

Appendix 4.11

**Detail Calculation of
On-site Operation Noise
(Mitigated Scenario)**

Project: North-east New Territories (NENT) Landfill Extension
Title: Operation Noise Assessment (Mitigated)

Noise Sensitive Receiver: SR1 Wo Keng Shan Tsuen

Source ID	Description	Source Type	SWL	Distance (m)	Adjustments			Duration of activity as percentage of 30mins	Resultant, Leq dB(A)
					Screening ⁽¹⁾	Air Absorption ⁽²⁾	View Angle ⁽³⁾		
S1	Leachate treatment plant	Fixed	75	378	-10	-1	100%	13	
S2	Ammonia scrapping	Fixed	88	386	-10	-12	100%	26	
S5a	Waste filling Phase 1	National	112	557	-5	-17	100%	45	
S5b	Waste filling Phase 2	National	112	873	-5	-26	100%	41	
S5c	Waste filling Phase 3	National	112	638	-5	-19	100%	44	

Source ID	Description	Source Type	SWL	No. of Vehicle (hr)	No. of Vehicle (30min)	Vehicle Speed (km/hr)	Adjustments			Resultant, Leq dB(A)	
							Distance	View Angle	Screening ⁽⁴⁾		
S4	Refuse vehicle ⁽¹⁾	Mobile	97	180	60	20	116	34	23	3	45

Source ID	Description	Source Type	Resultant Leq dB(A)
S1	Leachate treatment plant	Fixed	13
S2	Ammonia scrapping	Fixed	26
S4	Refuse vehicle	Mobile	45
S5a	Waste filling	National	45
S5b	Waste filling	National	41
S5c	Waste filling	National	44
Compliance			Yes

Note:

- [1] Haul Road Traffic within the site
- [2] BS5228 Pt 1:1997, D.3.5.2 Method for mobile plant using a regular well defined route (haul roads)
 $L_{Aeq, 1hr} = L_{wa} - 33 + 10 \log V - 10 \log d + 10 \log(Aw/180) + FE$
 where
 L_{wa} = sound power level of the plant (truck)
 V = number of vehicles (truck) per hr
 d = average vehicle speed (km/hr)
 d = distance of receiving position from centre of haul road
 Aw = View angle to the haul road segment
 FE = facada effect

- [2] Predicted noise level at waste filling is based on the maximum SPL of S5a, S5b & S5c, as there is no overlapping between the different phases.
- [3] Distance correction for fixed plant and national source = $-20 \log r - 8$ based on hemi-spherical radiation, where r = distance.
- [4] 10dB(A) reduction for total screening from natural topography, 5dB(A) reduction for partial screening from the hill slope.
- [5] Assuming typical Relative Humidity is at 70% and Temperature is at 25°C, based on ISO 9613 "Method for calculation of the Absorption of Sound By the Atmosphere", the air absorption is $-3dB / km$

Project: North-east New Territories (NENT) Landfill Extension
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Noise Sensitive Receiver: SR2 Village houses at Junction of Ng Chow Road and Wo Keng Shan Road

Source ID	Description	Source Type	SWL	Distance (m)	Adjustments			Duration of activity, min	Duration of activity as percentage of 30mins	Resultant Leq dB(A)
					Air Absorption	Screening	View Angle			
S1	Leachate treatment plant	Fixed	75	1012	-58	-10	-3.0	30	100%	3
S2	Ammonia scrubbing	Fixed	88	1034	-68	-10	-3.1	30	100%	16
S5	Waste filling	Notional	112	1110	-69	-5	-3.3	30	100%	39
S5a	Phase 1	Notional	112	1143	-69	-5	-3.4	30	100%	37
S5b	Phase 2	Notional	112	1181	-69	-5	-3.5	30	100%	37
S5c	Phase 3	Notional	112	1181	-69	-5	-3.5	30	100%	37

