

CLIENT:	Viridor
JOB NO:	LE10104
SITE:	Lostock Gralam
ACTIVITY:	Summary of Predicted Noise Levels V2
DATE:	22.09.09
CALC'D BY:	Hannah Jones
REVISION:	

Receptor:	Address:
Receptor 1	227 Manchester Road
Receptor 2	16 St John's Close
Receptor 3	38 James Street
Receptor 4	25 Bowden Street
Receptor 5	2 Ann Street
Receptor 6	Wade Works Residential Development

DAYTIME - (0700 - 1930 Hours)

Activity	Predicted Noise Levels						Predicted Rating Level						Average Measured L90 Noise Levels						Difference Between Rating level and L90					
	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6
WTP	35.7	31.3	32.7	31.3	35.2	37.2	35.7	31.5	33.0	31.7	35.2	37.5												
Rail Movements	35.6	10.9	27.3	25.0	35.8	23.3	40.6	15.9	32.3	30.0	40.8	28.3												
Movements of Containers - Fork Lift	34.9	13.9	15.1	26.6	28.3	19.5	39.9	18.9	20.1	31.6	33.3	24.5												
Vehicle Movements	27.2	25.1	0.0	15.2	26.6	8.4	27.2	25.1	0.0	15.2	26.6	8.4												
TOTAL	40.4	32.3	33.9	33.4	39.1	37.4	44.1	32.7	35.8	36.0	42.5	38.2	46.3	41.8	39.4	38.9	50.6	38.9	-2.2	-9.1	-3.6	-2.9	-8.1	-0.7

DAYTIME - (0700 - 1930 Hours)

Activity	Predicted Noise Levels						Predicted Rating Level						Average Measured L90 Noise Levels						Difference Between Rating level and L90					
	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6
WTP	35.7	31.3	32.7	31.3	35.2	37.2	35.7	31.5	33.0	31.7	35.2	37.5												
Rail Loading - Gantry Crane	29.1	5.5	10.8	21.3	22.6	14.7	34.1	10.5	15.8	26.3	27.6	19.7												
Movements of Containers - Fork Lift	34.9	13.9	15.1	26.6	28.3	19.5	39.9	18.9	20.1	31.6	33.3	24.5												
Vehicle Movements	27.2	25.1	0.0	15.2	26.6	8.4	27.2	25.1	0.0	15.2	26.6	8.4												
TOTAL	39.1	32.3	32.8	33.0	36.6	37.3	42.2	32.6	33.3	35.3	38.1	37.8	46.3	41.8	39.4	38.9	50.6	38.9	-4.1	-9.2	-6.1	-3.6	-12.5	-1.1

DAYTIME - (0700 - 1930 Hours)

Activity	Predicted Noise Levels						Predicted Rating Level						Average Measured L90 Noise Levels						Difference Between Rating level and L90					
	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6
WTP	35.7	31.3	32.7	31.3	35.2	37.2	35.7	31.5	33.0	31.7	35.2	37.5												
Movements of Containers - Fork Lift	34.9	13.9	15.1	26.6	28.3	19.5	39.9	18.9	20.1	31.6	33.3	24.5												
Vehicle Movements	27.2	25.1	0.0	15.2	26.6	8.4	27.2	25.1	0.0	15.2	26.6	8.4												
TOTAL	38.6	32.3	32.8	32.7	36.5	37.3	41.4	32.6	33.2	34.7	37.7	37.7	46.3	41.8	39.4	38.9	50.6	38.9	-4.9	-9.2	-6.2	-4.2	-12.9	-1.2

DAYTIME - (1930 - 2300 Hours)

Activity	Predicted Noise Levels						Predicted Rating Level						Average Measured L90 Noise Levels						Difference Between Rating level and L90					
	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6
WTP	35.2	30.3	32.0	30.7	35.1	36.5	35.2	30.6	32.4	31.0	35.1	36.9												
Rail Movements	35.6	10.9	27.3	25.0	35.8	23.3	40.6	15.9	32.3	30.0	40.8	28.3												
Movements of Containers - Fork Lift	34.9	13.9	15.1	26.6	28.3	19.5	39.9	18.9	20.1	31.6	33.3	24.5												
TOTAL	40.0	30.5	33.3	32.9	38.9	36.8	43.9	31.0	35.5	35.7	42.4	37.7	46.3	41.8	39.4	38.9	50.6	38.9	-2.4	-10.8	-3.9	-3.2	-8.2	-1.2

DAYTIME - (1930 - 2300 Hours)

Activity	Predicted Noise Levels						Predicted Rating Level						Average Measured L90 Noise Levels						Difference Between Rating level and L90					
	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6
WTP	35.2	30.3	32.0	30.7	35.1	36.5	35.2	30.6	32.4	31.0	35.1	36.9												
Movements of Containers - Fork Lift	34.9	13.9	15.1	26.6	28.3	19.5	39.9	18.9	20.1	31.6	33.3	24.5												
TOTAL	38.0	30.4	32.1	32.1	35.9	36.6	41.1	30.9	32.6	34.3	37.3	37.2	46.3	41.8	39.4	38.9	50.6	38.9	-5.2	-10.9	-6.8	-4.6	-13.3	-1.7

NIGHT-TIME - (2300 - 0700 Hours)

Activity	Predicted Noise Levels						Predicted Rating Level						Average Measured L90 Noise Levels						Difference Between Rating level and L90					
	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6
WTP	35.2	30.8	32.8	31.4	35.1	37.2	35.2	31.1	33.1	31.7	35.2	37.6												
TOTAL	35.2	30.8	32.8	31.4	35.1	37.2	35.2	31.1	33.1	31.7	35.2	37.6	42.7	42.9	39.8	39.1	41.5	41.7	-7.5	-11.8	-6.7	-7.4	-6.3	-4.1

CLIENT:	Viridor
JOB NO:	LE10104
SITE:	Lostock Gralam
ACTIVITY:	WTP Source Noise Levels
DATE:	14.09.09
CALC'D BY:	
REVISION:	

Summary of Assumptions Made in the Calculations, Information obtained etc:

1. RCV & HGVs in WRH based on traffic info provided by Borehams. 47 vehicles in WRH per day, 12.5 hrs reception per day, 4 per hour. 10 mins to unload per vehicle. Lw corrected appropriately.
2. RCV/HGV Lw based on lorry unloading in BS5228-1, page 101
3. RCVs/HGVs in HWRC RWP based on traffic info provided by Borehams. 8 vehicles in HWRC RWP per day, 12.5 hrs reception per day, 1 per hour. 10 mins to unload per vehicle. Lw corrected appropriately
4. Loading shovel Lw based on information provided by Viridor for GMWDA jobs
5. Windshifter, Optical separator and heavy duty shredder Lw's based on information provided by Clark HAASE for GMWDA jobs
6. Biofilter SPLs based on information provided for GMWDA sites
7. Biodigging area SPL based on information provided for Dargavel site
8. Assumed Noise Levels for Densimetric Tables

