Appendix 4.6 Calculations of Construction Noise Levels without Mitigation Measures

NSR ID: N1a
NSR Description: Hong Kong Baptist Theological Seminary (HKBTS) Staff & Students Quarters
Landuse: Residential
No. of Storey: 6

Lowest Assessment Level, mPD [5]: 7.8

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	41	41		75												
2	Excavation and Lateral Support (ELS)	117	41	41			**80**	**80**	**80**									
3	Bulk Excavation	115	41	41				**78**	**78**	**78**								
4	Steel Fixing and Concreting of Structure	111	41	41						74	74	74	74	74				
5	Backfilling	109	41	41									72					
6	E&M Installations & Pipeworks	108	41	41									71	71	71	71		
7	Finishing and Landscape Works	114	41	41										**77**	**77**	**77**		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					**-**	75	**80**	**82**	**82**	**80**	74	74	**77**	**79**	**78**	**78**	**-**	**-**
Exceedance, dB(A)[4]:					-	0	5	7	7	5	0	0	2	4	3	3	-	-

Range, dB(A): 74 - 82

Middle Assessment Level, mPD [5]: 16.8

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	41	43		74												
2	Excavation and Lateral Support (ELS)	117	41	43			**80**	**80**	**80**									
3	Bulk Excavation	115	41	43				**78**	**78**	**78**								
4	Steel Fixing and Concreting of Structure	111	41	43						74	74	74	74	74				
5	Backfilling	109	41	43									72					
6	E&M Installations & Pipeworks	108	41	43									71	71	71	71		
7	Finishing and Landscape Works	114	41	43										**77**	**77**	**77**		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					**-**	74	**80**	**82**	**82**	**79**	74	74	**77**	**79**	**78**	**78**	**-**	**-**
Exceedance, dB(A)[4]:					-	0	5	7	7	4	0	0	2	4	3	3	-	-

Range, dB(A): 74 - 82

Highest Assessment Level, mPD [5]: 22.8

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	41	45		74												
2	Excavation and Lateral Support (ELS)	117	41	45			**79**	**79**	**79**									
3	Bulk Excavation	115	41	45				**77**	**77**	**77**								
4	Steel Fixing and Concreting of Structure	111	41	45						73	73	73	73	73				
5	Backfilling	109	41	45									71					
6	E&M Installations & Pipeworks	108	41	45									70	70	70	70		
7	Finishing and Landscape Works	114	41	45										**76**	**76**	**76**		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					**-**	74	**79**	**82**	**82**	**79**	73	73	**77**	**79**	**77**	**77**	**-**	**-**
Exceedance, dB(A)[4]:					-	0	4	7	7	4	0	0	2	4	2	2	-	-

Range, dB(A): 73 - 82

Notes:

[1] The notional source position is taken following the GW-TM.
Distance Attenuation in dB(A) = 20 log D + 8, where D is slant distance in metres.

[2] A +3 dB(A) façade correction was added to the predicted noise level to account for the façade effect at the NSR.

[3] **Bolded** values indicate exceedance of EIAO-TM noise criteria of 75 dB(A) for residential dwellings.
*Construction noise exceedances are predicted at the lowest, middle and highest assessment levels at representative NSR N1a & N1b (HKBTS Staff & Students Quarters). Based on the assessment results and distances of the other sensitive façade of the noise sensitive use - HKBTS Staff & Students Quarters - and the project site, it is estimated that construction noise exceedance would be expected at the sensitive facade facing Nin Ming Road under the unmitigated scenarios, affecting approximately <35 flats.

[4] The construction noise criteria for residential dwelling is 75dB(A).

[5] The floor to floor height of the NSR is assumed as 3m and the assessment levels adopted are 1.2m from the floor of the lowest, middle and highest storeys. The noise source is assumed at 5.5mPD.

Appendix 4.6 Calculations of Construction Noise Levels without Mitigation Measures

NSR ID: N1b
NSR Description: Hong Kong Baptist Theological Seminary (HKBTS) Staff & Students Quarters
Landuse: Residential
No. of Storey: 6

Lowest Assessment Level, mPD [5]: 7.8

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	32	32		**77**												
2	Excavation and Lateral Support (ELS)	117	32	32			**82**	**82**	**82**									
3	Bulk Excavation	115	32	32				**80**	**80**	**80**								
4	Steel Fixing and Concreting of Structure	111	32	32						**76**	**76**	**76**	**76**	**76**				
5	Backfilling	109	32	32									74					
6	E&M Installations & Pipeworks	108	32	32									73	73	73	73		
7	Finishing and Landscape Works	114	32	32										**79**	**79**	**79**		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					**-**	**77**	**82**	**84**	**84**	**82**	**76**	**76**	**79**	**82**	**80**	**80**	**-**	**-**
Exceedance, dB(A)[4]:					-	2	7	9	9	7	1	1	4	7	5	5	-	-

