	Pile Removal at Wan Shing Street Footbridge					
	Site clearance and hoarding and utility diversion	305	114	213	63	0
	Construction of new footbridge					
	SubArea 1 (Work Site 30401)	30401	117	196	66	0
	SubArea 2 (Work Site 30402)	30402	117	252	64	0
	Demolition of existing footbridge	305	121	213	69	0
	Removal of piles for existing footbridge & abandoned box culvert	305	121	213	69	0
	Reinstatement	305	111	213	59	0
	Underpinning of Pier of Causeway Flyover					
	Site clearance and hoarding and utility diversion	306	114	88	70	0
	Excavation and construction of new piles	306	119	88	75	0
	Construct pile cap	306	114	88	70	0
	Remove piles	306	115	88	72	0
	Backfill and reinstatement	306	103	88	59	0
	Underpinning of Abutment of Causeway Flyover					
	Site clearance and hoarding and utility diversion	307	114	85	70	0
	Excavation and construction of new piles	307	119	85	76	0
	Construct pile cap	307	114	85	70	0
	Remove piles	307	115	85	72	0
	Backfill and reinstatement	307	103	85	60	0
	Grouting Work for DSD 1.8m Truck Sewers					
	Site clearance and hoarding and utility diversion	308	116	270	62	0
	Temp Access Shaft - Diaphragm wall	308	115	270	61	0
	Temp Access Shaft - Excavation	308	112	270	59	0
	Grouting from within the shaft	308	102	270	48	0
	Backfilling and Reinstatement	308	114	270	60	0
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge					
	Site clearance and hoarding and utility diversion	309	112	102	67	0
	Construction of temporary footbridge	309	104	102	59	0
	Demolish of existing footbridge	309	121	102	76	0
	TBM Assemble, First and Second Drive and Retrieval					
	TBM Assembly	401	117	151	68	0
	1st Retrieval and reasseambly TBM	401	118	151	70	0
	2nd Retrieval of TBM	401	118	151	70	0

2017

Construction Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	49	50	51	52	53	54	55	56	57	58	59	60
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction	66	66	66	66	66	66	66	66	66	66	66	66
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM			70	70	70	70	70					
2nd Retrieval of TBM											70	70
Overall Noise Level (Phase II), Leq (30min), dB(A)	66	66	71	71	71	71	71	66	66	66	71	71

2018

Construction Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	61	62	63	64	65	66	67	68	69	70	71	72
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)	64	64	64	64								
Construction of new POC building					66	66	66	66	66	66	66	
E&M Installation											62	62
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	64	64	64	64	66	66	66	66	66	66	67	62

2019

Construction Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	73	74	75	76	77	78	79	80	81	82	83	84
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation	62	62	62	62	62	62	62					
Dismantle Hoarding								64				
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	62	62	62	62	62	62	62	64	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

CH4 - Marco Polo Mansion

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [4] (m)	SPL [3]	Building Screening
	Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)					
10 IMT to SOV POC	Dredging	50103	121	235	68	0
	Rockfill to temporary seawall	50103	121	235	68	0
	Temporary Seawall Construction	50103	121	235	68	0
	Filling behind temporary seawall	50103	121	235	68	0
	Diaphragm Wall Construction	50103	117	235	64	0
	Soil Excavation	50103	116	235	63	0
	Tunnel Box Construction	50103	115	235	63	0
	Backfilling	50103	116	235	64	0
	Diaphragm Wall Removal	50103	116	235	64	0
09 SOV POC	**SOV Construction**					
	Installing Hoarding	401	108	317	53	0
	Demolition of existing POC building	401	126	317	71	0
	Diaphragm Wall Construction	401	123	317	68	0
	Excavation work at SOV	401	127	317	72	0
	Construction of TBM launching shaft / SOV	401	126	317	71	0
	SOV Construction	401	115	317	60	0
	Construction of cut and cover tunnel section (SCL 1.4)					
	Diaphragm Wall Construction	50105	117	276	63	0
	Excavation Works	50105	127	276	73	0
	Tunnel Box Construction	50105	115	276	61	0
	Backfilling	50105	116	276	62	0
	Diaphragm Wall Removal	50105	116	276	62	0
	New POC Construction					
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)	401	113	317	58	0
	Construction of new POC building	401	115	317	60	0
	E&M Installation	401	110	317	55	0
	Dismantle Hoarding	401	113	317	58	0
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**					
	Site clearance and hoarding and utility diversion	302	114	415	56	0
	Construction of temporary footbridge	301	104	449	46	0
	Demolish of portion of existing footbridge	302	121	415	64	0
	Removal of clased and potential clased piles	302	116	415	58	0
	Reconstruction of permanent footbridge	302	110	415	53	0
	Temporary bridge removal and reinstate landscaping	301	117	449	59	0
	Underpinning of Canal Road Flyover					
	Site clearance and hoarding and utility diversion	303	114	593	54	0
	Excavation and construction of pre-bored H-piles	303	120	593	59	0
	Construct new pile cap and ground beams	303	114	593	54	0
	Backfill and reinstatement	303	108	593	47	0
	Diversion of Canal Road Culvert & Removal of Piles					
	Site clearance and hoarding and utility diversion	310	112	562	52	0
	Culvert diversion	310	112	562	52	0
	Remove of piles	310	115	562	55	0
	Pile Removal at Wan Shing Street Footbridge					
	Site clearance and hoarding and utility diversion	305	114	641	53	0
	Construction of new footbridge					
	SubArea 1 (Work Site 30401)	30401	117	636	56	0
	SubArea 2 (Work Site 30402)	30402	117	680	55	0
	Demolition of existing footbridge	305	121	641	59	0
	Removal of piles for existing footbridge & abandoned box culvert	305	121	641	60	0
	Reinstatement	305	111	641	50	0
	Underpinning of Pier of Causeway Flyover					
	Site clearance and hoarding and utility diversion	306	114	423	57	0
	Excavation and construction of new piles	306	119	423	62	0
	Construct pile cap	306	114	423	56	0
	Remove piles	306	115	423	58	0
	Backfill and reinstatement	306	103	423	46	0
	Underpinning of Abutment of Causeway Flyover					
	Site clearance and hoarding and utility diversion	307	114	378	58	0
	Excavation and construction of new piles	307	119	378	63	0
	Construct pile cap	307	114	378	57	0
	Remove piles	307	115	378	59	0
	Backfill and reinstatement	307	103	378	47	0
	Grouting Work for DSD 1.8m Truck Sewers					
	Site clearance and hoarding and utility diversion	308	116	679	54	0
	Temp Access Shaft - Diaphragm wall	308	115	679	53	0
	Temp Access Shaft - Excavation	308	112	679	51	0
	Grouting from within the shaft	308	102	679	40	0
	Backfilling and Reinstatement	308	114	679	52	0
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge					
	Site clearance and hoarding and utility diversion	309	112	377	56	0
	Construction of temporary footbridge	309	104	377	47	0
	Demolish of existing footbridge	309	121	377	65	0
	TBM Assemble, First and Second Drive and Retrieval					
	TBM Assembly	401	117	317	62	0
	1st Retrieval and reasseambly TBM	401	118	317	63	0
	2nd Retrieval of TBM	401	118	317	63	0
	Overall Noise Level (Phase II), Leq (30min), dB(A)					