Source Noise Levels of Plant

Section of MBT Process	Component	Source Noise Levels (dB(A))	No. of Units	Predicted Reverberant Source Noise Levels (dB(A))	Total Reverberant Sound Pressure Level (dB(A))
Waste Reception Hall (WRH) - 0700 to 1930 Hours	Shredder	*	88	2	91.0
	Feeding Conveyor (to MSP)	*	69	-	69.0
	Loading Shovel (Lw)	**	108	1	90.8
	RCVs/HGVs - unloading waste (Lw)	***	112	4 per hour	93.0
WRH - 1930 to 0700 Hours	Shredder	*	88	2	91.0
	Feeding Conveyor (to MSP)	*	69	-	69.0
	Loading Shovel (Lw)	**	108	1	90.8
	Trommel Screen	*	87	5	94.0
Mechanical Separation Process (MSP) - 24 Hours	Windshifter&Combiseparator (Lw)	**	101	4	98.4
	Fe Separator	*	84	5	91.0
	Non-Fe Separator	*	85	5	92.0
	Windshifter	*	88	2	91.0
	NIR Optical Separator	*	95	2	98.0
	Stretch Deck Screen	*	85	1	85.0
	Densimetric Tables	*	95	1	95.0
	Compactor Station	*	90	1	90.0
	Conveyors	*	69	-	69.0
	Biodigesting Tunnels (BT) - 24 Hours	RDF loading conveyor	*	80	1
Tunnel Filling		*	78.5	2	81.5
Automatic Discharge Device		*	84.5	1	84.5
Bio-Drying		*	87	13	87.0
Conveyors		*	78.3	-	78.3
HWRC Residual Waste Processing Facility (HWRC RWP) - 0700 to 1930 Hours		Heavy Duty Shredder (Lw)	**	108	1
	Windshifter&Combiseparator (Lw)	**	101	1	87.3
	Trommel Screens	*	87	2	90.0
	Fe Separator	*	84	2	87.0
	Loading Shovel (Lw)	*	108	1	86.5
	RCVs/HGVs - unloading waste (Lw)	***	112	2 per hour	93.5
HWRC Residual Waste Processing Facility (HWRC RWP) - 1930 to 2300 Hours	Heavy Duty Shredder (Lw)	**	108	1	94.3
	Windshifter&Combiseparator (Lw)	**	101	1	87.3
	Trommel Screens	*	87	2	90.0
	Fe Separator	*	84	2	87.0
	Loading Shovel (Lw)	*	108	1	86.5
HWRC Residual Waste Processing Facility (HWRC RWP) - 2300 to 0700 Hours	Heavy Duty Shredder (Lw)	**	108	1	94.3
	Windshifter&Combiseparator (Lw)	**	101	1	87.3
	Trommel Screens	*	87	2	90.0
	Fe Separator	*	84	2	87.0
	Loading Shovel (Lw)	*	108	1	95.0
Conveyor from HWRC to Waste Reception Hall - 24 Hours	Conveyer	*	69	-	-
Biofilter	Day & Night	**	88.8	-	-

* Information from Technology Providers. Considered to be representative of reverberant noise levels.

** Information from Wardell Armstrong Archives. Corrected for reverberant field as detailed in the Table below.

*** Information obtained from BS5228-1:2009. Corrected for reverberant field as detailed in the Table below.

Reverberant SPL and Room Constant, R_c, for calculating Reverberation SPL

Area of Building	Width at Longest Length (m) *	Length at longest length(m) *	Height (m)	Surface Area of Facades, S (m ²)	Absorption Co-efficient	Room Constant	Lw (dB(A))	Reverberant SPL
WRH - Loading Shovel	50	70	16.26	10303	0.02	210.27	108.0	90.8
WRH - RCV	50	70	16.26	10303	0.02	210.27	110.2	93.0
MSP - Windshifter	45	105	16.26	14328	0.02	292.41	107.0	88.4
HWRC - Shredder	30	50	13.45	4592	0.02	93.71	108.0	94.3
HWRC - Windshifter&Combiseparator	30	50	13.45	4592	0.02	93.71	101.0	87.3
HWRC - RCV	30	50	13.45	4592	0.02	93.71	107.2	93.5
HWRC - Loading Shovel (Day)	30	50	13.45	4592	0.02	93.71	100.2	86.5
HWRC - Loading Shovel (Night)	30	50	13.45	4592	0.02	93.71	108.0	94.3

CLIENT:	Vindor
JOB NO:	LE1014
SITE:	Lockstock Gralam
ACTIVITY:	WTP
DATE:	22.09.09
CALCD BY:	Hannah Jones
REVISION:	

Summary of Assumptions Made in the Calculations. Information obtained etc:
 1. Loading/Unloading of Containers based on traffic info provided by Waterman Berhams. 7 vehicles per day, 1 per hour. Approx 10 minutes to load/unload a container. Noise level based on that used for GMWDA sites.

RECEPTOR 1:

Activity	Reverberant SPL dB(A)	Level of Attenuation of Building	Height of Building to Eaves i.e. a (m)	Length of Building Façade Area i.e. b (m)	Surface Area of Façade (m ²)	SPL dB(A) Outside facade	Distance where Plane-wave Correction goes to Line Source (m) i.e. >=3.14	Distance where Line Source Correction goes to Point Source (m) i.e. >=3.14	Distance to Receiver,R(m)	Line Source Corrected dB(A)	Point Source Corrected dB(A)	Barrier Correction	Soft Ground Distance (m)	Soft Ground Attenuation	Activity L _{AEq}
INTERNAL PLANT - Daytime (0700 to 1930 Hours)															
WRH	96.5	30.0	16.26	50.00	813	60.5	5.2	15.9	255	56.6	31.5	0.0	100.0	2.0	29.6
MSP	102.6	34.0	16.26	105.00	1707.3	62.6	5.2	33.4	270	54.5	36.3	0.0	100.0	1.9	34.4
Bio Tunnels	90.4	25.0	10.20	120.00	1224	59.4	3.2	38.2	305	48.7	30.6	20.0	100.0	1.8	10.6
HWRC RWP	98.7	25.0	13.45	30.00	403.5	67.7	4.3	9.6	340	64.2	33.2	16.9	100.0	1.7	16.3
TOTAL															35.7
INTERNAL PLANT - Daytime (1930 to 2300 Hours)															
WRH	93.9	30.0	16.26	50.00	813	57.9	5.2	15.9	255	53.0	29.0	0.0	100.0	2.0	27
MSP	102.6	34.0	16.26	105.00	1707.3	62.6	5.2	33.4	270	54.5	36.3	0.0	100.0	1.9	34.4
Bio Tunnels	90.4	25.0	10.20	120.00	1224	59.4	3.2	38.2	305	48.7	30.6	20.0	100.0	1.8	10.6
HWRC RWP	97.1	25.0	13.45	30.00	403.5	66.1	4.3	9.6	340	62.7	31.6	16.9	100.0	1.7	14.7
TOTAL															35.2
INTERNAL PLANT - Night-time (2300 to 0700 Hours)															
WRH	93.9	30.0	16.26	50.00	813	57.9	5.2	15.9	255	53.0	29.0	0.0	100.0	2.0	27
MSP	102.6	34.0	16.26	105.00	1707.3	62.6	5.2	33.4	270	54.5	36.3	0.0	100.0	1.9	34.4
Bio Tunnels	90.4	25.0	10.20	120.00	1224	59.4	3.2	38.2	305	48.7	30.6	20.0	100.0	1.8	10.6
HWRC RWP	99.0	25.0	13.45	30.00	403.5	68.0	4.3	9.6	340	64.5	33.5	16.9	100.0	1.7	16.6
TOTAL															35.2