Range, dB(A): 76 - 84

Middle Assessment Level, mPD [5]: 16.8

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	32	34		**76**												
2	Excavation and Lateral Support (ELS)	117	32	34			**82**	**82**	**82**									
3	Bulk Excavation	115	32	34				**80**	**80**	**80**								
4	Steel Fixing and Concreting of Structure	111	32	34						**76**	**76**	**76**	**76**	**76**				
5	Backfilling	109	32	34									74					
6	E&M Installations & Pipeworks	108	32	34									73	73	73	73		
7	Finishing and Landscape Works	114	32	34										**79**	**79**	**79**		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					**-**	**76**	**82**	**84**	**84**	**81**	**76**	**76**	**79**	**81**	**80**	**80**	**-**	**-**
Exceedance, dB(A)[4]:					-	1	7	9	9	6	1	1	4	6	5	5	-	-

Range, dB(A): 76 - 84

Highest Assessment Level, mPD [5]: 22.8

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	32	36		**76**												
2	Excavation and Lateral Support (ELS)	117	32	36			**81**	**81**	**81**									
3	Bulk Excavation	115	32	36				**79**	**79**	**79**								
4	Steel Fixing and Concreting of Structure	111	32	36						75	75	75	75	75				
5	Backfilling	109	32	36									73					
6	E&M Installations & Pipeworks	108	32	36									72	72	72	72		
7	Finishing and Landscape Works	114	32	36										**78**	**78**	**78**		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					**-**	**76**	**81**	**83**	**83**	**81**	75	75	**78**	**81**	**79**	**79**	**-**	**-**
Exceedance, dB(A)[4]:					-	1	6	8	8	6	0	0	3	6	4	4	-	-

Range, dB(A): 75 - 83

Notes:

[1] The notional source position is taken following the GW-TM.
Distance Attenuation in dB(A) = 20 log D + 8, where D is slant distance in metres.

[2] A +3 dB(A) façade correction was added to the predicted noise level to account for the façade effect at the NSR.

[3] **Bolded** values indicate exceedance of EIAO-TM noise criteria of 75 dB(A) for residential dwellings.
*Construction noise exceedances are predicted at the lowest, middle and highest assessment levels at representative NSR N1a & N1b (HKBTS Staff & Students Quarters). Based on the assessment results and distances of the other sensitive façade of the noise sensitive use - HKBTS Staff & Students Quarters - and the project site, it is estimated that construction noise exceedance would be expected at the sensitive facade facing Nin Ming Road under the unmitigated scenarios, affecting approximately <35 flats.

[4] The construction noise criteria for residential dwelling is 75dB(A).

[5] The floor to floor height of the NSR is assumed as 3m and the assessment levels adopted are 1.2m from the floor of the lowest, middle and highest storeys. The noise source is assumed at 5.5mPD.

Appendix 4.6 Calculations of Construction Noise Levels without Mitigation Measures

NSR ID: N2
NSR Description: HKBTS Administration and Education Block
Landuse: Education
No. of Storey: 5

Lowest Assessment Level, mPD [5]: 8.1

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]															
					2021		2022				2023				2024					
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
1	Site Clearance	112	67	67		**71**														
2	Excavation and Lateral Support (ELS)	117	67	67			**76**	**76**	**76**											
3	Bulk Excavation	115	67	67				**74**	**74**	**74**										
4	Steel Fixing and Concreting of Structure	111	67	67						70	70	70	70	70						
5	Backfilling	109	67	67									68							
6	E&M Installations & Pipeworks	108	67	67									67	67	67	67				
7	Finishing and Landscape Works	114	67	67										**73**	**73**	**73**				
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					-	**71**	**76**	**78**	**78**	**75**	70	70	**73**	**75**	**74**	**74**	-	-		
Exceedance during Normal School Day, dB(A)[4]:					-	1	6	8	8	5	0	0	3	5	4	4	-	-		
Exceedance during Examination Period, dB(A)[4]:					-	6	11	13	13	10	5	5	8	10	9	9	-	-		
Range, dB(A): 70 - 78																				

