Hann Tucker Associates
Consultants in Acoustics Noise & Vibration
Duke House 1-2 Duke Street Woking Surrey GU21 5BA
(t) +44 (0) 1483 770595
(e) enquiries@hanntucker.co.uk
(w) hanntucker.co.uk

PROJECT TECHNICAL MEMORANDUM

JOB TITLE : Sunlight House, Manchester

REF : HT: 30453/PTM1

DATE : 24 October 2024

FROM : Will Robertson

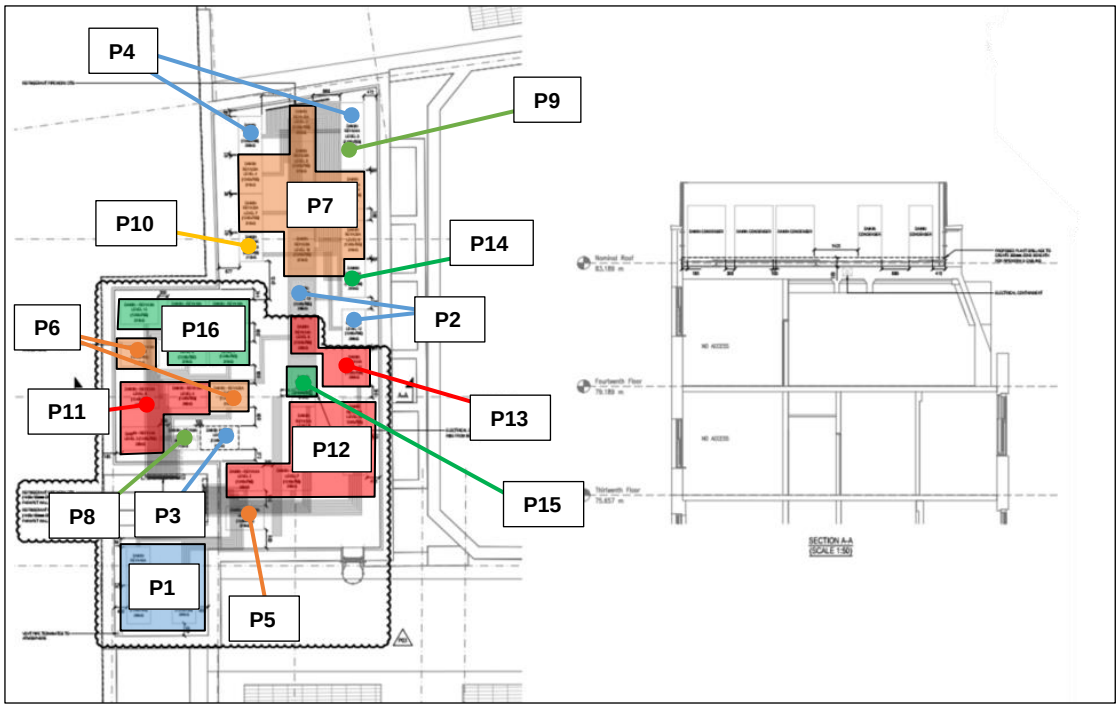
ISSUED TO : Savills

RE: PLANT NOISE CALCULATIONS

Following the issue of the Plant Noise Assessment (30453-PNA1-R2-WR) for the Sunlight House site in Manchester, the local Environmental Health Officer has requested calculations to determine how the cumulative rating at the receptors has been predicted. The following memo details the calculations to the office receptor at No1 Spinningfields. The purpose of this PTM is to address the EHO's request, further updates to the original report have been addressed in an updated report (30453-PNA1-R3-WR).

1.0 Plant Assessment Locations

As there are many proposed units for this development, the units have been grouped throughout our calculations. The groups are illustrated in the plan below:



1.1 Proposed Plant

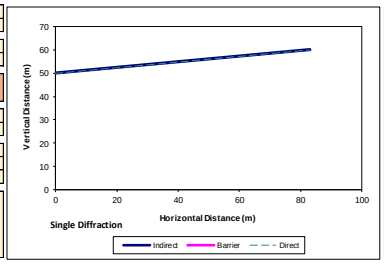
We understand the rooftop plant comprises of the following units.