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver,R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pk} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Barrier Correction	Activity LAeq,1hr (Excluding Attenuation provided by the Building)	Level of Attenuation Provided by Building	Activity LAeq,1hr
Loading - Unloading of Containers	70	10	370	31.4	38.6	100.0	1.6	16	7.96	0	29.1	34.0	-4.9

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver,R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pk} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Level of Attenuation Provided by Building / Barrier Correction	Activity L _{AEq,1hr}
Biofilter	88.8	1	380	51.6	37.2	100.0	1.6	100	0	43.0	-5.8
Conveyor from Bio Tunnels to MSP	67.9	2	490	47.8	20.1	100.0	1.3	100	0	17.2	2.9
Conveyor from HWRC to Waste Reception Hall	69	1	335	50.5	18.5	100.0	1.7	100	0	20.0	-1.5
TOTAL											2.9

Activity	Activity L _{AEq}	Rating Level L _{AEq}
Internal Plant	35.7	35.7
External Plant	0.0	0.0
External Plant	2.9	7.9
TOTAL	35.7	35.7

Activity	Activity L _{AEq}	Rating Level L _{AEq}
Internal Plant	35.2	35.2
External Plant	2.9	7.9
TOTAL	35.2	35.2

Activity	Activity L _{AEq}	Rating Level L _{AEq}
Internal Plant	35.2	35.2
External Plant	2.9	7.9
TOTAL	35.2	35.2

RECEPTOR 2:

Activity	Reverberant SPL dB(A)	Level of Attenuation of Building	Height of Building to Eaves i.e. a (m)	Length of Building Façade Area i.e. b (m)	Surface Area of Façade (m ²)	SPL dB(A) Outside facade	Distance where Plane-wave Correction goes to Line Source (m) i.e. >=3.14	Distance where Line Source Correction goes to Point Source (m) i.e. >=3.14	Distance to Receiver,R(m)	Line Source Corrected dB(A)	Point Source Corrected dB(A)	Barrier Correction	Soft Ground Distance (m)	Soft Ground Attenuation	Activity L _{AEq}
INTERNAL PLANT - Daytime (0700 to 1930 Hours)															
WRH	96.5	25.0	16.3	50.00	813	65.5	5.2	15.9	620	60.6	28.8	0.0	500.0	3.4	25.5
MSP	102.6	25.0	16.3	105.00	1707.3	71.6	5.2	33.4	630	63.5	38.0	11.2	500.0	3.3	26.8
Bio Tunnels	90.4	25.0	10.2	120.00	1224	59.4	3.2	38.2	590	48.7	24.9	0.0	500.0	3.5	21.4
HWRC RWP	98.7	25.0	13.5	30.00	403.5	67.7	4.3	9.6	550	64.2	29.0	0.0	500.0	3.7	25.4
TOTAL															31.2
INTERNAL PLANT - Daytime (1930 to 2300 Hours)															
WRH	93.9	25.0	16.3	50.00	813	62.9	5.2	15.9	620	58.0	26.2	0.0	500.0	3.4	22.9
MSP	102.6	25.0	16.3	105.00	1707.3	71.6	5.2	33.4	630	63.5	38.0	11.2	500.0	3.3	26.8
Bio Tunnels	90.4	25.0	10.2	120.00	1224	59.4	3.2	38.2	590	48.7	24.9	0.0	500.0	3.5	21.4
HWRC RWP	97.1	25.0	13.5	30.00	403.5	66.1	4.3	9.6	550	62.7	27.5	0.0	500.0	3.7	23.9
TOTAL															30.2
INTERNAL PLANT - Night-time (2300 to 0700 Hours)															
WRH	93.9	25.0	16.3	50.00	813	62.9	5.2	15.9	620	58.0	26.2	0.0	500.0	3.4	22.9
MSP	102.6	25.0	16.3	105.00	1707.3	71.6	5.2	33.4	630	63.5	38.0	11.2	500.0	3.3	26.8
Bio Tunnels	90.4	25.0	10.2	120.00	1224	59.4	3.2	38.2	590	48.7	24.9	0.0	500.0	3.5	21.4
HWRC RWP	99.0	25.0	13.5	30.00	403.5	68.0	4.3	9.6	550	64.5	29.3	0.0	500.0	3.7	25.6
TOTAL															30.7

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver,R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pk} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Barrier Correction	Activity LAeq,1hr (Excluding Attenuation provided by the Building)	Level of Attenuation Provided by Building	Activity LAeq,1hr
Loading - Unloading of Containers	70	10	670	36.5	33.5	500.0	3.2	16	7.96	10.9	14.6	22.0	-7.4

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver,R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pk} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Level of Attenuation Provided by Building / Barrier Correction	Activity L _{AEq,1hr}
Biofilter	88.8	1	555	54.9	33.9	500.0	3.6	100	0	43.0	-9.1
Conveyor from Bio Tunnels to MSP	67.9	2	590	49.4	18.5	500.0	3.5	100	0	0.0	15
Conveyor from HWRC to Waste Reception Hall	69	1	590	55.4	13.6	500.0	3.5	100	0	20.0	-6.4
TOTAL											15.0

Activity	Activity L _{AEq}	Rating Level L _{AEq}
Internal Plant	31.2	31.2
External Plant	0.0	0.0
External Plant	15.0	20.0
TOTAL	31.3	31.5