Construction Activity	2013 Jan 1	Feb 2	Mar 3	Apr 4	May 5	Jun 6	Jul 7	Aug 8	Sep 9	Oct 10	Nov 11	Dec 12
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-

Construction Activity	2014 Jan 13	Feb 14	Mar 15	Apr 16	May 17	Jun 18	Jul 19	Aug 20	Sep 21	Oct 22	Nov 23	Dec 24
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-

Construction Activity	2015 Jan 25	Feb 26	Mar 27	Apr 28	May 29	Jun 30	Jul 31	Aug 32	Sep 33	Oct 34	Nov 35	Dec 36
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction			63	63	63							
Excavation Works						73	73	73	73			
Tunnel Box Construction										61	61	61
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	63	63	63	73	73	73	73	61	61	61

Construction Activity	2016 Jan 37	Feb 38	Mar 39	Apr 40	May 41	Jun 42	Jul 43	Aug 44	Sep 45	Oct 46	Nov 47	Dec 48
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling	62											
Diaphragm Wall Removal		62	62	62								
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	62	62	62	62	-	-	-	-	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

CH4 - Marco Polo Mansion

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [4] (m)	SPL [5]	Building Screening
	Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)					
10 IMT to SOV POC	Dredging	50103	121	235	68	0
	Rockfill to temporary seawall	50103	121	235	68	0
	Temporary Seawall Construction	50103	121	235	68	0
	Filling behind temporary seawall	50103	121	235	68	0
	Diaphragm Wall Construction	50103	117	235	64	0
	Soil Excavation	50103	116	235	63	0
	Tunnel Box Construction	50103	115	235	63	0
	Backfilling	50103	116	235	64	0
	Diaphragm Wall Removal	50103	116	235	64	0
09 SOV POC	**SOV Construction**					
	Installing Hoarding	401	108	317	53	0
	Demolition of existing POC building	401	126	317	71	0
	Diaphragm Wall Construction	401	123	317	68	0
	Excavation work at SOV	401	127	317	72	0
	Construction of TBM launching shaft / SOV	401	126	317	71	0
	SOV Construction	401	115	317	60	0
	Construction of cut and cover tunnel section (SCL 1.4)					
	Diaphragm Wall Construction	50105	117	276	63	0
	Excavation Works	50105	127	276	73	0
	Tunnel Box Construction	50105	115	276	61	0
	Backfilling	50105	116	276	62	0
	Diaphragm Wall Removal	50105	116	276	62	0
	New POC Construction					
	Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)	401	113	317	58	0
	Construction of new POC building	401	115	317	60	0
	E&M Installation	401	110	317	55	0
	Dismantle Hoarding	401	113	317	58	0
08 Tunnels SOV to EXH	**Reconstruct of Percival Street Footbridge**					
	Site clearance and hoarding and utility diversion	302	114	415	56	0
	Construction of temporary footbridge	301	104	449	46	0
	Demolish of portion of existing footbridge	302	121	415	64	0
	Removal of clased and potential clased piles	302	116	415	58	0
	Reconstruction of permanent footbridge	302	110	415	53	0
	Temporary bridge removal and reinstate landscaping	301	117	449	59	0
	Underpinning of Canal Road Flyover					
	Site clearance and hoarding and utility diversion	303	114	593	54	0
	Excavation and construction of pre-bored H-piles	303	120	593	59	0
	Construct new pile cap and ground beams	303	114	593	54	0
	Backfill and reinstatement	303	108	593	47	0
	Diversion of Canal Road Culvert & Removal of Piles					
	Site clearance and hoarding and utility diversion	310	112	562	52	0
	Culvert diversion	310	112	562	52	0
	Remove of piles	310	115	562	55	0
	Pile Removal at Wan Shing Street Footbridge					
	Site clearance and hoarding and utility diversion	305	114	641	53	0
	Construction of new footbridge					
	SubArea 1 (Work Site 30401)	30401	117	636	56	0
	SubArea 2 (Work Site 30402)	30402	117	680	55	0
	Demolition of existing footbridge	305	121	641	59	0
	Removal of piles for existing footbridge & abandoned box culvert	305	121	641	60	0
	Reinstatement	305	111	641	50	0
	Underpinning of Pier of Causeway Flyover					
	Site clearance and hoarding and utility diversion	306	114	423	57	0
	Excavation and construction of new piles	306	119	423	62	0
	Construct pile cap	306	114	423	56	0
	Remove piles	306	115	423	58	0
	Backfill and reinstatement	306	103	423	46	0
	Underpinning of Abutment of Causeway Flyover					
	Site clearance and hoarding and utility diversion	307	114	378	58	0
	Excavation and construction of new piles	307	119	378	63	0
	Construct pile cap	307	114	378	57	0
	Remove piles	307	115	378	59	0
	Backfill and reinstatement	307	103	378	47	0
	Grouting Work for DSD 1.8m Truck Sewers					
	Site clearance and hoarding and utility diversion	308	116	679	54	0
	Temp Access Shaft - Diaphragm wall	308	115	679	53	0
	Temp Access Shaft - Excavation	308	112	679	51	0
	Grouting from within the shaft	308	102	679	40	0
	Backfilling and Reinstatement	308	114	679	52	0
	Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge					
	Site clearance and hoarding and utility diversion	309	112	377	56	0
	Construction of temporary footbridge	309	104	377	47	0
	Demolish of existing footbridge	309	121	377	65	0
	TBM Assemble, First and Second Drive and Retrieval					
	TBM Assembly	401	117	317	62	0
	1st Retrieval and reasseambly TBM	401	118	317	63	0
	2nd Retrieval of TBM	401	118	317	63	0
	Overall Noise Level (Phase II), Leq (30min), dB(A)					

Construction Activity	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	49	50	51	52	53	54	55	56	57	58	59	60
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging			68									
Rockfill to temporary seawall				68								
Temporary Seawall Construction					68	68						
Filling behind temporary seawall							68					
Diaphragm Wall Construction								64	64	64	64	
Soil Excavation												63
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	68	68	68	68	68	64	64	64	64	63

Construction Activity	2018 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	61	62	63	64	65	66	67	68	69	70	71	72
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation	63											
Tunnel Box Construction		63	63	63	63							
Backfilling						64	64	64				
Diaphragm Wall Removal						64	64	64				
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	63	63	63	63	63	67	67	67	-	-	-	-