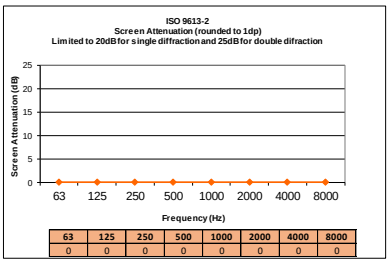
Location	Qty	Plant Make	Model Number
Rooftop Plant Deck	2	Daikin	REYA8A
	1		REYA10A
	10		REYA14A
	8		REYA16A
	7		REYA18A
	11		REYA20A

2.0 Plant Assessment Calculations

Detailed calculation sheets for each plant group identified in Section 1.0 are presented below:

HT No:	30453	Description	P1								Mode		
Project:	Sunlight House, Manchester										Octave Band		
Eng:	WR	Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
Date:	24/10/2024	0.0	Hemispherical	3	16A To Office	87.0	87.0	84.0	86.0	84.0	76.0	75.0	68.0	87.7
Source Height (m) (see notes)	50.0													
Receiver Height (m) (see notes)	60.0													
Source to centre barrier (m)	2.0													
Receiver to centre barrier (m)	81.0													
Direct S to R distance (m to 1dp)	83.6													
Barrier Height (m)	0.0													
Barrier Thickness (<4m)	0.0													
Dimensions - Source Length (m)	2.5													
Dimensions - Source Width (m)	2.3													
Dimensions - Source Height (m)	1.7													
On-site Radiating Conditions	Hemispherical													





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-42.2
Conformal Area	-52.4
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation									
Rounding (x decimal places)	0								
	Sound Level at Octave Band Centre Frequency (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
16A To Office Sound Power Level (SWL)	87	87	84	86	84	76	75	68	88
Correction for 3No.	5	5	5	5	5	5	5	5	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	40	40	37	39	37	29	28	21	41

CRTN	0.0	[Illuminated]

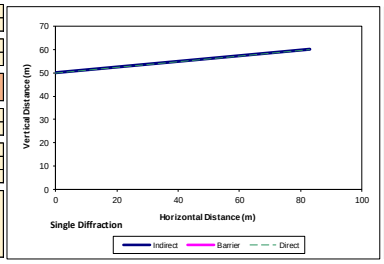
HT No:	30453
Project:	Sunlight House, Manchester
Eng:	WR
Date:	24/10/2024

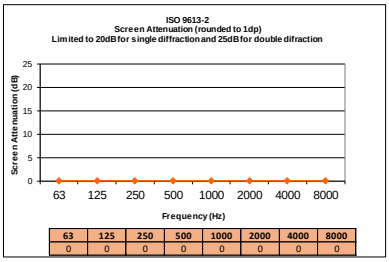
Description: **P2**

Mode: **Octave Band**

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	2	16A To Office	87.0	87.0	84.0	86.0	84.0	76.0	75.0	68.0	**87.7**

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	**83.6**
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	2.5
Dimensions - Source Width (m)	2.3
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	**Hemispherical**





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-42.2
Conformal Area	-52.4
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	**Conformal Area**

Octave Band Plant Noise Calculation

CRTN: **0.0** [Illuminated]

Rounding (x decimal places): 0

	Sound Level at Octave Band Centre Frequency (Hz) 63	125	250	500	1k	2k	4k	8k	dBA
16A To Office Sound Power Level (SWL)	87	87	84	86	84	76	75	68	**88**
Correction for 2No.	3	3	3	3	3	3	3	3	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	**38**	**38**	**35**	**37**	**35**	**27**	**26**	**19**	**39**

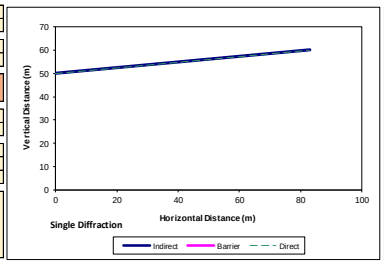
HT No:	30453
Project:	Sunlight House, Manchester
Eng:	WR
Date:	24/10/2024

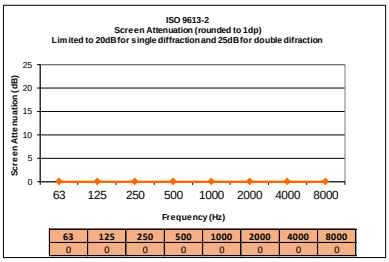
Description: **P3** : reya 16A marked as "future" on plans

Mode: **Octave Band**

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	1	16A To Office	87.0	87.0	84.0	86.0	84.0	76.0	75.0	68.0	**87.7**

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	**83.6**
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	2.5
Dimensions - Source Width (m)	2.3
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	**Hemispherical**





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-42.2
Conformal Area	-52.4
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	**Conformal Area**

Octave Band Plant Noise Calculation

CRTN: **0.0** [Illuminated]

