

**Table C1a Equipment List for each Construction Activity (Unmitigated)**

Activity / Equipment	TM Code	SWL, dB(A)	Quantity	Summation of SWL, dB(A)	Total SWL dB(A), Eastern Portal	Total SWL dB(A), Western portal only
<b>Eastern &amp; Western Tunnel Portals Construction</b>						
<i>Site clearance</i>						
Bulldozer	030	115	1	115	115	115
<i>Surface breaking</i>						
Breaker, excavator mounted	028	122	1	122	122	122
<i>Drill</i>						
Rock drill, hand-held (pneumatic)	183	116	1	116	116	116
Air compressor	003	104	1	104		
<i>Loading</i>						
Wheeled Loader	081	112	1	112	118	118
Dump Truck	067	117	1	117		
<i>Site formation</i>						
Excavator	081	112	1	112	118	118
Dump Truck	067	117	1	117		
<i>TBM Support</i>						
Gantry	122	95	1	95	118	119
Ventilation fan	241	108	1	108		
Conveyor belt	041	90	1	90		
Muck train	#	105	1	105		
Dump Truck	067	117	1	117		
Air compressor	003	104	1	104		
Tug Boat (Western portal only)	221	110	1	110		
Crane, barge mounted (Western portal only)	048	112	1	112		
<i>Finalized stage - General Works</i>						
Excavator	081	112	1	112	118	118
Dump Truck	067	117	1	117		
<i>Finalized stage - Concreting</i>						
Concrete lorry mixer	044	109	1	109	114	114
Poker, vibratory, hand-held	170	113	1	113		
<i>Finalized stage - Marine Transport</i>						
Tug Boat (Western portal only)	221	110	1	110		114
Crane, barge mounted (Western portal only)	048	112	1	112		
Activity / Equipment	TM Code	SWL, dB(A)	Quantity	Summation of SWL, dB(A)	Total SWL dB(A), Raising Bored Intake	Total SWL dB(A), Drill From Surface
<b>Intake Shafts</b>						
<i>Site clearance</i>						
Excavator	081	112	1	112	112	112
<i>Surface breaking</i>						
Breaker, excavator mounted	028	122	1	122	122	122
<i>Initial Excavation</i>						
Excavator	081	112	1	112	112	112
Water pump, submersible (electric)	283	85	1	85		
Generator, silenced	102	100	1	100		
<i>Rock drill for manhole</i>						
Breaker, excavator mounted	028	122	1	122	122	122
<i>Excavation</i>						
Reverse circulation drill (50% on time for drill from surface option)	166	100	1	100	103	110
Hydraulic power pack	102	100	1	100		
Lorry with Grab (50% on time, for drill from surface option only)	141	112	1	112		
<i>Finalized stage - General Works</i>						
Lorry with crane	141	112	1	112	112	112
<i>Finalized stage - Concreting</i>						
Concrete lorry mixer	044	109	1	109	114	114
Poker, vibratory, hand-held	170	113	1	113		

Notes:

SWL: Sound Power Level of a Powered Mechanical Equipment (PME).

TM: Technical Memorandum on Noise from Construction Work other than Percussive Piling