Construction Activity	2019 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	73	74	75	76	77	78	79	80	81	82	83	84
Construction of cut and cover tunnel section (inside breakwater - SCL 3.2)												
Dredging												
Rockfill to temporary seawall												
Temporary Seawall Construction												
Filling behind temporary seawall												
Diaphragm Wall Construction												
Soil Excavation												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
SOV Construction												
Installing Hoarding												
Demolition of existing POC building												
Diaphragm Wall Construction												
Excavation work at SOV												
Construction of TBM launching shaft / SOV												
SOV Construction												
Construction of cut and cover tunnel section (SCL 1.4)												
Diaphragm Wall Construction												
Excavation Works												
Tunnel Box Construction												
Backfilling												
Diaphragm Wall Removal												
New POC Construction												
Piling: 610mm Diameter Pre-Bored H-Pile (Without SOV Basement)												
Construction of new POC building												
E&M Installation												
Dismantle Hoarding												
Reconstruct of Percival Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of portion of existing footbridge												
Removal of clased and potential clased piles												
Reconstruction of permanent footbridge												
Temporary bridge removal and reinstate landscaping												
Underpinning of Canal Road Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of pre-bored H-piles												
Construct new pile cap and ground beams												
Backfill and reinstatement												
Diversion of Canal Road Culvert & Removal of Piles												
Site clearance and hoarding and utility diversion												
Culvert diversion												
Remove of piles												
Pile Removal at Wan Shing Street Footbridge												
Site clearance and hoarding and utility diversion												
Construction of new footbridge												
SubArea 1 (Work Site 30401)												
SubArea 2 (Work Site 30402)												
Demolition of existing footbridge												
Removal of piles for existing footbridge & abandoned box culvert												
Reinstatement												
Underpinning of Pier of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Underpinning of Abutment of Causeway Flyover												
Site clearance and hoarding and utility diversion												
Excavation and construction of new piles												
Construct pile cap												
Remove piles												
Backfill and reinstatement												
Grouting Work for DSD 1.8m Truck Sewers												
Site clearance and hoarding and utility diversion												
Temp Access Shaft - Diaphragm wall												
Temp Access Shaft - Excavation												
Grouting from within the shaft												
Backfilling and Reinstatement												
Demolition & Reprovisioning of Cross Harbour Tunnel Footbridge												
Site clearance and hoarding and utility diversion												
Construction of temporary footbridge												
Demolish of existing footbridge												
TBM Assemble, First and Second Drive and Retrieval												
TBM Assembly												
1st Retrieval and reasseambly TBM												
2nd Retrieval of TBM												
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

EX1 - Causeway Centre, Block A

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening
07 EXH	**Temporary PTI Construction**					
	Temporary PTI Construction	208	110	257	57	0
	EXH Structure					
	(i) At Harbour Road Sports Centre / Wan Chai Swimming Pool					
	Site Hoarding Erection	205	114	41	77	0
	Demolition of staircase & relocation of oil tank [5]	210	121	89	77	0
	Demolition of staircase of existing FB linking Causeway Center and Harbour Centre [5]	207	121	48	83	0
	Demolition of elevated walkway to Harbour Road Sports Centre [5]	209	124	63	83	0
	Temporary filtration plant room construction	203	115	97	71	-5
	Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre [5]	206	121	72	79	0
	Piling works for Phase 1 structure	205	121	41	84	0
	Superstructure for Phase 1 structure	205	118	41	80	0
	Piling works for Phase 2 structure	205	121	41	84	0
	Superstructure for Phase 2 structure	205	115	41	77	0
	Roof Truss Installation	205	111	41	74	0
	Roof Truss Erection	205	108	41	70	0
	E&M Installation	205	110	41	73	0
	Installing Hoarding	203	108	97	64	-5
	Demolition of Harbour Road Sports Centre & Wan Chai Swimming Pool	203	124	97	79	-5
	Pile Removal	203	122	97	77	-5
	Diaphragm Wall Construction	203	116	97	71	-5
	Excavation	203	125	97	80	0
	Construction of Internal Structures of Box Station	203	125	97	80	0
	Construction of Station Box Roof Slab	203	117	97	72	-5
	Construction of Entrance and Vent Shafts	203	117	97	73	-5
	Backfilling and Reinstatement	203	118	97	73	-5
	(ii) At PTI Area					
	Site Hoarding Erection and utility diversion	202	116	126	69	-5
	Construction of temporary Wan Chai Ferry Pier footbridge	202	120	126	73	-5
	Demolition of existing Wan Chai Ferry Pier footbridge	202	121	126	74	-5
	Diaphragm Wall Construction	202	117	126	70	-5
	Roof Slab Construction	202	117	126	70	-5
	Excavation	202	125	126	78	0
	Construction of Internal Structures of Box Station	202	125	126	78	0
	Construction of Entrance and Vent Shafts	202	117	126	70	-5
	Construction of Station Box Roof Slab	202	117	126	70	-5
	Backfilling and Reinstatement	202	118	126	71	-5
	Site Hoarding Erection and utility diversion	202	116	126	69	-5
	walkway system	202	123	126	76	-5
	Deck construction for new FB linking to existing Wan Chai elevated walkway system	202	119	126	72	-5
	Backfilling and Reinstatement	202	118	126	71	-5
	(iii) At Fleming Road					
	Site Hoarding Erection	201	114	249	61	-5
	Diaphragm Wall Construction	201	117	249	64	-5
	Roof Slab Construction	201	117	249	64	-5
	Utility diversion	201	112	249	59	-5
	Excavation	201	125	249	72	0
	Construction of Internal Structures of Box Station	201	125	249	72	0
	Construction of Entrance and Vent Shafts	201	117	249	64	-5
	Construction of Station Box Roof Slab	201	117	249	64	-5
	(iv) At Wan Chai Sports Ground/ Tonnochy Road Area					
	Site Clearance, Fencing and Hoarding	204	117	127	70	0
	Demolition & temporary re-provision of grandstand	204	118	127	71	0
	Diaphragm Wall Construction	204	116	127	69	0
	King Post Construction	204	113	127	66	0
	Excavation	204	118	127	71	0
	Retrieval of TBM (1st drive)	204	118	127	71	0
	Retrieval of TBM (2nd drive)	204	118	127	71	0
	Construction of Station Box Roof Slab	204	117	127	69	0
	Construction of Internal Structures of Box Station	204	118	127	71	0
	Re-provision of WCSP grandstand	204	117	127	69	0
Barging Point	**Barging Point at Wan Chai Ex-PCWA**					
	Spoil Removal	211	119	270	66	0
	Overall Noise Level (Phase II), Leq (30min), dB(A)					