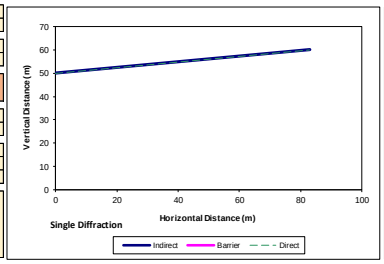
Rounding (x decimal places): 0

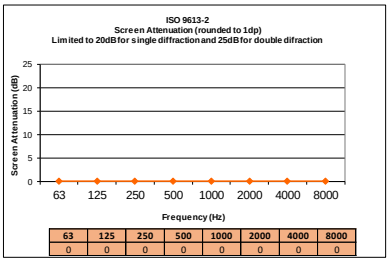
	Sound Level at Octave Band Centre Frequency (Hz) 63	125	250	500	1k	2k	4k	8k	dBA
16A To Office Sound Power Level (SWL)	87	87	84	86	84	76	75	68	**88**
Correction for 1No.	0	0	0	0	0	0	0	0	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	**35**	**35**	**32**	**34**	**32**	**24**	**23**	**16**	**36**

HT No:	30453	Description	P4 : reya 16A part of the 24A unit	Mode
Project:	Sunlight House, Manchester			Octave Band
Eng:	WR			
Date:	24/10/2024			

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	2	16A To Office	87.0	87.0	84.0	86.0	84.0	76.0	75.0	68.0	87.7

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	2.5
Dimensions - Source Width (m)	2.3
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-42.2
Conformal Area	-52.4
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN 0.0 [Illuminated]

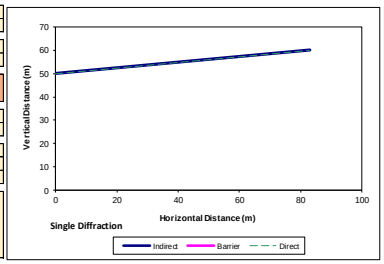
Rounding (x decimal places) 0

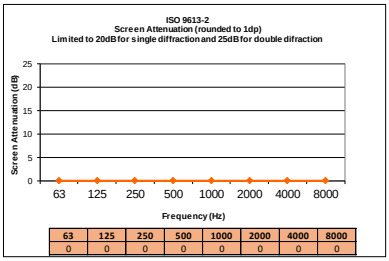
	Sound Level at Octave Band Centre Frequency (Hz) 63	125	250	500	1k	2k	4k	8k	dBA
16A To Office Sound Power Level (SWL)	87	87	84	86	84	76	75	68	88
Correction for 2No.	3	3	3	3	3	3	3	3	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	38	38	35	37	35	27	26	19	39

HT No:	30453	Description	P5 : reya 20A furthest south 20A unit	Mode
Project:	Sunlight House, Manchester			Octave Band
Eng:	WR			
Date:	24/10/2024			

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	1	20A To Office	90.0	90.0	88.0	89.0	83.0	68.0	69.0	71.0	88.6

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	0.7
Dimensions - Source Width (m)	1.3
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-40.4
Conformal Area	-52.3
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN 0.0 [Illuminated]

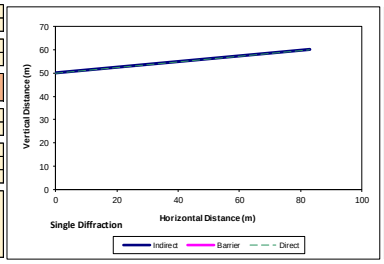
Rounding (x decimal places) 0

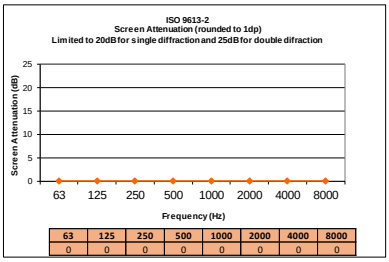
	Sound Level at Octave Band Centre Frequency (Hz) 63	125	250	500	1k	2k	4k	8k	dBA
20A To Office Sound Power Level (SWL)	90	90	88	89	83	68	69	71	89
Correction for 1No.	0	0	0	0	0	0	0	0	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	38	38	36	37	31	16	17	19	37

HT No:	30453	Description	P6	: reya 20A middle 2 units	Mode
Project:	Sunlight House, Manchester				Octave Band
Eng:	WR				
Date:	24/10/2024				

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	2	20A To Office	90.0	90.0	88.0	89.0	83.0	68.0	69.0	71.0	88.6

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	0.7
Dimensions - Source Width (m)	2.6
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-43.9
Conformal Area	-52.4
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN: 0.0 [Illuminated]