Activity	Activity L _{AEq}	Rating Level L _{AEq}
Internal Plant	30.2	30.2
External Plant	15.0	20.0
TOTAL	30.3	30.6

Activity	Activity L _{AEq}	Rating Level L _{AEq}
Internal Plant	30.7	30.7
External Plant	15.0	20.0
TOTAL	30.8	31.1

RECEPTOR 3:

Activity	Reverberant SPL dB(A)	Level of Attenuation of Building	Height of Building to Eaves I.e a (m)	Length of Building Façade Area I.e. b (m)	Surface Area of Façade (m ²)	SPL dB(A) Outside facade	Distance where Plane-wave Correction goes to Line Source (m) I.e. >R3.14	Distance where Line Source Correction goes to Point Source (m) I.e. >R3.14	Distance to Receiver,R(m)	Line Source Corrected dB(A)	Point Source Corrected dB(A)	Barrier Correction	Soft Ground Distance (m)	Soft Ground Attenuation	Activity L _{Aeq}
INTERNAL PLANT - Daytime (0700 to 1930 Hours)															
WRH	96.5	25.0	16.3	70.0	1138.2	65.5	5.2	22.3	660	59.2	29.7	10.8	100.0	1.1	18.9
MSP	102.6	30.0	16.3	45.0	731.7	66.6	5.2	14.3	560	62.2	30.3	0.0	100.0	1.2	29.1
Bio Tunnels	90.4	25.0	10.2	44.0	448.8	59.4	3.2	14.0	545	53.0	21.2	0.0	100.0	1.2	20
HWRC RWP	98.7	25.0	13.5	50.0	672.5	67.7	4.3	15.9	615	62.0	30.3	0.0	100.0	1.1	29.1
TOTAL															32.6
INTERNAL PLANT - Daytime (1930 to 2300 Hours)															
WRH	93.9	25.0	16.3	70.0	1138.2	62.9	5.2	22.3	660	56.6	27.2	10.8	100.0	1.1	16.4
MSP	102.6	30.0	16.3	45.0	731.7	66.6	5.2	14.3	560	62.2	30.3	0.0	100.0	1.2	29.1
Bio Tunnels	90.4	25.0	10.2	44.0	448.8	59.4	3.2	14.0	545	53.0	21.2	0.0	100.0	1.2	20
HWRC RWP	97.1	25.0	13.5	50.0	672.5	66.1	4.3	15.9	615	60.4	28.7	0.0	100.0	1.1	27.6
TOTAL															31.9
INTERNAL PLANT - Night-time (2300 to 0700 Hours)															
WRH	93.9	25.0	16.3	70.0	1138.2	62.9	5.2	22.3	660	56.6	27.2	10.8	100.0	1.1	16.4
MSP	102.6	30.0	16.3	45.0	731.7	66.6	5.2	14.3	560	62.2	30.3	0.0	100.0	1.2	29.1
Bio Tunnels	90.4	25.0	10.2	44.0	448.8	59.4	3.2	14.0	545	53.0	21.2	0.0	100.0	1.2	20
HWRC RWP	99.0	25.0	13.5	50.0	672.5	68.0	4.3	15.9	615	62.3	30.5	0.0	100.0	1.1	29.4
TOTAL															32.6

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver,R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pA} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Barrier Correction	Activity LAeq,1hr (Excluding Attenuation provided by the Building)	Level of Attenuation Provided by Building	Activity LAeq,1hr
Loading - Unloading of Containers	70	10	660	36.4	33.6	100.0	1.1	16	7.96	0	24.6	22.0	2.6

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver,R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pA} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Level of Attenuation Provided by Building / Barrier Correction	Activity L _{Aeq,1hr}
EXTERNAL PLANT - Daytime (0700 to 2300 Hours) & Night-time (2300 to 0700 Hours)											
Biofiller	88.8	1	580	55.3	33.5	100.0	1.2	100	0	43.0	-9.5
Conveyor from Bio Tunnels to MSP	67.9	2	550	48.8	19.1	100.0	1.2	100	0	0.0	17.9
Conveyor from HWRC to Waste Reception Hall	69	1	650	56.3	12.7	100.0	1.1	100	0	20.0	-7.3
TOTAL											17.9

Daytime (0700 to 1930 Hours)		
Activity	Activity L _{Aeq}	Rating Level
Internal Plant	32.6	32.6
External Plant	0.0	0.0
External Plant	17.9	22.9
TOTAL	32.7	33.0

Daytime (1930 to 2300 Hours)		
Activity	Activity L _{Aeq}	Rating Level
Internal Plant	31.9	31.9
External Plant	17.9	22.9
TOTAL	32.0	32.4

Night-time (2300 to 0700 Hours)		
Activity	Activity L _{Aeq}	Rating Level L _{Aeq}
Internal Plant	32.6	32.6
External Plant	17.9	22.9
TOTAL	32.8	33.1

RECEPTOR 4:

Activity	Reverberant SPL dB(A)	Level of Attenuation of Building	Height of Building to Eaves I.e a (m)	Length of Building Façade Area I.e. b (m)	Surface Area of Façade (m ²)	SPL dB(A) Outside facade	Distance where Plane-wave Correction goes to Line Source (m) I.e. >R3.14	Distance where Line Source Correction goes to Point Source (m) I.e. >R3.14	Distance to Receiver,R(m)	Line Source Corrected dB(A)	Point Source Corrected dB(A)	Barrier Correction	Soft Ground Distance (m)	Soft Ground Attenuation	Activity L _{Aeq}
INTERNAL PLANT - Daytime (0700 to 1930 Hours)															
WRH	96.5	25.0	16.3	70.0	1138.2	65.5	5.2	22.3	710	59.2	29.1	15.5	150.0	1.5	13.8
MSP	102.6	30.0	16.3	45.0	731.7	66.6	5.2	14.3	600	62.2	29.7	0.0	150.0	1.7	28
Bio Tunnels	90.4	25.0	10.2	44.0	448.8	59.4	3.2	14.0	595	53.0	20.5	0.0	150.0	1.7	18.7
HWRC RWP	98.7	25.0	13.5	50.0	672.5	67.7	4.3	15.9	690	62.0	29.3	0.0	150.0	1.8	27.7
TOTAL															31.2
INTERNAL PLANT - Daytime (1930 to 2300 Hours)															
WRH	93.9	25.0	16.3	70.0	1138.2	62.9	5.2	22.3	710	56.6	26.5	15.5	150.0	1.5	11
MSP	102.6	30.0	16.3	45.0	731.7	66.6	5.2	14.3	600	62.2	29.7	0.0	150.0	1.7	28
Bio Tunnels	90.4	25.0	10.2	44.0	448.8	59.4	3.2	14.0	595	53.0	20.5	0.0	150.0	1.7	18.7
HWRC RWP	97.1	25.0	13.5	50.0	672.5	66.1	4.3	15.9	690	60.4	27.7	0.0	150.0	1.6	26.1
TOTAL															30.5
INTERNAL PLANT - Night-time (2300 to 0700 Hours)															
WRH	93.9	25.0	16.3	70.0	1138.2	62.9	5.2	22.3	710	56.6	26.5	15.5	150.0	1.5	11
MSP	102.6	30.0	16.3	45.0	731.7	66.6	5.2	14.3	600	62.2	29.7	0.0	150.0	1.7	28
Bio Tunnels	90.4	25.0	10.2	44.0	448.8	59.4	3.2	14.0	595	53.0	20.5	0.0	150.0	1.7	18.7
HWRC RWP	99.0	25.0	13.5	50.0	672.5	68.0	4.3	15.9	690	62.3	29.5	0.0	150.0	1.6	28
TOTAL															31.3