Construction Activity	2013 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	1	2	3	4	5	6	7	8	9	10	11	12
Temporary PTI Construction							57	57	57			
Site Hoarding Erection						77						
Demolition of staircase & relocation of oil tank [5]							77					
Demolition of staircase of existing FB linking Causeway Center and Harbour Centre [5]							83					
Demolition of elevated walkway to Harbour Road Sports Centre [5]							83					
Temporary filtration plant room construction							66	66	66	66	66	66
Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre [5]							79					
Piling works for Phase 1 structure							84	84	84	84	84	
Superstructure for Phase 1 structure												80
Piling works for Phase 2 structure												
Superstructure for Phase 2 structure												
Roof Truss Installation												
Roof Truss Erection												
E&M Installation												
Installing Hoarding												
Demolition of Harbour Road Sports Centre & Wan Chai Swimming Pool												
Pile Removal												
Diaphragm Wall Construction												
Excavation												
Construction of Internal Structures of Box Station												
Construction of Station Box Roof Slab												
Construction of Entrance and Vent Shafts												
Backfilling and Reinstatement												
Site Hoarding Erection and utility diversion					64	64						
Construction of temporary Wan Chai Ferry Pier footbridge							68	68	68	68	68	
Demolition of existing Wan Chai Ferry Pier footbridge												69
Diaphragm Wall Construction										65	65	65
Roof Slab Construction												
Excavation												
Construction of Internal Structures of Box Station												
Construction of Entrance and Vent Shafts												
Construction of Station Box Roof Slab												
Backfilling and Reinstatement												
Site Hoarding Erection and utility diversion												
walkway system												
Deck construction for new FB linking to existing Wan Chai elevated walkway system												
Backfilling and Reinstatement												
Site Hoarding Erection												
Diaphragm Wall Construction												
Roof Slab Construction												
Utility diversion												
Excavation												
Construction of Internal Structures of Box Station												
Construction of Entrance and Vent Shafts												
Construction of Station Box Roof Slab												
Site Clearance, Fencing and Hoarding												
Demolition & temporary re-provision of grandstand												
Diaphragm Wall Construction												
King Post Construction												
Excavation												
Retrieval of TBM (1st drive)												
Retrieval of TBM (2nd drive)												
Construction of Station Box Roof Slab												
Construction of Internal Structures of Box Station												
Re-provision of WCSP grandstand												
Spoil Removal												
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	64	77	87	84	84	84	84	81

Construction Activity	2014 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	13	14	15	16	17	18	19	20	21	22	23	24
Temporary PTI Construction												
Site Hoarding Erection												
Demolition of staircase & relocation of oil tank [5]												
Demolition of staircase of existing FB linking Causeway Center and Harbour Centre [5]												
Demolition of elevated walkway to Harbour Road Sports Centre [5]												
Temporary filtration plant room construction	66	66	66	66								
Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre [5]												
Piling works for Phase 1 structure												
Superstructure for Phase 1 structure	80	80	80	80	80	80	80	80	80	80	80	80
Piling works for Phase 2 structure						84	84					
Superstructure for Phase 2 structure								77	77	77	77	77
Roof Truss Installation												
Roof Truss Erection												
E&M Installation										73	73	73
Installing Hoarding												
Demolition of Harbour Road Sports Centre & Wan Chai Swimming Pool												
Pile Removal												
Diaphragm Wall Construction												
Excavation												
Construction of Internal Structures of Box Station												
Construction of Station Box Roof Slab												
Construction of Entrance and Vent Shafts												
Backfilling and Reinstatement												
Site Hoarding Erection and utility diversion												
Construction of temporary Wan Chai Ferry Pier footbridge												
Demolition of existing Wan Chai Ferry Pier footbridge												
Diaphragm Wall Construction	65	65	65	65	65	65	65					
Roof Slab Construction								65	65	65	65	65
Excavation												
Construction of Internal Structures of Box Station												
Construction of Entrance and Vent Shafts												
Construction of Station Box Roof Slab												
Backfilling and Reinstatement												
Site Hoarding Erection and utility diversion												
walkway system												
Deck construction for new FB linking to existing Wan Chai elevated walkway system												
Backfilling and Reinstatement												
Site Hoarding Erection												
Diaphragm Wall Construction												
Roof Slab Construction												
Utility diversion												
Excavation												
Construction of Internal Structures of Box Station												
Construction of Entrance and Vent Shafts												
Construction of Station Box Roof Slab												
Site Clearance, Fencing and Hoarding				70								
Demolition & temporary re-provision of grandstand					71	71	71	71	71			
Diaphragm Wall Construction										69	69	69
King Post Construction												
Excavation												
Retrieval of TBM (1st drive)												
Retrieval of TBM (2nd drive)												
Construction of Station Box Roof Slab												
Construction of Internal Structures of Box Station												
Re-provision of WCSP grandstand												
Spoil Removal												
Overall Noise Level (Phase II), Leq (30min), dB(A)	80	80	80	81	81	86	86	82	82	83	83	83

Construction Activity	2015 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	25	26	27	28	29	30	31	32	33	34	35	36
Temporary PTI Construction												
Site Hoarding Erection												
Demolition of staircase & relocation of oil tank [5]												
Demolition of staircase of existing FB linking Causeway Center and Harbour Centre [5]												
Demolition of elevated walkway to Harbour Road Sports Centre [5]												
Temporary filtration plant room construction												
Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre [5]												
Piling works for Phase 1 structure												
Superstructure for Phase 1 structure												
Piling works for Phase 2 structure												
Superstructure for Phase 2 structure	77	77										
Roof Truss Installation		74										
Roof Truss Erection		70										
E&M Installation	73	73	73	73	73	73	73	73	73			
Installing Hoarding											59	
Demolition of Harbour Road Sports Centre & Wan Chai Swimming Pool												74
Pile Removal												
Diaphragm Wall Construction												
Excavation												
Construction of Internal Structures of Box Station												
Construction of Station Box Roof Slab												
Construction of Entrance and Vent Shafts												
Backfilling and Reinstatement												
Site Hoarding Erection and utility diversion												
Construction of temporary Wan Chai Ferry Pier footbridge												
Demolition of existing Wan Chai Ferry Pier footbridge												
Diaphragm Wall Construction												
Roof Slab Construction	65	65	65	65	65	65	65					
Excavation					78	78	78	78	78	78	78	78
Construction of Internal Structures of Box Station												
Construction of Entrance and Vent Shafts												
Construction of Station Box Roof Slab												
Backfilling and Reinstatement												
Site Hoarding Erection and utility diversion												
walkway system												
Deck construction for new FB linking to existing Wan Chai elevated walkway system												
Backfilling and Reinstatement												
Site Hoarding Erection												
Diaphragm Wall Construction												
Roof Slab Construction												
Utility diversion												
Excavation												
Construction of Internal Structures of Box Station												
Construction of Entrance and Vent Shafts												
Construction of Station Box Roof Slab												
Site Clearance, Fencing and Hoarding												
Demolition & temporary re-provision of grandstand												
Diaphragm Wall Construction	69	69	69	69								
King Post Construction					66	66	66					
Excavation								71	71	71	71	
Retrieval of TBM (1st drive)												
Retrieval of TBM (2nd drive)												
Construction of Station Box Roof Slab												
Construction of Internal Structures of Box Station												
Re-provision of WCSP grandstand												
Spoil Removal	66	66	66	66	66	66	66	66	66	66	66	66
Overall Noise Level (Phase II), Leq (30min), dB(A)	79	81	75	75	80	80	80	80	80	79	79	80