Source ID	Description	Source Type	SWL	No. of Vehicle (1hr)	No. of Vehicle (30mins)	Vehicle Speed	Adjustments			Distance	View Angle	No. of Vehicles	Speed	Distance	View Angle	Screening	Air Absorption	Resultant Leq dB(A)
							Distance	Distance	View Angle									
S4	Refuse vehicle	Mobils	97	180	90	20	744	50	20	50	20	13	28	5	-10	-2.2	27	

Source ID	Description	Source Type	Resultant Leq dB(A)
S1	Leachate treatment plant	Fixed	3
S2	Ammonia scrubbing	Fixed	16
S4	Refuse vehicle	Mobils	27
S5	Waste filling	Notional	39
Total (N, Leq 30min) dB(A)			39
Daytime noise with dB(A)			57
Compliance			Yes

Note:

- [1] Haul Road Traffic within the site
 BS5228 Pt 1:1997, D.3.5.2 Method for mobile plant using a regular well defined route (haul roads)
 $L_{eq, 1hr} = L_{wa} - 33 + 10 \log Q - 10 \log V - 10 \log d + 10 \log(Avr/150) + FE$
 where
 L_{wa} = sound power level of the plant (truck)
 Q = number of vehicles (truck) per hr
 V = average vehicle speed (km/hr)
 d = distance of receiving position from centre of haul road
 Av = view angle to the haul road segment
 FE = facade effect
- [2] Predicted noise level at waste filling is based on the maximum SPL of S5a, S5b & S5c, as there is no overlapping between the different phases.
- [3] Distance correction for fixed plant and notional source = $-20 \log r - 8$ based on hemi-spherical radiation, where r = distance.
- [4] 10dB(A) reduction for total screening from natural topography, 5dB(A) reduction for partial screening from the hill slope.
- [5] Assuming typical Relative Humidity is at 70% and Temperature is at 25°C, based on ISO 9613 Method for calculation of the Absorption of Sound By the Atmosphere, the air absorption is -3dB / km

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Noise Sensitive Receiver: SR3 Cheung Shan Wu Tse

Source ID	Description	Source Type	SWL	Distance (m)	Adjustments			Duration of activity, min	Duration of activity, hrs	Resultant, Leq dB(A)
					Screening (d)	Air Absorption (a)	View Angle			
S1	Leachate treatment plant	Fixed	75	1336	-10	-4.0	-	30	30	0
S2	Ammonia scrapping	Fixed	88	1338	-71	-4.0	-	3	3	0
S5a	Waste filling	Notional	112	1076	-10	-3.2	-	30	30	12
S5b	Phase 2	Notional	112	1020	-10	-3.1	-	30	30	33
S5c	Phase 3	Notional	112	1082	-10	-3.2	-	30	30	34

Source ID	Description	Source Type	SWL	No. of Vehicle (trk)	No. of Vehicle (30min)	Vehicle Speed (km/hr)	Distance (m)	View Angle (°)	Adjustments		Resultant, Leq dB(A)
									No. of Vehicle	View Angle	
S4	Refuse vehicle	Mobile	97	180	90	20	969	87	30	4	28

Source ID	Description	Source Type	Resultant, Leq dB(A)
S1	Leachate treatment plant	Fixed	0
S2	Ammonia scrapping	Fixed	12
S4	Refuse vehicle	Mobile	26
S5	Waste filling	Notional	34
Total ON - Leq (30min) dB(A)			35
Daytime noise - Inter. dB(A)			35
Compliance			Yes

Note:

- (1) Haul Road Traffic within the site
 BSS228 Pt 1:1997, D.3.5.2 Method for mobile plant using a regular well defined route (haul roads)
 $Leq, 1hr = Lwa - 33 + 10 \log Q - 10 \log V - 10 \log d + 10 \log(AV180) + FE$
 where
 Lwa = sound power level of the plant (truck)
 Q = number of vehicles (truck) per hr
 V = average vehicle speed (km/hr)
 d = distance of receiving position from centre of haul road
 Av = view angle to the haul road segment
 FE = facade effect