Middle Assessment Level, mPD [5]: 14.1

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]															
					2021		2022				2023				2024					
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
1	Site Clearance	112	67	67		**71**														
2	Excavation and Lateral Support (ELS)	117	67	67			**76**	**76**	**76**											
3	Bulk Excavation	115	67	67				**74**	**74**	**74**										
4	Steel Fixing and Concreting of Structure	111	67	67						70	70	70	70	70						
5	Backfilling	109	67	67									68							
6	E&M Installations & Pipeworks	108	67	67									67	67	67	67				
7	Finishing and Landscape Works	114	67	67										**73**	**73**	**73**				
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					-	**71**	**76**	**78**	**78**	**75**	70	70	**73**	**75**	**74**	**74**	-	-		
Exceedance during Normal School Day, dB(A)[4]:					-	1	6	8	8	5	0	0	3	5	4	4	-	-		
Exceedance during Examination Period, dB(A)[4]:					-	6	11	13	13	10	5	5	8	10	9	9	-	-		
Range, dB(A): 70 - 78																				

Highest Assessment Level, mPD [5]: 20.1

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]															
					2021		2022				2023				2024					
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
1	Site Clearance	112	67	68		70														
2	Excavation and Lateral Support (ELS)	117	67	68			**76**	**76**	**76**											
3	Bulk Excavation	115	67	68				**74**	**74**	**74**										
4	Steel Fixing and Concreting of Structure	111	67	68						70	70	70	70	70						
5	Backfilling	109	67	68									68							
6	E&M Installations & Pipeworks	108	67	68									66	66	66	66				
7	Finishing and Landscape Works	114	67	68										**73**	**73**	**73**				
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					-	70	**76**	**78**	**78**	**75**	70	70	**73**	**75**	**74**	**74**	-	-		
Exceedance during Normal School Day, dB(A)[4]:					-	0	6	8	8	5	0	0	3	5	4	4	-	-		
Exceedance during Examination Period, dB(A)[4]:					-	5	11	13	13	10	5	5	8	10	9	9	-	-		
Range, dB(A): 70 - 78																				

Notes:

[1] The notional source position is taken following the GW-TM.
Distance Attenuation in dB(A) = 20 log D + 8, where D is slant distance in metres.

[2] A +3 dB(A) façade correction was added to the predicted noise level to account for the façade effect at the NSR.

[3] **Bolded** values indicate exceedance of EIAO noise criteria of 70 dB(A) for educational institution during normal school days. Underlined values indicate exceedance of EIAO-TM noise criteria of 65 dB(A) for educational institution during examination period.

* Construction noise exceedances are predicted at the lowest, middle and highest assessment levels at representative NSR N2 (HKBTS Administration and Education Block). Based on the assessment results and distances of the other sensitive façade of the noise sensitive use - HKBTS Administration and Education Block - and the project site, it is estimated that construction noise exceedance would be expected at the sensitive facade facing Nin Ming Road under the unmitigated scenarios, affecting approximately up to 16 classrooms / practice rooms / laboratories / library.

[4] The construction noise criteria for educational institution is 70 dB(A) during normal school days and 65 dB(A) during examination period.

[5] The floor to floor height of the NSR is assumed as 3m and the assessment levels adopted are 1.2m from the floor of the lowest, middle and highest storeys. The noise source is assumed at 5.5mPD.

Appendix 4.6 Calculations of Construction Noise Levels without Mitigation Measures

NSR ID: N4
NSR Description: Symphony Bay, Block 11
Landuse: Residential
No. of Storey: 7

Lowest Assessment Level, mPD [4]: 15.2

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	210	211		61												
2	Excavation and Lateral Support (ELS)	117	210	211			66	66	66									
3	Bulk Excavation	115	210	211				64	64	64								
4	Steel Fixing and Concreting of Structure	111	210	211						60	60	60	60	60				
5	Backfilling	109	210	211									58					
6	E&M Installations & Pipeworks	108	210	211									57	57	57	57		
7	Finishing and Landscape Works	114	210	211										63	63	63		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					-	61	66	68	68	65	60	60	63	65	64	64	-	-
Exceedance, dB(A)[4]:					-	0	0	0	0	0	0	0	0	0	0	0	-	-

Range, dB(A): 60 - 68

Middle Assessment Level, mPD [4]: 24.2

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	210	211		61												
2	Excavation and Lateral Support (ELS)	117	210	211			66	66	66									
3	Bulk Excavation	115	210	211				64	64	64								
4	Steel Fixing and Concreting of Structure	111	210	211						60	60	60	60	60				
5	Backfilling	109	210	211									58					
6	E&M Installations & Pipeworks	108	210	211									57	57	57	57		
7	Finishing and Landscape Works	114	210	211										63	63	63		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					-	61	66	68	68	65	60	60	63	65	64	64	-	-
Exceedance, dB(A)[4]:					-	0	0	0	0	0	0	0	0	0	0	0	-	-