Construction Activity	2016 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	37	38	39	40	41	42	43	44	45	46	47	48
Temporary PTI Construction												
Site Hoarding Erection												
Demolition of staircase & relocation of oil tank [5]												
Demolition of staircase of existing FB linking Causeway Center and Harbour Centre [5]												
Demolition of elevated walkway to Harbour Road Sports Centre [5]												
Temporary filtration plant room construction												
Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre [5]												
Piling works for Phase 1 structure												
Superstructure for Phase 1 structure												
Piling works for Phase 2 structure												
Superstructure for Phase 2 structure												
Roof Truss Installation												
Roof Truss Erection												
E&M Installation												
Installing Hoarding												
Demolition of Harbour Road Sports Centre & Wan Chai Swimming Pool	74											
Pile Removal	72	72										
Diaphragm Wall Construction	66	66	66	66								
Excavation					80	80	80	80	80			
Construction of Internal Structures of Box Station										80	80	80
Construction of Station Box Roof Slab												67
Construction of Entrance and Vent Shafts												
Backfilling and Reinstatement												
Site Hoarding Erection and utility diversion												
Construction of temporary Wan Chai Ferry Pier footbridge												
Demolition of existing Wan Chai Ferry Pier footbridge												
Diaphragm Wall Construction												
Roof Slab Construction												
Excavation												
Construction of Internal Structures of Box Station	78	78	78	78	78							
Construction of Entrance and Vent Shafts				65	65	65	65					
Construction of Station Box Roof Slab						65	65	65	65			
Backfilling and Reinstatement												
Site Hoarding Erection and utility diversion												
walkway system												
Deck construction for new FB linking to existing Wan Chai elevated walkway system												
Backfilling and Reinstatement												
Site Hoarding Erection								56				
Diaphragm Wall Construction									59	59	59	59
Roof Slab Construction												
Utility diversion												
Excavation												
Construction of Internal Structures of Box Station												
Construction of Entrance and Vent Shafts												
Construction of Station Box Roof Slab												
Site Clearance, Fencing and Hoarding												
Demolition & temporary re-provision of grandstand												
Diaphragm Wall Construction												
King Post Construction												
Excavation												
Retrieval of TBM (1st drive)											71	
Retrieval of TBM (2nd drive)												
Construction of Station Box Roof Slab												
Construction of Internal Structures of Box Station												
Re-provision of WCSP grandstand												
Spoil Removal	66	66	66	66	66	66	66	66	66	66	66	66
Overall Noise Level (Phase II), Leq (30min), dB(A)	80	79	79	79	82	80	80	80	80	80	81	80

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

EX1 - Causeway Centre, Block A

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist (m) [2]	SPL [3]	Building Screening
07 EXH	**Temporary PTI Construction**					
	Temporary PTI Construction	208	110	257	57	0
	EXH Structure					
	(i) At Harbour Road Sports Centre / Wan Chai Swimming Pool					
	Site Hoarding Erection	205	114	41	77	0
	Demolition of staircase & relocation of oil tank [5]	210	121	89	77	0
	Demolition of staircase of existing FB linking Causeway Center and Harbour Centre [5]	207	121	48	83	0
	Demolition of elevated walkway to Harbour Road Sports Centre [5]	209	124	63	83	0
	Temporary filtration plant room construction	203	115	97	71	-5
	Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre [5]	206	121	72	79	0
	Piling works for Phase 1 structure	205	121	41	84	0
	Superstructure for Phase 1 structure	205	118	41	80	0
	Piling works for Phase 2 structure	205	121	41	84	0
	Superstructure for Phase 2 structure	205	115	41	77	0
	Roof Truss Installation	205	111	41	74	0
	Roof Truss Erection	205	108	41	70	0
	E&M Installation	205	110	41	73	0
	Installing Hoarding	203	108	97	64	-5
	Demolition of Harbour Road Sports Centre & Wan Chai Swimming Pool	203	124	97	79	-5
	Pile Removal	203	122	97	77	-5
	Diaphragm Wall Construction	203	116	97	71	-5
	Excavation	203	125	97	80	0
	Construction of Internal Structures of Box Station	203	125	97	80	0
	Construction of Station Box Roof Slab	203	117	97	72	-5
	Construction of Entrance and Vent Shafts	203	117	97	73	-5
	Backfilling and Reinstatement	203	118	97	73	-5
	(ii) At PTI Area					
	Site Hoarding Erection and utility diversion	202	116	126	69	-5
	Construction of temporary Wan Chai Ferry Pier footbridge	202	120	126	73	-5
	Demolition of existing Wan Chai Ferry Pier footbridge	202	121	126	74	-5
	Diaphragm Wall Construction	202	117	126	70	-5
	Roof Slab Construction	202	117	126	70	-5
	Excavation	202	125	126	78	0
	Construction of Internal Structures of Box Station	202	125	126	78	0
	Construction of Entrance and Vent Shafts	202	117	126	70	-5
	Construction of Station Box Roof Slab	202	117	126	70	-5
	Backfilling and Reinstatement	202	118	126	71	-5
	Site Hoarding Erection and utility diversion	202	116	126	69	-5
	walkway system	202	123	126	76	-5
	Deck construction for new FB linking to existing Wan Chai elevated walkway system	202	119	126	72	-5
	Backfilling and Reinstatement	202	118	126	71	-5
	(iii) At Fleming Road					
	Site Hoarding Erection	201	114	249	61	-5
	Diaphragm Wall Construction	201	117	249	64	-5
	Roof Slab Construction	201	117	249	64	-5
	Utility diversion	201	112	249	59	-5
	Excavation	201	125	249	72	0
	Construction of Internal Structures of Box Station	201	125	249	72	0
	Construction of Entrance and Vent Shafts	201	117	249	64	-5
	Construction of Station Box Roof Slab	201	117	249	64	-5
	(iv) At Wan Chai Sports Ground/ Tonnochy Road Area					
	Site Clearance, Fencing and Hoarding	204	117	127	70	0
	Demolition & temporary re-provision of grandstand	204	118	127	71	0
	Diaphragm Wall Construction	204	116	127	69	0
	King Post Construction	204	113	127	66	0
	Excavation	204	118	127	71	0
	Retrieval of TBM (1st drive)	204	118	127	71	0
	Retrieval of TBM (2nd drive)	204	118	127	71	0
	Construction of Station Box Roof Slab	204	117	127	69	0
	Construction of Internal Structures of Box Station	204	118	127	71	0
	Re-provision of WCSP grandstand	204	117	127	69	0
Barging Point	**Barging Point at Wan Chai Ex-PCWA**					
	Spoil Removal	211	119	270	66	0
	Overall Noise Level (Phase II), Leq (30min), dB(A)					