- (2) Predicted noise level at waste filling is based on the maximum SPL of S5a, S5b & S5c, as there is no overlapping between the different phases.
- (3) Distance correction for fixed plant and notional source = $-20 \log r - 8$ based on hemi-spherical radiation, where r = distance.
- (4) 10dB(A) reduction for total screening from natural topography, 5dB(A) reduction for partial screening from the hill slope.
- (5) Assuming typical Relative Humidity is at 70% and Temperature is at 25°C, based on ISO 9613 "Method for calculation of the Absorption of Sound by the Atmosphere", the air absorption is $-3dB / km$

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Noise Sensitive Receiver: SR4 Miu Keng

Source ID	Description	Source Type	SWL	Distance (m)	Adjustments			Duration of activity as percentage of 30mins	Duration of activity (min)	Resultant Leq dB(A)
					Distance [1]	Screening [2]	Air Absorption [3]			
S1	Leachate treatment plant	Fixed	75	1668	-7.4	-10	-5.9	100%	30	0
S2	Ammonia scrubbing	Fixed	86	1960	-7.4	-10	-5.9	100%	30	7
S5	Waste filling	Nonlocal	112	1435	-7.1	-5	-4.3	100%	30	35
S5a	Phase 1	Nonlocal	112	1397	-7.1	-5	-4.2	100%	30	35
S5b	Phase 2	Nonlocal	112	1340	-7.1	-5	-4.0	100%	30	35
S5c	Phase 3	Nonlocal	112	1340	-7.1	-5	-4.0	100%	30	35

Source ID	Description	Source Type	SWL	No. of Vehicle (hr)	No. of Vehicle (30min)	Vehicle Speed	Distance	View Angle	No. of Vehicle	Speed	Adjustments			Resultant Leq dB(A)
											Distance	View Angle	Facade	
S4	Refuse vehicle	Mobile	87	180	90	20	1198	50	20	413	-37	-10	-38	32

Source ID	Description	Source Type	Resultant Leq dB(A)
S1	Leachate treatment plant	Fixed	0
S2	Ammonia scrubbing	Fixed	7
S4	Refuse vehicle	Mobile	24
S5	Waste filling	Nonlocal	35
Total CNEL (30min) dB(A)			36
Daytime noise criteria compliance			53
Nighttime noise criteria compliance			483

Note:

- [1] Haul Road Traffic within the site
- [2] BS5228 Pt 1:1997, D.3.5.2 Method for mobile plant using a regular well defined route (haul roads)
 $L_{Aeq, 1hr} = L_{wa} - 33 + 10 \log Q - 10 \log V - 10 \log d + 10 \log (A_v/180) + FE$
 where
 L_{wa} = sound power level of the plant (truck)
 Q = number of vehicles (truck) per hr
 V = average vehicle speed (km/hr)
 d = distance of receiving position from centre of haul road
 A_v = view angle to the haul road segment
 FE = facade effect

[3] Predicted noise level at waste filling is based on the maximum SPL of S5a, S5b & S5c, as there is no overlapping between the different phases.

[4] Distance correction for fixed plant and nonlocal source = $-20 \log r - 8$ based on hemi-spherical radiation, where r = distance.

[5] 10dB(A) reduction for total screening from natural topography, 5dB(A) reduction for partial screening from the hill slope.

[6] Assuming typical Relative Humidity is at 70% and Temperature is at 25°C, based on ISO 9613-Method for calculation of the Absorption of Sound By the Atmosphere, the air absorption is $-3dB / km$

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Noise Sensitive Receiver: SR5 Wing Fai Yuen

Source ID	Description	Source Type	SWL	Distance (m)	Adjustments			Duration of activity (min)	Duration of activity as percentage of 30mins	Resultant, Leq dB(A)
					Distance Pl	Screening Pl	Air Absorption			
S1	Leachate treatment plant	Fixed	75	1680	-73	-10	-5.0	30	100%	0
S2	Ammonia scrapping	Fixed	88	1676	-72	-10	-5.0	30	100%	9
S5	Waste filling									
SSa	Phase 1	National	112	1263	-70	-5	-3.8	30	100%	36
SSb	Phase 2	National	112	1213	-70	-5	-3.6	30	100%	37
SSc	Phase 3	National	112	1214	-70	-5	-3.6	30	100%	37