# : Noise level provided by site measurement

**Table C1b Equipment List for each Construction Activity (Quiet Plant)**

Activity / Equipment	Code	SWL, dB(A)	Quantity	Summation of SWL, dB(A)	Total SWL dB(A), Eastern Portal	Total SWL dB(A), Western portal only
<b>Eastern &amp; Western Tunnel Portals Construction</b>						
<i>Site clearance</i>						
Bulldozer	BS5228: Tab. C9-2	104	1	104	104	104
<i>Surface breaking</i>						
Breaker, excavator mounted	BS5228: Tab. C8-13	110	1	110	110	110
<i>Drill</i>						
Rock drill, hand-held (pneumatic)	183	116	1	116	116	116
Air compressor	003	104	1	104		
<i>Loading</i>						
Wheeled Loader	BS5228: Tab. C3-4	108	1	108	110	110
Dump Truck	BS5228: Tab. C9-27	105	1	105		
<i>Site formation</i>						
Excavator	BS5228: Tab. C3-97	105	1	105	108	108
Dump Truck	BS5228: Tab. C9-27	105	1	105		
<i>TBM Support</i>						
Gantry	122	95	1	95	112	115
Ventilation fan	241	108	1	108		
Conveyor belt	041	90	1	90		
Muck train	#	105	1	105		
Dump Truck	BS5228: Tab. C9-27	105	1	105		
Air compressor	BS5228: Tab. C7-44	103	1	103		
Tug Boat (Western portal only)	221	110	1	110		
Crane, barge mounted (Western portal only)	BS5228: Tab. C7-113	107	1	107		
<i>Finalized stage - General Works</i>						
Excavator	BS5228: Tab. C3-97	105	1	105	108	108
Dump Truck	BS5228: Tab. C9-27	105	1	105		
<i>Finalized stage - Concreting</i>						
Concrete lorry mixer	BS5228: Tab. C6-35	100	1	100	106	106
Poker, vibratory, hand-held	BS5228: Tab. C6-43	105	1	105		
<i>Finalized stage - Marine Transport</i>						
Tug Boat (Western portal only)	221	110	1	110		112
Crane, barge mounted (Western portal only)	BS5228: Tab. C7-113	107	1	107		
Activity / Equipment	TM Code	SWL, dB(A)	Quantity	Summation of SWL, dB(A)	Total SWL dB(A),	
<b>Intake Shafts</b>						
<i>Site clearance</i>						
Excavator	BS5228: Tab. C3-97	105	1	105	105	105
<i>Surface breaking</i>						
Breaker, excavator mounted	BS5228: Tab. C8-13	110	1	110	110	110
<i>Initial Excavation</i>						
Excavator	BS5228: Tab. C3-97	105	1	105	106	106
Water pump, submersible (electric)	283	85	1	85		
Generator, silenced	102	100	1	100		
<i>Rock drill for manhole</i>						
Breaker, excavator mounted	BS5228: Tab. C8-13	110	1	110	110	110
<i>Excavation</i>						
Reverse circulation drill (50% on time for drill from surface)	166	100	1	100	103	105
Hydraulic power pack	102	100	1	100		
Lorry with Grab (50% on time, for drill from surface option)	BS5228: Tab. C9-27	105	1	105		
<i>Finalized stage - General Works</i>						
Lorry with crane	BS5228: Tab. C9-27	105	1	105	105	105
<i>Finalized stage - Concreting</i>						
Concrete lorry mixer	BS5228: Tab. C6-35	100	1	100	106	106
Poker, vibratory, hand-held	BS5228: Tab. C6-43	105	1	105		

Notes:

SWL: Sound Power Level of a Powered Mechanical Equipment (PME).

TM: Technical Memorandum on Noise from Construction Work other than Percussive Piling

# : Noise level provided by site measurement

**Table C1e Equipment List for each Construction Activity (Quiet plant+temporary barrier+movable barrier/full enclosure)**