Construction Activity	2017 Jan (49)	Feb (50)	Mar (51)	Apr (52)	May (53)	Jun (54)	Jul (55)	Aug (56)	Sep (57)	Oct (58)	Nov (59)	Dec (60)
Temporary PTI Construction												
Site Hoarding Erection												
Demolition of staircase & relocation of oil tank [5]												
Demolition of staircase of existing FB linking Causeway Center and Harbour Centre [5]												
Demolition of elevated walkway to Harbour Road Sports Centre [5]												
Temporary filtration plant room construction												
Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre [5]												
Piling works for Phase 1 structure												
Superstructure for Phase 1 structure												
Piling works for Phase 2 structure												
Superstructure for Phase 2 structure												
Roof Truss Installation												
Roof Truss Erection												
E&M Installation												
Installing Hoarding												
Demolition of Harbour Road Sports Centre & Wan Chai Swimming Pool												
Pile Removal												
Diaphragm Wall Construction												
Excavation												
Construction of Internal Structures of Box Station	80											
Construction of Station Box Roof Slab	67	67										
Construction of Entrance and Vent Shafts	68	68	68									
Backfilling and Reinstatement				68	68	68	68	68	68	68	68	
Site Hoarding Erection and utility diversion												
Construction of temporary Wan Chai Ferry Pier footbridge												
Demolition of existing Wan Chai Ferry Pier footbridge												
Diaphragm Wall Construction												
Roof Slab Construction												
Excavation												
Construction of Internal Structures of Box Station												
Construction of Entrance and Vent Shafts												
Construction of Station Box Roof Slab												
Backfilling and Reinstatement											66	66
Site Hoarding Erection and utility diversion						64	64					
walkway system								71	71	71		
Deck construction for new FB linking to existing Wan Chai elevated walkway system											67	67
Backfilling and Reinstatement												
Site Hoarding Erection												
Diaphragm Wall Construction	59											
Roof Slab Construction		59	59	59	59	59	59					
Utility diversion								54	54	54	54	
Excavation												72
Construction of Internal Structures of Box Station												
Construction of Entrance and Vent Shafts												
Construction of Station Box Roof Slab												
Site Clearance, Fencing and Hoarding												
Demolition & temporary re-provision of grandstand												
Diaphragm Wall Construction												
King Post Construction												
Excavation												
Retrieval of TBM (1st drive)												
Retrieval of TBM (2nd drive)								71				
Construction of Station Box Roof Slab									69	69	69	69
Construction of Internal Structures of Box Station												
Re-provision of WCSP grandstand												
Barging Point at Wan Chai Ex-PCWA												
Spoil Removal	66	66	66	66	66	66	66	66	66	66	66	66
Overall Noise Level (Phase II), Leq (30min), dB(A)	81	72	70	70	70	71	71	76	75	75	74	76

Construction Activity	2018 Jan (61)	Feb (62)	Mar (63)	Apr (64)	May (65)	Jun (66)	Jul (67)	Aug (68)	Sep (69)	Oct (70)	Nov (71)	Dec (72)
Temporary PTI Construction												
Site Hoarding Erection												
Demolition of staircase & relocation of oil tank [5]												
Demolition of staircase of existing FB linking Causeway Center and Harbour Centre [5]												
Demolition of elevated walkway to Harbour Road Sports Centre [5]												
Temporary filtration plant room construction												
Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre [5]												
Piling works for Phase 1 structure												
Superstructure for Phase 1 structure												
Piling works for Phase 2 structure												
Superstructure for Phase 2 structure												
Roof Truss Installation												
Roof Truss Erection												
E&M Installation												
Installing Hoarding												
Demolition of Harbour Road Sports Centre & Wan Chai Swimming Pool												
Pile Removal												
Diaphragm Wall Construction												
Excavation												
Construction of Internal Structures of Box Station												
Construction of Station Box Roof Slab												
Construction of Entrance and Vent Shafts												
Backfilling and Reinstatement												
Site Hoarding Erection and utility diversion												
walkway system												
Deck construction for new FB linking to existing Wan Chai elevated walkway system												
Backfilling and Reinstatement	66											
Site Hoarding Erection												
Diaphragm Wall Construction												
Roof Slab Construction												
Utility diversion												
Excavation	72	72	72	72								
Construction of Internal Structures of Box Station						72	72	72	72			
Construction of Entrance and Vent Shafts								59	59	59		
Construction of Station Box Roof Slab									59	59	59	
Site Clearance, Fencing and Hoarding												
Demolition & temporary re-provision of grandstand												
Diaphragm Wall Construction												
King Post Construction												
Excavation												
Retrieval of TBM (1st drive)												
Retrieval of TBM (2nd drive)												
Construction of Station Box Roof Slab												
Construction of Internal Structures of Box Station	71	71	71	71								
Re-provision of WCSP grandstand					69	69	69	69				
Barging Point at Wan Chai Ex-PCWA												
Spoil Removal	66	66	66	66	66	66	66	66	66			
Overall Noise Level (Phase II), Leq (30min), dB(A)	76	76	76	75	74	75	75	71	67	-	-	-

Construction Activity	2019 Jan (73)	Feb (74)	Mar (75)	Apr (76)	May (77)	Jun (78)	Jul (79)	Aug (80)	Sep (81)	Oct (82)	Nov (83)	Dec (84)
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

EX5 - The Hong Kong Academy for Performing Arts (Open Arena)

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening
	Demolition of Fleet Arcade					
05 ADM to Shaft	Site Clearance	001	121	63	80	0
	Site Hoarding Erection	001	114	63	73	0
	Demolition of Fleet Arcade	001	121	63	80	0
	Pile Removal	001	122	63	81	0
	Demolition of Pump House and Pile Removal at West Sewage Sreening Plant					
	Site Formation	002	121	80	78	0
	Site Hoarding Erection	002	114	80	71	0
	Demolition of Pump House and Pile Removal	002	122	80	79	0
	TTMS & Lung King Street Culvert Diversion & Associated Pile Removal & Reinstatement					
	Site Formation	002	121	80	78	0
	Site Hoarding Erection	002	114	80	71	0
	Pile Removal and Reinstatement	002	122	80	79	0
	Reinstatement of Fleet Arcade					
	Foundation and Superstructure Construction	001	119	63	78	0
	Convention Avenue Launching Shaft Construction					
	Site Formation	003	121	154	72	0
	Site Hoarding Erection	003	114	154	65	0
	Diaphragm Wall Excavation	003	115	154	66	0
	Diaphragm Wall Reinforcement Fixing and Concrete Casting	003	116	154	67	0
	Shaft Excavation	003	118	154	69	0
	TBM Assembly	003	117	154	68	0
	TWL protection works from U/Track	003	120	154	71	0
	Retrieve & reasseamble TBM, Second Drive (D/Track), 2nd retrieval	003	118	154	70	0
	Completion of Structure after TBM retieval	003	113	154	64	0
	Backfilling and Reinstatement	003	117	154	68	0
06 EXH to Shaft	**Tunnel at West to EXH**					
	Site Formation	102	120	380	64	0
	Site Hoarding Erection	102	114	380	58	0
	Excavation and Tunnel Box Structure Construction					
	Excavation inside SCL tunnels protection works	101	118	281	64	-5
	Tunnel Box Structure Construction	101	115	281	61	-5
	Diaphragm Wall Construction	102	114	380	58	0
	Excavation and Tunnel Box Structure Construction					
	Excavation	102	118	380	61	0
	Tunnel Box Structure Construction	102	115	380	59	0
	Backfilling and Superstructure (including EAP)	102	117	380	60	0