Source ID	Description	Source Type	SWL	No. of Vehicle (hr)	No. of Vehicle (30min)	Vehicle Speed	Adjustments			Distance	View Angle	Screening Pl	Air Absorption	Resultant, Leq dB(A)
							Distance	View Angle	Speed					
S4	Refuse vehicle	Mobile	97	180	36	20	1185	-31	-10	-3.6	3		24	

Source ID	Description	Source Type	Resultant, Leq dB(A)
S1	Leachate treatment plant	Fixed	0
S2	Ammonia scrapping	Fixed	9
S4	Refuse vehicle	Mobile	24
S5	Waste filling	Mobile	37
Total ONL Leq(Cont'd) dB(A)			37
Daytime noise criteria dB(A)			58
Compliance			Yes

Note:

- Haul Road Traffic within the site
 BSS228 Pt 1:1997, D.3.2 Method for mobile plant using a regular well defined route (haul roads)
 $L_{Aeq, 1hr} = L_{wa} - 35 + 10 \log Q - 10 \log V - 10 \log d + 10 \log(Aw/180) + FE$
 where
 L_{wa} = sound power level of the plant (truck)
 Q = number of vehicles (truck) per hr
 V = average vehicle speed (km/hr)
 d = distance of receiving position from centre of haul road
 FE = facade effect
- Predicted noise level at waste filling is based on the maximum SPL of SSa, SSb & SSc, as there is no overlapping between the different phases.
- Distance correction for fixed plant and national source = $-20 \log r - 8$ based on hemi-spherical radiation, where r = distance.
- 10dB(A) reduction for total screening from natural topography, 5dB(A) reduction for partial screening from the hill slope.
- Assuming typical Relative humidity is at 70% and Temperature is at 25°C, based on ISO 9613 "Method for calculation of the Absorption of Sound By the Atmosphere", the air absorption is $-3dB / km$

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Noise Sensitive Receiver: SR6 Heung Yuen Wai

Source ID	Description	Type	SWL	Distance	Adjustments			Duration of activity as percentage of 30mins	Resultant, Leq dB(A)
					Distance ⁽¹⁾	Screening ⁽²⁾	Air absorption ⁽³⁾		
S1	Leachate treatment plant	Fixed	75	1467	-71	-10	-4.4	30	0
S2	Ammonia scrubbing	Fixed	88	1466	-71	-10	-4.4	30	11
S5a	Waste filling	Notional	112	1511	-72	-10	-4.5	30	29
S5b	Phase 1	Notional	112	2096	-74	-10	-6.3	30	24
S5c	Phase 2	Notional	112	1911	-70	-10	-3.9	30	31

Source ID	Description	Type	SWL	No. of Vehicle (1hr)	No. of Vehicle (30min)	Vehicle Speed	Distance	View Angle	No. of Vehicle	Speed	Distance	View Angle	No. of Vehicle	Screening ⁽⁴⁾	Air absorption ⁽⁵⁾	Resultant, Leq dB(A)
S4	Reuse vehicle IV	Mobile	97	180	90	20	1287	34	20	-13	31	7	20	-10	-3.9	21

Source ID	Description	Type	Resultant Leq dB(A)
S1	Leachate treatment plant	Fixed	0
S2	Ammonia scrubbing	Fixed	11
S4	Reuse vehicle	Mobile	21
S5	Waste filling	Notional	31
	Total CM, Leq(30min) dB(A)		31
	Daytime noise criteria dB(A)		45
	Compliance		Yes

Notes:

- (1) Haul Road Traffic within the site
- (2) BSS228 Pt 1:1997, D.3.5.2 Method for mobile plant using a regular well defined route (haul roads)
 $L_{Aeq, 1hr} = L_{wa} - 33 + 10 \log Q - 10 \log V - 10 \log d + 10 \log (Av/180) + FE$
 where
 L_{wa} = sound power level of the plant (truck)
 Q = number of vehicles (truck) per hr
 V = average vehicle speed (km/hr)
 d = distance of receiving position from centre of haul road
 Av = view angle to the haul road segment
 FE = facade effect
- (3) Predicted noise level at waste filling is based on the maximum SPL of S5a, S5b & S5c, as there is no overlapping between the different phases.
- (4) Distance correction for fixed plant and notional source = $-20 \log r - 8$ based on hemispherical radiation, where r = distance.
- (5) $10 \log(A)$ reduction for total screening from natural topography, $5 \log(A)$ reduction for partial screening from the hill slope.
- (6) Assuming typical Relative Humidity is at 70% and Temperature is at 25°C, based on ISO 9613 Method for calculation of the Absorption of Sound By the Atmosphere, the air absorption is -3 dB / km

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Noise Sensitive Receiver: SR7 Tsung Yuen Ha

Source ID	Description	Source Type	SWL	Distance (m)	Adjustments			Duration of activity as percentage of 30mins	Resultant, Leq dB(A)
					Screening (1)	Air absorption (2)	View Angle		
S1	Leachate treatment plant	Fixed	75	1828	-10	-5.5	30	0	
S2	Ammonia scrubbing	Fixed	88	1851	-10	-5.6	30	0	
S5a	Waste filling Phase 1	Notional	112	2022	-5	-6.1	100%	30	
S5b	Waste filling Phase 2	Notional	112	2624	-5	-7.9	100%	26	
S5c	Waste filling Phase 3	Notional	112	1850	-5	-5.5	100%	31	

Source ID	Description	Source Type	SWL	No. of Vehicle (1/hr)	No. of Vehicle (30min)	Vehicle Speed (km/hr)	Distance (m)	View Angle (°)	No. of Vehicle	Speed (km/hr)	Adjustments		Resultant, Leq dB(A)
											Distance	View Angle	
S4	Refuse vehicle (1)	Mobile	97	180	90	20	1813	28	20	20	-3	-8	28

Source ID	Description	Source Type	Resultant, Leq dB(A)
S1	Leachate treatment plant	Fixed	0
S2	Ammonia scrubbing	Fixed	8
S4	Refuse vehicle	Mobile	17
S5	Waste filling (3)	Notional	31
Total CNEL, Leq (30min) dB(A)			31
Daytime noise criteria, dB(A)			52
Compliance			Yes

Note:

- Haul Road Traffic within the site
 $BS5228 Pt 1:1997, D,3.5.2$ Method for mobile plant using a regular well defined route (haul roads)
 $LA_{eq}, 1hr = L_{wa} + 10 \log Q + 10 \log V - 10 \log d + 10 \log(Av/180) + FE$
 where
 L_{wa} = sound power level of the plant (truck)
 Q = number of vehicles (truck) per hr
 V = average vehicle speed (km/hr)
 d = distance of receiving position from centre of haul road
 Av = view angle to the haul road segment
 FE = facade effect
- Predicted noise level at waste filling is based on the maximum SPL of S5a, S5b & S5c, as there is no overlapping between the different phases.
- Distance correction for fixed plant and notional source = $-20 \log r - 8$ based on hemi-spherical radiation, where r = distance.
- $10dB(A)$ reduction for total screening from natural topography, $5dB(A)$ reduction for partial screening from the hill slope.
- Assuming typical Relative Humidity is at 70% and Temperature is at 25°C, based on ISO 9613 Method for calculation of the Absorption of Sound By the Atmosphere, the air absorption is $-3dB / km$

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Noise Sensitive Receiver: SR8 Haikung Yuen

Source ID	Description	Source Type	SWL	Distance (m)	Adjustments			Duration of activity, min	Duration of activity as percentage of 30mins	Resultant, Leq dB(A)
					Screening (M)	View Angle	Facade			
S1	Leachate treatment plant	Fixed	75	1484	-10	-	3	30	100%	0
S2	Ammunition scrapping	Fixed	88	1488	-10	-	3	30	100%	11
S5	Waste filling	Mobile	112	1585	-71	-	0	30	100%	28
S5a	Phase 1	National	112	2177	-10	-	3	30	100%	28
S5b	Phase 2	National	112	1388	-10	-	3	30	100%	28
S5c	Phase 3	National	112	1388	-10	-	3	30	100%	30