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver,R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pA} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Barrier Correction	Activity LAeq,1hr (Excluding Attenuation provided by the Building)	Level of Attenuation Provided by Building	Activity LAeq,1hr
Loading - Unloading of Containers	70	10	670	36.5	33.5	150.0	1.6	16	7.96	0	23.9	30.0	-6.1

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver,R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pA} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Level of Attenuation Provided by Building / Barrier Correction	Activity L _{Aeq,1hr}
EXTERNAL PLANT - Daytime (0700 to 2300 Hours) & Night-time (2300 to 0700 Hours)											
Biofiller	88.8	1	650	56.3	32.5	150.0	1.6	100	0	43.0	-10.5
Conveyor from Bio Tunnels to MSP	67.9	2	605	49.6	18.3	150.0	1.7	100	0	0.0	16.6
Conveyor from HWRC to Waste Reception Hall	69	1	715	57.1	11.9	150.0	1.5	100	0	13.3	-1.4
TOTAL											16.6

Daytime (0700 to 1930 Hours)		
Activity	Activity L _{Aeq}	Rating Level
Internal Plant	31.2	31.2
External Plant	0.0	0.0
External Plant	16.6	21.6
TOTAL	31.3	31.7

Daytime (1930 to 2300 Hours)		
Activity	Activity L _{Aeq}	Rating Level
Internal Plant	30.5	30.5
External Plant	16.6	21.6
TOTAL	30.7	31.0

Night-time (2300 to 0700 Hours)		
Activity	Activity L _{Aeq}	Rating Level L _{Aeq}
Internal Plant	31.3	31.3
External Plant	16.6	21.6
TOTAL	31.4	31.7

Activity	Reverberant SPL dB(A)	Level of Attenuation of Building	Height of Building to Eaves L _e a (m)	Length of Building Façade Area L _e b (m)	Surface Area of Façade (m ²)	SPL dB(A) Outside facade	Distance where Plane-wave Correction goes to Line Source (m) i.e. >=0.3.14	Distance where Line Source Correction goes to Point Source (m) i.e. >=0.3.14	Distance to Receiver R(m)	Line Source Corrected dB(A)	Point Source Corrected dB(A)	Barrier Correction	Soft Ground Distance (m)	Soft Ground Attenuation	Activity L _{eq}
RECEPTOR 5:															
INTERNAL PLANT - Daytime (0700 to 1930 Hours)															
WRH	96.5	30.0	16.3	50.0	813	60.5	5.2	15.9	310	55.6	29.8	11.2	100.0	1.8	18.6
MSP	102.6	34.0	16.3	105.0	1707.3	62.6	5.2	33.4	290	54.5	37.0	0.0	100.0	2.0	35
Bio Tunnels	90.4	25.0	10.2	120.0	1224	59.4	3.2	38.2	295	48.7	30.9	20.0	100.0	1.8	10.9
HWRC RWP	98.7	25.0	13.5	30.0	403.5	67.7	4.3	9.6	375	64.2	32.4	15.7	100.0	1.6	16.7
TOTAL															35.2
INTERNAL PLANT - Daytime (1930 to 2300 Hours)															
WRH	93.9	30.0	16.3	50.0	813	57.9	5.2	15.9	310	53.0	27.3	11.2	100.0	1.8	16.1
MSP	102.6	34.0	16.3	105.0	1707.3	62.6	5.2	33.4	290	54.5	37.0	0.0	100.0	2.0	35
Bio Tunnels	90.4	25.0	10.2	120.0	1224	59.4	3.2	38.2	295	48.7	30.9	20.0	100.0	1.8	10.9
HWRC RWP	97.1	25.0	13.5	30.0	403.5	66.1	4.3	9.6	375	62.7	30.8	15.7	100.0	1.6	15.1
TOTAL															35.1
INTERNAL PLANT - Night-time (2300 to 0700 Hours)															
WRH	93.9	30.0	16.3	50.0	813	57.9	5.2	15.9	310	53.0	27.3	11.2	100.0	1.8	16.1
MSP	102.6	34.0	16.3	105.0	1707.3	62.6	5.2	33.4	290	54.5	37.0	0.0	100.0	2.0	35
Bio Tunnels	90.4	25.0	10.2	120.0	1224	59.4	3.2	38.2	295	48.7	30.9	20.0	100.0	1.8	10.9
HWRC RWP	99.0	25.0	13.5	30.0	403.5	68.0	4.3	9.6	375	64.5	32.6	15.7	100.0	1.6	16.9
TOTAL															35.1

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver, R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pk} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Barrier Correction	Activity LAeq,1hr (Excluding Attenuation provided by the Building)	Level of Attenuation Provided by Building	Activity LAeq,1hr
Loading - Unloading of Containers	70	10	280	28.9	41.1	100.0	1.9	16	7.96	11.6	21.5	34.0	-12.5

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver, R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pk} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Level of Attenuation Provided by Building / Barrier Correction	Activity L _{max,1hr}
Biofiller	88.8	1	350	50.9	37.9	100.0	1.6	100	0	43.0	-5.1
Conveyor from Bio Tunnels to MSP	67.9	2	320	44.1	23.8	100.0	1.7	100	0	20.0	3.8
Conveyor from HWRC to Waste Reception Hall	69	1	370	51.4	17.6	100.0	1.6	100	0	15.0	2.6
TOTAL											6.3

Daytime (0700 to 1930 Hours)			Daytime (1930 to 2300 Hours)			Night-time (2300 to 0700 Hours)		
Activity	Activity L _{max}	Rating Level	Activity	Activity L _{max}	Rating Level	Activity	Activity L _{max}	Rating Level
Internal Plant	35.2	35.2	Internal Plant	35.1	35.1	Internal Plant	35.1	35.1
External Plant	6.3	11.3	External Plant	6.3	11.3	External Plant	6.3	11.3
TOTAL	35.2	35.2	TOTAL	35.1	35.1	TOTAL	35.1	35.2