Construction Activity	2013 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2014 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Demolition of Fleet Arcade																								
Site Clearance																		80	80					
Site Hoarding Erection																				73				
Demolition of Fleet Arcade																					80	80	80	80
Pile Removal																								
Demolition of Pump House and Pile Removal at West Sewage Sreening Plant																								
Site Formation																78	78							
Site Hoarding Erection																		71						
Demolition of Pump House and Pile Removal																			79	79	79			
TTMS & Lung King Street Culvert Diversion & Associated Pile Removal & Reinstatement																								
Site Formation																			78					
Site Hoarding Erection																				71				
Pile Removal and Reinstatement																					79	79	79	79
Reinstatement of Fleet Arcade																								
Foundation and Superstructure Construction																								
Convention Avenue Launching Shaft Construction																								
Site Formation															72	72								
Site Hoarding Erection																	65							
Diaphragm Wall Excavation																		66	66	66	66	66		
Diaphragm Wall Reinforcement Fixing and Concrete Casting																		67	67	67	67	67		
Shaft Excavation																							69	69
TBM Assembly																								
TWL protection works from U/Track																								
Retrieve & reasseamble TBM, Second Drive (D/Track), 2nd retrieval																								
Completion of Structure after TBM retieval																								
Backfilling and Reinstatement																								
Tunnel at West to EXH																								
Site Formation																								
Site Hoarding Erection																								
Excavation and Tunnel Box Structure Construction																								
Excavation inside SCL tunnels protection works																								
Tunnel Box Structure Construction																								
Diaphragm Wall Construction																								
Excavation and Tunnel Box Structure Construction																								
Excavation																								
Tunnel Box Structure Construction																								
Backfilling and Superstructure (including EAP)																								
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	79	78	81	84	81	84	83	83	83

Construction Activity	2015 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2016 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Demolition of Fleet Arcade																								
Site Clearance																								
Site Hoarding Erection																								
Demolition of Fleet Arcade	80																							
Pile Removal		81																						
Demolition of Pump House and Pile Removal at West Sewage Sreening Plant																								
Site Formation																								
Site Hoarding Erection																								
Demolition of Pump House and Pile Removal																								
TTMS & Lung King Street Culvert Diversion & Associated Pile Removal & Reinstatement																								
Site Formation																								
Site Hoarding Erection																								
Pile Removal and Reinstatement	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	
Reinstatement of Fleet Arcade																								
Foundation and Superstructure Construction																								
Convention Avenue Launching Shaft Construction																								
Site Formation																								
Site Hoarding Erection																								
Diaphragm Wall Excavation																								
Diaphragm Wall Reinforcement Fixing and Concrete Casting																								
Shaft Excavation	69	69	69	69	69	69	69	69																
TBM Assembly																	68	68	68	68	68	68	68	
TWL protection works from U/Track																					71	71	71	
Retrieve & reasseamble TBM, Second Drive (D/Track), 2nd retrieval																								70
Completion of Structure after TBM retieval																								
Backfilling and Reinstatement																								
Tunnel at West to EXH																								
Site Formation																								
Site Hoarding Erection																								
Excavation and Tunnel Box Structure Construction																								
Excavation inside SCL tunnels protection works									59	59	59	59	59	59	59	59								
Tunnel Box Structure Construction																	56	56	56	56	56	56		
Diaphragm Wall Construction																								
Excavation and Tunnel Box Structure Construction																								
Excavation																								
Tunnel Box Structure Construction																								
Backfilling and Superstructure (including EAP)																								
Overall Noise Level (Phase II), Leq (30min), dB(A)	83	83	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	80	80	80	70

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

EX5 - The Hong Kong Academy for Performing Arts (Open Arena)

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist (m) [2]	SPL [3]	Building Screening	2017												2018												2019											
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
	Demolition of Fleet Arcade																																									
05 ADM to Shaft	Site Clearance	001	121	63	80	0																																				
	Site Hoarding Erection	001	114	63	73	0																																				
	Demolition of Fleet Arcade	001	121	63	80	0																																				
	Pile Removal	001	122	63	81	0																																				
	Demolition of Pump House and Pile Removal at West Sewage Sreening Plant																																									
	Site Formation	002	121	80	78	0																																				
	Site Hoarding Erection	002	114	80	71	0																																				
	Demolition of Pump House and Pile Removal	002	122	80	79	0																																				
	TTMS & Lung King Street Culvert Diversion & Associated Pile Removal & Reinstatement																																									
	Site Formation	002	121	80	78	0																																				
	Site Hoarding Erection	002	114	80	71	0																																				
	Pile Removal and Reinstatement	002	122	80	79	0																																				
	Reinstatement of Fleet Arcade																																									
	Foundation and Superstructure Construction	001	119	63	78	0	78	78	78	78	78	78	78	78	78	78	78																									
	Convention Avenue Launching Shaft Construction																																									
	Site Formation	003	121	154	72	0																																				
	Site Hoarding Erection	003	114	154	65	0																																				
	Diaphragm Wall Excavation	003	115	154	66	0																																				
	Diaphragm Wall Reinforcement Fixing and Concrete Casting	003	116	154	67	0																																				
	Shaft Excavation	003	118	154	69	0																																				
	TBM Assembly	003	117	154	68	0																																				
	TWL protection works from U/Track	003	120	154	71	0																																				
	Retrieve & reasseamble TBM, Second Drive (D/Track), 2nd retrieval	003	118	154	70	0	70	70	70	70	70	70	70	70	70																											
	Completion of Structure after TBM retieval	003	113	154	64	0										64	64	64	64																							
	Backfilling and Reinstatement	003	117	154	68	0		68	68	68	68	68	68	68	68	68	68	68	68																							
06 EXH to Shaft	**Tunnel at West to EXH**																																									
	Site Formation	102	120	380	64	0																																				
	Site Hoarding Erection	102	114	380	58	0																																				
	Excavation and Tunnel Box Structure Construction																																									
	Excavation inside SCL tunnels protection works	101	118	281	64	-5																																				
	Tunnel Box Structure Construction	101	115	281	61	-5																																				
	Diaphragm Wall Construction	102	114	380	58	0																																				
	Excavation and Tunnel Box Structure Construction																																									
	Excavation	102	118	380	61	0																																				
	Tunnel Box Structure Construction	102	115	380	59	0																																				
	Backfilling and Superstructure (including EAP)	102	117	380	60	0																																				
	Overall Noise Level (Phase II), Leq (30min), dB(A)						79	79	79	79	79	79	79	79	79	79	79	69	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

[5] Construction activities would not be conducted simultaneously, therefore max SPL among these activities would be used for calcualtion of that particular month. These activities include: Demolition of staircase & relocation of oil tank, Demolition of staircase of exisitng FB linking Causeway Center and Harbour Centre, Demolition of elevated walkway to Harbour Road Sports Centre and Demolition of staircase of existing FB across Harbour Road near Sun Hung Kei Centre in month 31.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

AD1 - Ching Yi to Barrack Paget House

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening	2013												2014												2015												2016											
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
03 Hong Kong Park Ventilation Building	**Overrun Tunnel**																																																					
	ADM overrun tunnel (drill and blast)	000	123	315	68	0																																																
	ADM overrun tunnel linning works	000	112	315	57	0																																																
	Aboveground works and reinstatement	000	127	315	72	0																																																
Contract 1124 - ADM Works for SCL	**ADM Works**																																																					
	Spoil Removal	000a	125	230	73	0																															73	73	73	73	73	73	73	73	73	73	73	73						
	Aboveground works and reinstatement	000a	122	230	70	0																																																
	Demolition of Ventilation Shaft X	000a	123	230	71	0																																																
						Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	73	73	73	73	73	73	73	73	73	73	73	-	-	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