Range, dB(A): 60 - 68

Highest Assessment Level, mPD [4]: 33.2

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	210	212		61												
2	Excavation and Lateral Support (ELS)	117	210	212			66	66	66									
3	Bulk Excavation	115	210	212				64	64	64								
4	Steel Fixing and Concreting of Structure	111	210	212						60	60	60	60	60				
5	Backfilling	109	210	212									58					
6	E&M Installations & Pipeworks	108	210	212									57	57	57	57		
7	Finishing and Landscape Works	114	210	212										63	63	63		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					-	61	66	68	68	65	60	60	63	65	64	64	-	-
Exceedance, dB(A)[3]:					-	0	0	0	0	0	0	0	0	0	0	0	-	-

Range, dB(A): 60 - 68

Notes:
[1] The notional source position is taken following the GW-TM.
Distance Attenuation in dB(A) = 20 log D + 8, where D is slant distance in metres.
[2] A +3 dB(A) façade correction was added to the predicted noise level to account for the façade effect at the NSR.
[3] The construction noise criteria for residential dwelling is 75dB(A).
[4] The floor to floor height of the NSR is assumed as 3m and the assessment levels adopted are 1.2m from the floor of the lowest, middle and highest storeys. The noise source is assumed at 5.5mPD.

Appendix 4.6 Calculations of Construction Noise Levels without Mitigation Measures

NSR ID: N5
NSR Description: Zessa Vista
Landuse: Residential
No. of Storey: 3

Lowest Assessment Level, mPD [4]: 7.2

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	240	240		59												
2	Excavation and Lateral Support (ELS)	117	240	240			65	65	65									
3	Bulk Excavation	115	240	240				63	63	63								
4	Steel Fixing and Concreting of Structure	111	240	240						59	59	59	59	59				
5	Backfilling	109	240	240									57					
6	E&M Installations & Pipeworks	108	240	240									56	56	56	56		
7	Finishing and Landscape Works	114	240	240										62	62	62		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					-	59	65	67	67	64	59	59	62	64	63	63	-	-
Exceedance, dB(A)[3]:					-	0	0	0	0	0	0	0	0	0	0	0	-	-

Range, dB(A): 59 - 67

Middle Assessment Level, mPD [4]: 10.2

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	240	240		59												
2	Excavation and Lateral Support (ELS)	117	240	240			65	65	65									
3	Bulk Excavation	115	240	240				63	63	63								
4	Steel Fixing and Concreting of Structure	111	240	240						59	59	59	59	59				
5	Backfilling	109	240	240									57					
6	E&M Installations & Pipeworks	108	240	240									56	56	56	56		
7	Finishing and Landscape Works	114	240	240										62	62	62		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					-	59	65	67	67	64	59	59	62	64	63	63	-	-
Exceedance, dB(A)[3]:					-	0	0	0	0	0	0	0	0	0	0	0	-	-

Range, dB(A): 59 - 67

Highest Assessment Level, mPD [4]: 13.2

Act No.	Main Construction Elements	SWL, dB(A)	Notional Distance, m [1]	Slant Distance, m	Predicted Noise Level, $L_{eq\ (30\text{-}min)}$, dB(A) [2],[3]													
					2021		2022				2023				2024			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Clearance	112	240	240		59												
2	Excavation and Lateral Support (ELS)	117	240	240			65	65	65									
3	Bulk Excavation	115	240	240				63	63	63								
4	Steel Fixing and Concreting of Structure	111	240	240						59	59	59	59	59				
5	Backfilling	109	240	240									57					
6	E&M Installations & Pipeworks	108	240	240									56	56	56	56		
7	Finishing and Landscape Works	114	240	240										62	62	62		
Total SPL from the Proposed Project, $L_{eq\ (30\text{-}min)}$, dB(A):					-	59	65	67	67	64	59	59	62	64	63	63	-	-
Exceedance, dB(A)[3]:					-	0	0	0	0	0	0	0	0	0	0	0	-	-

Range, dB(A): 59 - 67

Notes:
[1] The notional source position is taken following the GW-TM.
Distance Attenuation in dB(A) = 20 log D + 8, where D is slant distance in metres.
[2] A +3 dB(A) façade correction was added to the predicted noise level to account for the façade effect at the NSR.
[3] The construction noise criteria for residential dwelling is 75dB(A).
[4] The floor to floor height of the NSR is assumed as 3m and the assessment levels adopted are 1.2m from the floor of the lowest, middle and highest storeys. The noise source is assumed at 5.5mPD.