Source ID	Description	Source Type	SWL	No. of Vehicle (1hr)	No. of Vehicle (30min)	Vehicle Speed (km/h)	Distance	View Angle	No. of Vehicle	Speed	Distance	View Angle	Screening (M)	Adjustments	Facade	Resultant, Leq dB(A)
S4	Refuse vehicle	Mobile	87	150	90	30	1388	33	20	13	31	7	-10	-	3	21

Source ID	Description	Source Type	Resultant, Leq dB(A)
S1	Leachate treatment plant	Fixed	0
S2	Ammunition scrapping	Fixed	11
S4	Refuse vehicle	Mobile	21
S5	Waste filling	National	30
Total CNL, Leq(30min) dB(A)			30
Daytime noise criteria, dB(A)			44
Compliance			Yes

Notes:

- Haul Road Traffic within the site
 E5522B Pt 1:1997, D.3.5.2 Method for mobile plant using a regular well defined route (haul roads)
 $LWA_{eq} = LWA_{ref} + 10 \log_{10} \frac{V}{V_{ref}} + 10 \log_{10} \frac{d}{d_{ref}} + 10 \log_{10} \frac{A_{v180}}{A_{v180}} + FE$
 where
 LWA_{eq} = sound power level of the plant (truck)
 V = number of vehicles (trucks) per hr
 V_{ref} = average vehicle speed (km/hr)
 d = distance of receiving position from centre of haul road
 A_{v180} = view angle to the haul road segment
 FE = facade effect
- Predicted noise level at waste filling is based on the maximum SPL of SEA, S5B & S5C, as there is no overlapping between the different phases.
- Distance correction for fixed plant and national sources = $-20 \log_{10} r - d$ based on hemi-spherical radiation, where r = distance.
- 10dB(A) reduction for total screening from natural topography, 5dB(A) reduction for partial screening from the hill slope.
- Assuming typical Relative Humidity is at 70% and Temperature is at 25°C, based on ISO 9613 Method for calculation of this Absorption of Sound By the Atmosphere, the air absorption is 0.3dB/1km

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Noise Sensitive Receiver: SR9 Lin Ma Hang

Source ID	Description	Source Type	SWL	Distance (ft)	Adjustments			Duration of activity (min)	Duration of activity as percentage of 30mins	Resultant, Leq dB(A)
					Distance Pt	Screening (ft)	Air Absorption (ft)			
S1	Leachate treatment plant	Fixed	75	1652	-72	-10	-5.0	30	100%	10
S2	Ammonia scrubbing	Fixed	88	1621	-72	-10	-4.9	30	100%	0
S5	Waste filling	Notional	112	1171	-69	-5	-3.5	30	100%	37
S5a	Phase 1 Notional	Notional	112	1124	-69	-5	-3.4	30	100%	38
S5b	Phase 2 Notional	Notional	112	897	-67	-5	-2.7	30	100%	40
S5c	Phase 3 Notional	Notional	112							

Source ID	Description	Source Type	SWL	No. of Vehicle (ft)	No. of Vehicle (30min)	Vehicle Speed (mph)	Distance	View Angle	No. of Vehicle	Speed	Distance	View Angle	Screening	Air Absorption	Resultant, Leq dB(A)
S4	Haul Road Vehicle (1)	Mobile	87	180	80	20	832	71	20	13	29	4	10	25	28

Source ID	Description	Source Type	Resultant, Leq dB(A)
S1	Leachate treatment plant	Fixed	0
S2	Ammonia scrubbing	Fixed	10
S4	Refuse vehicle	Mobile	28
S5	Waste filling	Notional	40
Total, Leq (30min) dB(A)			40
Exceeding noise criteria, dB(A)			44
Compliance			Yes

Note:

- Haul Road Traffic within the site
 BS2228 Pt 1:1997, D.3.5.2 Method for mobile plant using a regular well defined route (haul roads)
 $L_{Aeq, 1hr} = L_{we-33} + 10 \log Q - 10 \log V - 10 \log d + 10 \log(AwF180) + FE$
 where
 Lwa = sound power level of the plant (truck)
 Q = number of vehicles (truck) per hr
 V = average vehicle speed (km/hr)
 d = distance of receiving position from centre of haul road
 Aw = view angle to the haul road segment
 FE = façade effect
- Predicted noise level at waste filling is based on the maximum SPL of S5a, S5b & S5c, as there is no overlapping between the different phases.
- Distance correction for fixed plant and notional source = $-20 \log r - 0$ based on hemi-spherical radiation, where r = distance.
- 10dB(A) reduction for total screening from natural topography, 5dB(A) reduction for partial screening from the hill slope.
- Assuming typical Relative Humidity is at 70% and Temperature is at 25°C, based on ISO 9613 "Method for calculation of the Absorption of Sound By the Atmosphere", the air absorption is ~3dB / km

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Noise Sensitive Receiver: SR10 Tung Lo Hang

Source ID	Description	Source Type	SWL	Distances (1hr)	Distances (30min)	Adjustments			Duration of activity as percentage of 30mins	Resultant, Leq dB(A)
						Screening (1)	Air Absorption (2)	View Angle (3)		
S1	Leachate treatment plant	Fixed	75	781	-86	-10	-2.3	30	6	
S2	Ammonia scrapping	Fixed	88	780	-86	-10	-2.3	30	19	
S5a	Waste filling Phase 1	Notional	112	991	-68	-5	-3.0	30	39	
S5b	Waste filling Phase 2	Notional	112	1613	-72	-5	-4.8	30	33	
S5c	Waste filling Phase 3	Notional	112	992	-67	-5	-2.6	30	40	

Source ID	Description	Type	SWL	No. of Vehicle (1hr)	No. of Vehicle (30min)	Vehicle Speed	Distance	View Angle	No. of Vehicle	Screening (1)	Air Absorption (2)	View Angle (3)	Distance	Screening (4)	Air Absorption (5)	View Angle (6)	Resultant, Leq dB(A)
S4	Haul Road Traffic	Mobile	97	180	90	20	813	56	20	-13	-5	-5	50	-16	-2.4	-5	37

Source ID	Description	Type	SWL	No. of Vehicle (30min)	Vehicle Speed	Distance	View Angle	No. of Vehicle	Screening (1)	Air Absorption (2)	View Angle (3)	Distance	Screening (4)	Air Absorption (5)	View Angle (6)	Resultant, Leq dB(A)
S1	Leachate treatment plant	Fixed	8													
S2	Ammonia scrapping	Fixed	19													
S4	Refuse vehicle	Mobile	27													
S5	Waste filling	Notional	40													
	Total CNL Leq(30min) dB(A)		41													
	Daytime noise criteria dB(A)	Compliance	53													
			Yes													

Note:

[1] Haul Road Traffic within the site
 BS5228 Pt 1:1997, D.3.5.2 Method for mobile plant using a regular well defined route (haul roads)
 $L_{Aeq, 1hr} = L_{wa} - 33 + 10 \log Q - 10 \log V - 10 \log d + 10 \log (Av/760) + FE$
 where

L_{wa} = sound power level of the plant (truck)
 Q = number of vehicles (truck) per hr
 V = average vehicle speed (km/hr)
 d = distance of receiving position from centre of haul road
 Av = view angle to the haul road segment
 FE = façade effect

[2] Predicted noise level at waste filling is based on the maximum SPL of S5a, S5b & S5c, as there is no overlapping between the different phases.

[3] Distance correction for fixed plant and notional source = $-20 \log r - 8$ based on hemi-spherical radiation, where r = distance,

[4] 10dB(A) reduction for total screening from natural topography, 5dB(A) reduction for partial screening from the hill slope.

[5] Assuming typical Relative Humidity is at 70% and Temperature is at 25°C, based on ISO 9613. *Method for calculation of the Absorption of Sound By the Atmosphere*, the air absorption is -0.005 dB / km