AD1 - Ching Yi to Barrack Paget House

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening	2017												2018												2019											
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
03 Hong Kong Park Ventilation Building	**Overrun Tunnel**																																									
	ADM overrun tunnel (drill and blast)	000	123	315	68	0																																				
	ADM overrun tunnel linning works	000	112	315	57	0																																				
	Aboveground works and reinstatement	000	127	315	72	0																																				
Contract 1124 - ADM Works for SCL	**ADM Works**																																									
	Spoil Removal	000a	125	230	73	0																																				
	Aboveground works and reinstatement	000a	122	230	70	0																									70	70	70	70	70	70	70					
	Demolition of Ventilation Shaft X	000a	123	230	71	0																				71	71	71	71	71												
	Overall Noise Level (Phase II), Leq (30min), dB(A)						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71	71	71	71	71	70	70	70	70	70	70	70	-	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

AD2 - Regent on the Park

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist (m) [2]	SPL [3]	Building Screening
03 Hong Kong Park Ventilation Building	**Overrun Tunnel**					
	ADM overrun tunnel (drill and blast)	000	123	76	81	0
	ADM overrun tunnel linning works	000	112	76	69	0
	Aboveground works and reinstatement	000	127	76	85	0
Contract 1124 - ADM Works for SCL	**ADM Works**					
	Spoil Removal	000a	125	393	68	0
	Aboveground works and reinstatement	000a	122	393	65	0
	Demolition of Ventilation Shaft X	000a	123	393	66	0

	2013												2014												2015												2016											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
ADM overrun tunnel (drill and blast)																															81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	
ADM overrun tunnel linning works																																															69	69
Spoil Removal																																																
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	69

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

AD2 - Regent on the Park

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist (m) [2]	SPL [3]	Building Screening	2017												2018												2019											
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
03 Hong Kong Park Ventilation Building	**Overrun Tunnel**																																									
	ADM overrun tunnel (drill and blast)	000	123	76	81	0	69	69	69	69	69	69																														
	ADM overrun tunnel linning works	000	112	76	69	0						85	85	85	85	85	85	85	85	85	85																					
	Aboveground works and reinstatement	000	127	76	85	0																																				
Contract 1124 - ADM Works for SCL	**ADM Works**																																									
	Spoil Removal	000a	125	393	68	0																																				
	Aboveground works and reinstatement	000a	122	393	65	0																																				
	Demolition of Ventilation Shaft X	000a	123	393	66	0																																				
	Overall Noise Level (Phase II), Leq (30min), dB(A)						69	69	69	69	69	85	85	85	85	85	85	85	85	85	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

AD3 - Jockey Club New Life Hostel

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist (m) [2]	SPL [3]	Building Screening	2013												2014												2015												2016											
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
03 Hong Kong Park Ventilation Building	**Overrun Tunnel**																																																					
	ADM overrun tunnel (drill and blast)	000	123	102	78	0																															78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	
	ADM overrun tunnel linning works	000	112	102	67	0																																															67	67
	Aboveground works and reinstatement	000	127	102	82	0																																																
Contract 1124 - ADM Works for SCL	**ADM Works**																																																					
	Spoil Removal	000a	125	412	67	0																																																
	Aboveground works and reinstatement	000a	122	412	65	0																																																
	Demolition of Ventilation Shaft X	000a	123	412	66	0																																																
						Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	67

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

AD3 - Jockey Club New Life Hostel

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							49	50	51	52	53	54	55	56	57	58	59	60
03 Hong Kong Park Ventilation Building	**Overrun Tunnel**																	
	ADM overrun tunnel (drill and blast)	000	123	102	78	0												
	ADM overrun tunnel linning works	000	112	102	67	0	67	67	67	67	67	67						
	Aboveground works and reinstatement	000	127	102	82	0						82	82	82	82	82	82	82
Contract 1124 - ADM Works for SCL	**ADM Works**																	
	Spoil Removal	000a	125	412	67	0												
	Aboveground works and reinstatement	000a	122	412	65	0												
	Demolition of Ventilation Shaft X	000a	123	412	66	0												
	Overall Noise Level (Phase II), Leq (30min), dB(A)						67	67	67	67	67	82	82	82	82	82	82	82

Package	Construction Activity	2018 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		61	62	63	64	65	66	67	68	69	70	71	72
03 Hong Kong Park Ventilation Building	**Overrun Tunnel**												
	ADM overrun tunnel (drill and blast)												
	ADM overrun tunnel linning works												
	Aboveground works and reinstatement	82	82	82									
Contract 1124 - ADM Works for SCL	**ADM Works**												
	Spoil Removal												
	Aboveground works and reinstatement												
	Demolition of Ventilation Shaft X												
	Overall Noise Level (Phase II), Leq (30min), dB(A)	82	82	82	-	-	-	-	-	-	-	-	-

Package	Construction Activity	2019 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		73	74	75	76	77	78	79	80	81	82	83	84
03 Hong Kong Park Ventilation Building	**Overrun Tunnel**												
	ADM overrun tunnel (drill and blast)												
	ADM overrun tunnel linning works												
	Aboveground works and reinstatement												
Contract 1124 - ADM Works for SCL	**ADM Works**												
	Spoil Removal												
	Aboveground works and reinstatement												
	Demolition of Ventilation Shaft X												
	Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-

Remarks:

[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.

[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

TW1 - To Tei Wan Village

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist (m) [2]	SPL [3]	Building Screening
11 IMT	**Shek O Casting Basin**					
	Formation of Casting Basin at Shek O	702	121	385	65	-10
	Casting IMT units and Barging Point	702	117	385	60	-10
	Concrete Batching Plant	701	117	290	62	-10
	Overall Noise Level (Phase II), Leq (30min), dB(A)					

Construction Activity	2013												2014											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Shek O Casting Basin																								
Formation of Casting Basin at Shek O																								
Casting IMT units and Barging Point																								
Concrete Batching Plant																								
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Construction Activity	2015												2016											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Shek O Casting Basin																								
Formation of Casting Basin at Shek O																								
Casting IMT units and Barging Point																								
Concrete Batching Plant									52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
Overall Noise Level (Phase II), Leq (30min), dB(A)	-	-	-	-	-	-	-	-	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52

Remarks:
[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.
[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.

Appendix 9.4 Sample Calculation of Construction Noise Levels - Unmitigated Scenario

TW1 - To Tei Wan Village

Unmitigated

Package	Construction Activity	Work Site No. [1]	SWL	Dist [2] (m)	SPL [3]	Building Screening	2017												2018												2019											
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
11 IMT	**Shek O Casting Basin**																																									
	Formation of Casting Basin at Shek O	702	121	385	65	-10																																				
	Casting IMT units and Barging Point	702	117	385	60	-10																																				
	Concrete Batching Plant	701	117	290	62	-10	52	52	52																																	
	Overall Noise Level (Phase II), Leq (30min), dB(A)						52	52	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Remarks:
[1] The Works Area with length to width ratio exceeding 5 : 1 is divided into Subareas.
[2] Noise source at more than 300m from the sensitive receiver are not considered in the noise assessment due to large distance attenuation effect.

[3] For the calculation of sound pressure levels (SPL), the PMEs are assumed to be placed at the notional source position according to the "Technical Memorandum on Noise from Construction Work other than Percussive Piling" by EPD.