Activity	Reverberant SPL dB(A)	Level of Attenuation of Building	Height of Building to Eaves L _e a (m)	Length of Building Façade Area L _e b (m)	Surface Area of Façade (m ²)	SPL dB(A) Outside facade	Distance where Plane-wave Correction goes to Line Source (m) i.e. >=0.3.14	Distance where Line Source Correction goes to Point Source (m) i.e. >=0.3.14	Distance to Receiver R(m)	Line Source Corrected dB(A)	Point Source Corrected dB(A)	Barrier Correction	Soft Ground Distance (m)	Soft Ground Attenuation	Activity L _{eq}
RECEPTOR 6:															
INTERNAL PLANT - Daytime (0700 to 1930 Hours)															
WRH	96.5	25.0	16.3	70.0	1138.2	65.5	5.2	22.3	405	59.2	34.0	11.7	100.0	1.5	22.3
MSP	102.6	30.0	16.3	45.0	731.7	66.6	5.2	14.3	300	62.2	35.7	0.0	100.0	1.8	33.9
Bio Tunnels	90.4	25.0	10.2	44.0	448.8	59.4	3.2	14.0	290	53.0	26.7	0.0	100.0	1.8	24.9
HWRC RWP	98.7	25.0	13.5	50.0	672.5	67.7	4.3	15.9	365	62.0	34.8	0.0	100.0	1.6	33.2
TOTAL															37.0
INTERNAL PLANT - Daytime (1930 to 2300 Hours)															
WRH	93.9	25.0	16.3	70.0	1138.2	62.9	5.2	22.3	405	56.6	31.4	11.7	100.0	1.5	19.7
MSP	102.6	30.0	16.3	45.0	731.7	66.6	5.2	14.3	300	62.2	35.7	0.0	100.0	1.8	33.9
Bio Tunnels	90.4	25.0	10.2	44.0	448.8	59.4	3.2	14.0	290	53.0	26.7	0.0	100.0	1.8	24.9
HWRC RWP	97.1	25.0	13.5	50.0	672.5	66.1	4.3	15.9	365	60.4	33.2	0.0	100.0	1.6	31.6
TOTAL															36.3
INTERNAL PLANT - Night-time (2300 to 0700 Hours)															
WRH	93.9	25.0	16.3	70.0	1138.2	62.9	5.2	22.3	405	56.6	31.4	11.7	100.0	1.5	19.7
MSP	102.6	30.0	16.3	45.0	731.7	66.6	5.2	14.3	300	62.2	35.7	0.0	100.0	1.8	33.9
Bio Tunnels	90.4	25.0	10.2	44.0	448.8	59.4	3.2	14.0	290	53.0	26.7	0.0	100.0	1.8	24.9
HWRC RWP	99.0	25.0	13.5	50.0	672.5	68.0	4.3	15.9	365	62.3	35.1	0.0	100.0	1.6	33.5
TOTAL															37.1

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver, R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pk} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Barrier Correction	Activity LAeq,1hr (Excluding Attenuation provided by the Building)	Level of Attenuation Provided by Building	Activity LAeq,1hr
Loading - Unloading of Containers	70	10	385	31.7	38.3	100.0	1.5	16	7.96	14.5	15.8	30.0	-14.2

Activity	SPL dB(A)	Distance from the source (m)	Distance to Receiver, R (m)	Distance Correction (Assuming All Hard Ground)	Sound Level L _{pk} (Distance Corrected)	Soft Ground Distance (m)	Soft Ground Attenuation	% On Time	On Time Correction	Level of Attenuation Provided by Building / Barrier Correction	Activity L _{max,1hr}
Biofiller	88.8	1	330	50.4	38.4	100.0	1.7	100	0	43.0	0
Conveyor from Bio Tunnels to MSP	67.9	2	290	43.2	24.7	100.0	1.8	100	0	0.0	22.8
Conveyor from HWRC to Waste Reception Hall	69	1	400	52.0	17.0	100.0	1.5	100	0	14.5	2.5
TOTAL											22.8

Daytime (0700 to 1930 Hours)			Daytime (1930 to 2300 Hours)			Night-time (2300 to 0700 Hours)		
Activity	Activity L _{max}	Rating Level	Activity	Activity L _{max}	Rating Level	Activity	Activity L _{max}	Rating Level
Internal Plant	37.0	37.0	Internal Plant	36.3	36.3	Internal Plant	37.1	37.1
External Plant	22.8	27.8	External Plant	22.8	27.8	External Plant	22.8	27.8
TOTAL	37.2	37.5	TOTAL	36.5	36.9	TOTAL	37.2	37.8

CLIENT:	Viridor
JOB NO:	LE10104
SITE:	Lostock Gralam
ACTIVITY:	Barrier Calculations
DATE:	22.09.09
CALC'D BY:	Hannah Jones
REVISION:	

Summary of Assumptions Made in the Calculations, Information obtained etc:
 1. Base heights based on info in AERMOD model

RECEPTOR 1:

Activity	Distance from Source to Ctr of Barrier (m)	Distance from Receptor to Ctr of Barrier (m)	Distance from Source to Receptor (m)	AOD Base Height of Source (m)	Source Height (m)	Total Source Height (m)	AOD Base Height of Receptor (m)	Total Receptor Height (m)	AOD Base Height of Barrier (m)	Barrier	Height of Barrier (m)	Total Height of Barrier (m)	Path Difference (m)	Barrier Correction (dB(A) - in accordance with CRTN)
Bio-Tunnels	25	280	305	25	5.1	30.1	24	25.2	25	WRH	18.6	43.6	3.98	20.0
HWRC	40	300	340	25	6.725	31.725	24	25.2	25	WRH	18.6	43.6	2.23	16.9
Biofilter	50	335	385	25	4.3	29.3	24	25.2	25	MSP	17.35	42.35	2.09	18.4
Bio Tunnel Conveyor	70	420	490	25	4	29	24	25.2	25	MSP	17.35	42.35	1.60	17.2
HWRC Conveyor	10	325	335	25	5	30	24	25.2	25	MSP	17.35	42.35	6.31	20.0
Gantry Crane	20	240	260	25	1	26	24	25.2	25	Fence	2.4	27.4	0.06	8.5
Gantry Crane	20	210	230	25	1	26	24	25.2	25	Fence	2.4	27.4	0.06	8.5
Gantry Crane	20	195	215	25	1	26	24	25.2	25	Fence	2.4	27.4	0.06	8.5
Moving Containers	50	265	315	25	2	27	24	25.2	25	Fence	2.4	27.4	0.01	6.4
Moving Containers	30	240	270	25	2	27	24	25.2	25	Fence	2.4	27.4	0.01	6.4
Moving Containers	30	205	235	25	2	27	24	25.2	25	Fence	2.4	27.4	0.01	6.4
Main Access - Seg 1	82	275	357	25	1.5	26.5	24	25.2	25	Existing Building	8	33	0.37	12.3
MBT - WRH - Seg 2	31	169	200	25	1.5	26.5	24	25.2	25	Existing Building	8	33	0.85	14.8
HWRC - RWP - Seg 4	45	370	415	25	1.5	26.5	24	25.2	25	WRH	17.35	42.35	3.10	20.0