Activity / Equipment	Code	SWL, dB(A)	Quantity	Barrier correction - Eastern portal, dB(A)	Corrected SWL, Eastern portal dB(A)	Summation of SWL, Eastern portal dB(A)	Total SWL, Eastern portal dB(A)					
<b>Eastern &amp; Western Tunnel Portals Construction</b>												
<i>Site clearance</i>												
Bulldozer	BS5228: Tab. C9-2	104	1	-5 **	99	99	99					
<i>Surface breaking</i>												
Breaker, excavator mounted	BS5228: Tab. C8-13	110	1	-5 **	105	105	105					
<i>Drill</i>												
Rock drill, hand-held (pneumatic)	183	116	1	-15 ***	101	101	101					
Air compressor	003	104	1	-15 ***	89	89						
<i>Loading</i>												
Wheeled Loader	BS5228: Tab. C3-4	108	1	-5 **	103	103	105					
Dump Truck	BS5228: Tab. C9-27	105	1	-5 **	100	100						
<i>Site formation</i>												
Excavator	BS5228: Tab. C3-97	105	1	-5 **	100	100	103					
Dump Truck	BS5228: Tab. C9-27	105	1	-5 **	100	100						
<i>TBM Support</i>												
Gantry	122	95	1		95 *	95	102					
Ventilation fan	241	108	1	-15 ***	93	93						
Conveyor belt	041	90	1	-15 ***	75	75						
Muck train	#	105	1	-15 ***	90	90						
Dump Truck	BS5228: Tab. C9-27	105	1	-5 **	100	100						
Air compressor	BS5228: Tab. C7-44	103	1	-15 ***	88	88						
Tug Boat (Western portal only)	221	110	1									
Crane, barge mounted (Western portal only)	BS5228: Tab. C7-113	107	1									
<i>Finalized stage - General Works</i>												
Excavator	BS5228: Tab. C3-97	105	1	-5 **	100	100	103					
Dump Truck	BS5228: Tab. C9-27	105	1	-5 **	100	100						
<i>Finalized stage - Concreting</i>												
Concrete lorry mixer	BS5228: Tab. C6-35	100	1	-5 **	95	95	101					
Poker, vibratory, hand-held	BS5228: Tab. C6-43	105	1	-5 **	100	100						
<i>Finalized stage - Marine Transport</i>												
Tug Boat (Western portal only)	221	110	1									
Crane, barge mounted (Western portal only)	BS5228: Tab. C7-113	107	1									
	Code	SWL, dB(A)	Quantity	Movable barrier correction, dB(A)	Cantilever type correction, dB(A)	Corrected SWL, mobile barrier dB(A)	Corrected SWL, Cantilever barrier dB(A)	Summation of SWL, movable barrier dB(A)	Summation of SWL, cantilever barrier dB(A)	Total SWL, movable barrier dB(A)	Total SWL, cantilever barrier dB(A)	
<b>Intake Shafts</b>												
<i>Site clearance</i>												
Excavator	BS5228: Tab. C3-97	105	1	-5 **	-10 *	100 **	95	100	95	100	95	
<i>Surface breaking</i>												
Breaker, excavator mounted	BS5228: Tab. C8-13	110	1	-5 **	-10 *	105 **	100	105	100	105	100	
<i>Initial Excavation</i>												
Excavator	BS5228: Tab. C3-97	105	1	-5 **	-10 *	100	95	100	95	100	95	
Water pump, submersible (electric)	283	85	1	-10 *	-10 *	75	75	75	75			
Generator, silenced	102	100	1	-10 *	-10 *	90	90	90	90			
<i>Rock drill for manhole</i>												
Breaker, excavator mounted	BS5228: Tab. C8-13	110	1	-5 **	-10 *	105	100	105	100	105	100	
<i>Excavation</i>												
Reverse circulation drill (50% on time for drill from surface option)	166	100	1	-10 *	-10 *	90 *	90	90	90	93	93	Raise Boring Method
Hydraulic power pack	102	100	1	-10 *	-10 *	90 *	90	90	90			Drill From Surface
Lorry with Grab (50% on time, for drill from surface option only)	BS5228: Tab. C9-27	105	1	-5 **	-10 *	100 **	95	100	95	101	97	
<i>Finalized stage - General Works</i>												
Lorry with crane	BS5228: Tab. C9-27	105	1	-5 **	-10 *	100	95	100	95	100	95	
<i>Finalized stage - Concreting</i>												
Concrete lorry mixer	BS5228: Tab. C6-35	100	1	-5 **	-10 *	95	90	95	90	101	96	
Poker, vibratory, hand-held	BS5228: Tab. C6-43	105	1	-5 **	-10 *	100	95	100	95			

Notes:  
 SWL: Sound Power Level of a Powered Mechanical Equipment (PME).  
 TM: Technical Memorandum on Noise from Construction Work other than Percussive Piling  
 #: Noise level provided by site measurement  
 Equipment with movable barrier enclosure: \* : Stationary equipment & \*\*: Movable equipment & ; \*\*\* for Full enclosure