RECEPTOR 2:

Activity	Distance from Source to Ctr of Barrier (m)	Distance from Receptor to Ctr of Barrier (m)	Distance from Source to Receptor (m)	AOD Base Height of Source (m)	Source Height (m)	Total Source Height (m)	AOD Base Height of Receptor (m)	Total Receptor Height (m)	AOD Base Height of Barrier (m)	Barrier	Height of Barrier (m)	Total Height of Barrier (m)	Path Difference (m)	Barrier Correction (dB(A) - in accordance with CRTN)
MSP	45	585	630	25	8.13	33.13	24	25.2	23	BIO-DT	14	37	0.24	11.2
Loading Containers	50	620	670	25	8.13	33.13	24	25.2	23	BIO-DT	14	37	0.21	10.9
HWRC Conveyor	15	575	590	25	5	30	24	25.2	25	HWRC	13.6	38.6	2.43	20.0
Train idling/coupling	65	650	715	25	2	27	24	25.2	25	MSP	17.35	42.35	2.01	18.2
Train idling/coupling	55	650	705	25	2	27	24	25.2	25	MSP	17.35	42.35	2.33	20.0
Gantry Crane	55	650	705	25	1	26	24	25.2	25	MSP	17.35	42.35	2.60	20.0
Gantry Crane	60	650	710	25	1	26	24	25.2	25	MSP	17.35	42.35	2.41	20.0
Gantry Crane	90	630	720	25	1	26	24	25.2	25	MSP	17.35	42.35	1.71	17.5
Moving Containers	20	655	675	25	2	27	24	25.2	25	MSP	17.35	42.35	5.43	20.0
Moving Containers	40	650	690	25	2	27	24	25.2	25	MSP	17.35	42.35	3.07	20.0
Moving Containers	75	635	710	25	2	27	24	25.2	25	MSP	17.35	42.35	1.78	17.7
MBT - MSP - Seg 6	40	650	690	25	1.5	26.5	24	25.2	25	WRH	18.6	43.6	3.76	20.0

RECEPTOR 3:

Activity	Distance from Source to Ctr of Barrier (m)	Distance from Receptor to Ctr of Barrier (m)	Distance from Source to Receptor (m)	AOD Base Height of Source (m)	Source Height (m)	Total Source Height (m)	AOD Base Height of Receptor (m)	Total Receptor Height (m)	AOD Base Height of Barrier (m)	Barrier	Height of Barrier (m)	Total Height of Barrier (m)	Path Difference (m)	Barrier Correction (dB(A) - in accordance with CRTN)
WRH	63	602	665	25	8.13	33.13	22	23.2	23	BIO-DT	14	37	0.20	10.8
HWRC Conveyor	10	640	650	25	5	30	22	23.2	23	BIO-DT	14	37	2.32	20.0
Train idling/coupling	50	590	640	25	2	27	22	23.2	25	MSP	17.35	42.35	2.60	20.0
Gantry Crane	75	600	675	25	1	26	22	23.2	25	MSP	17.35	42.35	2.06	18.3
Gantry Crane	125	600	725	25	1	26	22	23.2	25	MSP	17.35	42.35	1.36	16.6
Gantry Crane	145	630	775	25	1	26	22	23.2	25	MSP	17.35	42.35	1.20	16.1
Moving Containers	30	590	620	25	2	27	22	23.2	25	MSP	17.35	42.35	4.00	20.0
Moving Containers	80	600	680	25	2	27	22	23.2	25	MSP	17.35	42.35	1.75	17.6
Moving Containers	110	530	640	25	2	27	22	23.2	25	MSP	17.35	42.35	1.40	16.7
Main Access - Seg 1	70	635	705	25	1.5	26.5	22	23.2	25	HWRC	13.6	38.6	1.22	16.1
MBT - WRH - Seg 2	25	680	705	25	1.5	26.5	22	23.2	25	WRH	18.6	43.6	5.59	20.0
MBT - WRH - Seg 5	45	680	725	25	1.5	26.5	22	23.2	25	WRH	18.6	43.6	3.44	20.0
MBT - WRH - Seg 6	60	590	650	25	1.5	26.5	22	23.2	25	MSP	17.35	42.35	2.36	20.0
HWRC - RWP - Seg 3	25	635	660	25	1.5	26.5	22	23.2	25	HWRC	13.6	38.6	2.95	20.0
HWRC - RWP - Seg 4	15	635	650	25	1.5	26.5	22	23.2	25	HWRC	13.6	38.6	4.45	20.0

RECEPTOR 4:

Activity	Distance from Source to Ctr of Barrier (m)	Distance from Receptor to Ctr of Barrier (m)	Distance from Source to Receptor (m)	AOD Base Height of Source (m)	Source Height (m)	Total Source Height (m)	AOD Base Height of Receptor (m)	Total Receptor Height (m)	AOD Base Height of Barrier (m)	Barrier	Height of Barrier (m)	Total Height of Barrier (m)	Path Difference (m)	Barrier Correction (dB(A) - in accordance with CRTN)
WRH	50	660	710	25	8.13	33.13	24	25.2	25	MSP	17.35	42.35	1.02	15.5
HWRC Conveyor	55	660	715	25	5	30	24	25.2	23	BIO-DT	14	37	0.53	13.3
Train idling/coupling	535	35	570	25	2	27	24	25.2	24	Existing Garages	2	26	0.01	6.4
Train idling/coupling	605	35	640	25	2	27	24	25.2	24	Existing Garages	2	26	0.01	6.4
Gantry Crane	638	37	675	25	1	26	24	25.2	24	Existing Garages	2	26	0.01	6.4
Gantry Crane	705	35	740	25	1	26	24	25.2	24	Existing Garages	2	26	0.01	6.4
Gantry Crane	755	35	790	25	1	26	24	25.2	24	Existing Garages	2	26	0.01	6.4
Moving Containers	600	35	635	25	2	27	24	25.2	24	Existing Garages	2	26	0.01	6.4
Moving Containers	660	35	695	25	2	27	24	25.2	24	Existing Garages	2	26	0.01	6.4
Moving Containers	725	35	760	25	2	27	24	25.2	24	Existing Garages	2	26	0.01	6.4
Main Access - Seg 1	100	660	760	25	1.5	26.5	24	25.2	23	BIO-DT	14	37	0.65	13.9
MBT - WRH - Seg 2	100	660	760	25	1.5	26.5	24	25.2	23	BIO-DT	14	37	0.65	13.9
MBT - WRH - Seg 5	30	725	755	25	1.5	26.5	24	25.2	25	MSP	17.35	42.35	4.13	20.0
HWRC - RWP - Seg 3	60	660	720	25	1.5	26.5	24	25.2	23	BIO-DT	14	37	1.02	15.5
HWRC - RWP - Seg 4	20	700	720	25	1.5	26.5	24	25.2	25	HWRC	13.6	38.6	3.50	20.0