**Sample calculation**

Location: **W8**

Location	NSR no.	Noise Sensitive Receivers (NSR)	Construction Activities	Total SWL dB(A)	Horizontal Distance (m)	Vertical Distance (m)	Distance Correction dB(A)	Facade Correction dB(A)	Predicted Noise Level dB(A)	Exceedance	Recommendation
Unmitigate											
Shaft W8	W8/2	Bonham Court	Site clearance	112	17	4.2	33	3	82	Yes	Quiet Plant
			Surface breaking	122	17	4.2	33	3	92	Yes	
			Initial Excavation	112	17	4.2	33	3	82	Yes	
			Rock Drilling for Manhole	122	17	4.2	33	3	92	Yes	
			Excavation	110	17	4.2	33	3	80	Yes	
			Finalized stage - General Works	112	17	4.2	33	3	82	Yes	
			Finalized stage - Concreting	114	17	4.2	33	3	85	Yes	
Quiet Plant											
Shaft W8	W8/2	Bonham Court	Site clearance	105	17	4.2	33	3	75	No	Cantilever-typed Noise Barrier (5m height + 2.7m cantilevered)
			Surface breaking	110	17	4.2	33	3	80	Yes	
			Initial Excavation	106	17	4.2	33	3	76	Yes	
			Rock Drilling for Manhole	110	17	4.2	33	3	80	Yes	
			Excavation	105	17	4.2	33	3	75	No	
			Finalized stage - General Works	105	17	4.2	33	3	75	No	
			Finalized stage - Concreting	106	17	4.2	33	3	76	Yes	
Quiet Plant + Cantilever-typed Noise Barrier											
Shaft W8	W8/2	Bonham Court	Site clearance	95	17	4.2	33	3	65	No	
			Surface breaking	100	17	4.2	33	3	70	No	
			Initial Excavation	95	17	4.2	33	3	65	No	
			Rock Drilling for Manhole	100	17	4.2	33	3	70	No	
			Excavation	97	17	4.2	33	3	67	No	
			Finalized stage - General Works	95	17	4.2	33	3	65	No	
			Finalized stage - Concreting	96	17	4.2	33	3	66	No	

**Noise Assessment for Construction of Noise Barriers**

**Location of Fixed Noise Barriers**

W5(P) according to Section 5.4.23 of the report (acoustic shed for drill rigs)  
 W8 according to Section 5.4.23 of the report (acoustic shed for drill rigs)

**Plant Team for Construction of Noise Barriers at W5(P)**

Construction Plant	Reference	SWL	Qty	% on time	SWL
Hand held drill rigs	CNP 183	106	1	50	103
Crane	BS5228:C7-113	107	1	50	104
Generator	CNP 102	100	1	50	97
Concrete Truck	BS5228:C6-35	100	1	50	97
<b>Overall SWL</b>					107

(-10dB(A) with acoustic shed)

**Plant Team for Construction of Noise Barriers at W8**

Construction Plant	Reference	SWL	Qty	% on time	SWL
Hand held drill rigs	CNP 183	106	1	50	103
Crane	BS5228:C7-113	107	1	50	104
Generator	CNP 102	100	1	50	97
Concrete Truck	BS5228:C6-35	100	1	50	97
<b>Overall SWL</b>					107

(-10dB(A) with acoustic shed)

**Results**

NSR ID	Description	Horizontal Distance	Vertical Distance	Distance (m)	Distance Correction dB(A)	Façade Correction (dB(A))	Noise Level at NSR (dB(A))	Exceedance	Recommendation
W5(P)/1	Raimongi College	13	10.2	17	-32	3	78	Yes	construction when school is not in use
W5(P)/2	Raimongi Primary School	12	10.2	16	-32	3	78	Yes	construction when school is not in use
W5(P)/3	Caritas House	30	1.2	30	-38	3	73	No	
W5(P)/4	Canossa Hosipital	76	49.7	91	-47	3	63	No	
W8/1	80 Robinson Road	11	34.2	36	-39	3	71	No	
W8/2	Bonham Court	17	4.2	18	-33	3	78	Yes	
W8/3	HK Institute of Technology	5	7.2	9	-27	3	84	Yes	construction when school is not in use

**Noise Barrier Dismantling**

**Plant Team for Dismantling Noise Barriers**

Construction Plant	Reference	SWL	Qty	% on time	SWL
Lorry	BS5228:C9-27	105	1	50	102
Crane	BS5228:C7-113	107	1	50	104
<b>Overall SWL</b>					106

**Results**

NSR ID	Description	Horizontal Distance	Vertical Distance	Distance (m)	Distance Correction dB(A)	Façade Correction (dB(A))	Noise Level at NSR (dB(A))	Exceedance	Recommendation
W5(P)/1	Raimongi College	13	10.2	17	-32	3	77	Yes	construction when school is not in use
W5(P)/2	Raimongi Primary School	12	10.2	16	-32	3	77	Yes	construction when school is not in use
W5(P)/3	Caritas House	30	1.2	30	-38	3	72	No	
W5(P)/4	Canossa Hosipital	76	49.7	91	-47	3	62	No	
W8/1	80 Robinson Road	11	34.2	36	-39	3	70	No	
W8/2	Bonham Court	17	4.2	18	-33	3	76	Yes	
W8/3	HK Institute of Technology	5	7.2	9	-27	3	82	Yes	construction when school is not in use