RECEPTOR 5:

Activity	Distance from Source to Cir of Barrier (m)	Distance from Receptor to Cir of Barrier (m)	Distance from Source to Receptor (m)	AOD Base Height of Source (m)	Source Height (m)	Total Source Height (m)	AOD Base Height of Receptor (m)	Total Receptor Height (m)	AOD Base Height of Barrier (m)	Barrier	Height of Barrier (m)	Total Height of Barrier (m)	Path Difference (m)	Barrier Correction (dB(A) - in accordance with CRTN)
WRH	220	90	310	25	8.13	33.13	24	25.2	25	Existing Buildings	8	33	0.24	11.2
HWRC	87	303	390	25	6.725	31.725	24	25.2	25	MSP/WRH	17.35	42.35	1.08	15.7
Bio Tunnels	20	275	295	25	5.1	30.1	24	25.2	25	MSP	18.6	43.6	4.70	20.0
Loading Containers	198	82	280	25	7.5	32.5	24	25.2	25	Existing Buildings	8	33	0.28	11.6
Bio Tunnel Conveyor	10	310	320	25	4	29	24	25.2	25	MSP	17.35	42.35	7.13	20.0
HWRC Conveyor	170	310	480	25	5	30	24	25.2	25	MSP/WRH	17.35	42.35	0.90	15.0
Biofilter	75	275	350	25	4.3	29.3	24	25.2	25	MSP	17.35	42.35	1.64	17.3
Train idling/coupling	155	75	230	25	2	27	24	25.2	25	Existing Buildings	8	33	0.51	13.2
Gantry Crane	175	90	265	25	1	26	24	25.2	25	Existing Buildings	8	33	0.48	13.0
Gantry Crane	210	90	300	25	1	26	24	25.2	25	Existing Buildings	8	33	0.45	12.8
Gantry Crane	250	100	350	25	1	26	24	25.2	25	Existing Buildings	8	33	0.40	12.5
Moving Containers	75	175	250	25	2	27	24	25.2	25	Existing Buildings	8	33	0.41	12.6
Moving Containers	90	200	290	25	2	27	24	25.2	25	Existing Buildings	8	33	0.35	12.1
Moving Containers	245	85	330	25	2	27	24	25.2	25	Existing Buildings	8	33	0.43	12.7
MBT - WRH - Seg 2	15	330	345	25	1.5	26.5	24	25.2	25	WRH	18.6	43.6	8.26	20.0
MBT - WRH - Seg 5	240	90	330	25	1.5	26.5	24	25.2	25	WRH	18.6	43.6	2.47	20.0
MBT - WRH - Seg 6	180	90	270	25	1.5	26.5	24	25.2	25	MSP	17.35	42.35	2.31	20.0
HWRC - RWP - Seg 3	20	360	380	25	1.5	26.5	24	25.2	25	Existing Buildings	8	33	1.11	15.8
HWRC - RWP - Seg 4	40	330	370	25	1.5	26.5	24	25.2	25	Existing Buildings	8	33	0.61	13.7

RECEPTOR 6:

Activity	Distance from Source to Cir of Barrier (m)	Distance from Receptor to Cir of Barrier (m)	Distance from Source to Receptor (m)	AOD Base Height of Source (m)	Source Height (m)	Total Source Height (m)	AOD Base Height of Receptor (m)	Total Receptor Height (m)	AOD Base Height of Barrier (m)	Barrier	Height of Barrier (m)	Total Height of Barrier (m)	Path Difference (m)	Barrier Correction (dB(A) - in accordance with CRTN)
WRH	45	315	360	25	8.13	33.13	24	25.2	23	BIO-DT	14	37	0.30	11.7
Loading Containers	42	343	385	25	8.13	33.13	24	25.2	25	MSP	18.6	43.6	1.70	17.5
HWRC Conveyor	40	360	400	25	5	30	24	25.2	23	BIO-DT	14	37	0.77	14.5
Train idling/coupling	70	250	320	25	2	27	24	25.2	25	Existing Building	6	31	0.18	10.5
Train idling/coupling	70	290	360	25	2	27	24	25.2	25	MSP	17.35	42.35	2.17	20.0
Gantry Crane	85	315	400	25	1	26	24	25.2	25	MSP	17.35	42.35	2.02	18.2
Gantry Crane	125	325	450	25	1	26	24	25.2	25	MSP	17.35	42.35	1.52	17.0
Gantry Crane	150	350	500	25	1	26	24	25.2	25	MSP	17.35	42.35	1.31	16.4
Moving Containers	25	325	350	25	2	27	24	25.2	25	MSP	17.35	42.35	4.78	20.0
Moving Containers	80	330	410	25	2	27	24	25.2	25	MSP	17.35	42.35	1.90	17.9
Moving Containers	130	340	470	25	2	27	24	25.2	25	MSP	17.35	42.35	1.33	16.5
Main Access - Seg 1	65	380	445	25	1.5	26.5	24	25.2	23	BIO-DT	14	37	1.02	15.5
MBT - WRH - Seg 2	20	430	450	25	1.5	26.5	24	25.2	25	WRH	18.6	43.6	6.71	20.0
MBT - WRH - Seg 5	35	430	465	25	1.5	26.5	24	25.2	25	WRH	18.6	43.6	4.35	20.0
MBT - WRH - Seg 6	40	340	380	25	1.5	26.5	24	25.2	25	MSP	17.35	42.35	3.46	20.0
HWRC - RWP - Seg 3	20	380	400	25	1.5	26.5	24	25.2	25	WRH	18.6	43.6	6.76	20.0
HWRC - RWP - Seg 4	25	375	400	25	1.5	26.5	24	25.2	25	HWRC	13.6	38.6	3.01	20.0