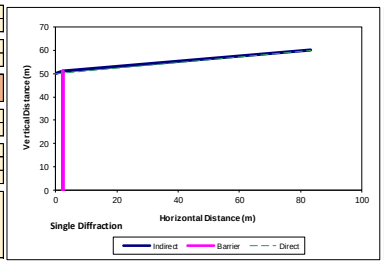
Rounding (x decimal places): 0

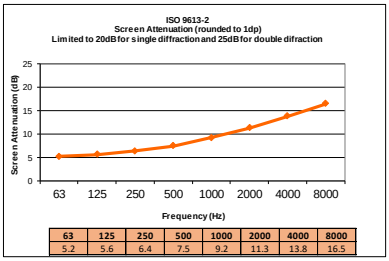
	Sound Level at Octave Band Centre Frequency (Hz) 63	125	250	500	1k	2k	4k	8k	dBA
20A To Office Sound Power Level (SWL)	90	90	88	89	83	68	69	71	89
Correction for 2No.	3	3	3	3	3	3	3	3	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	41	41	39	40	34	19	20	22	40

HT No:	30453	Description	P7	: reya 20A furthest north collated	Mode
Project:	Sunlight House, Manchester				Octave Band
Eng:	WR				
Date:	24/10/2024				

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	8	20A To Office	90.0	90.0	88.0	89.0	83.0	68.0	69.0	71.0	88.6

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.4
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	84.0
Barrier Height (m)	51.0
Barrier Thickness (<4.8m)	0.0
Dimensions - Source Length (m)	5.3
Dimensions - Source Width (m)	4.1
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
5.2	5.6	6.4	7.5	9.2	11.3	13.8	16.5

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.5
Rathe Method (Based on Width and Height)	-48.2
Conformal Area	-52.5
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN: -9.4 [Shadow]

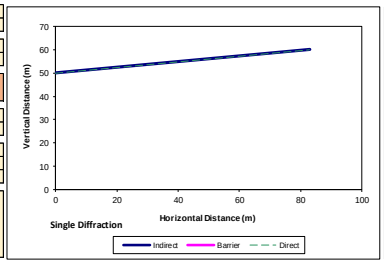
Rounding (x decimal places): 0

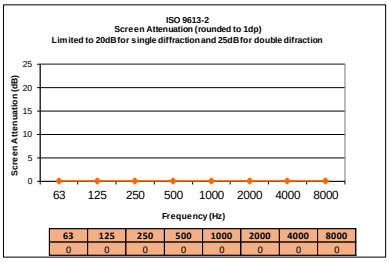
	Sound Level at Octave Band Centre Frequency (Hz) 63	125	250	500	1k	2k	4k	8k	dBA
20A To Office Sound Power Level (SWL)	90	90	88	89	83	68	69	71	89
Correction for 8No.	9	9	9	9	9	9	9	9	
Barrier Loss (ISO 9613-2)	-5	-6	-6	-8	-9	-11	-14	-17	
Conformal Area Distance Loss (SWL to SPL 0m to 84m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	42	41	39	38	31	14	12	11	38

HT No:	30453	Description	P8 : reya 8A furthest south	Mode
Project:	Sunlight House, Manchester			Octave Band
Eng:	WR			
Date:	24/10/2024			

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	1	8A To Office	81.0	81.0	81.0	79.0	71.0	70.0	65.0	60.0	79.5

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	0.7
Dimensions - Source Width (m)	0.9
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-43.4
Conformal Area	-52.3
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN 0.0 [Illuminated]

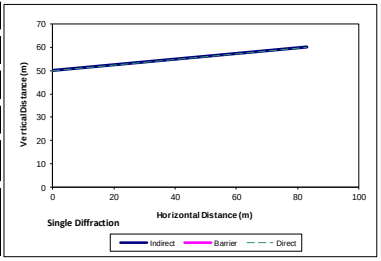
Rounding (x decimal places) 0

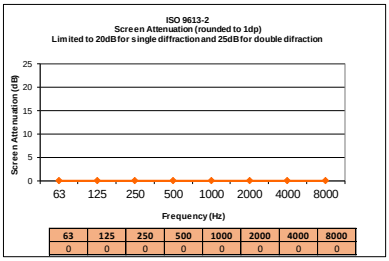
	Sound Level at Octave Band Centre Frequency (Hz) 63	125	250	500	1k	2k	4k	8k	dBA
8A To Office Sound Power Level (SWL)	81	81	81	79	71	70	65	60	80
Correction for 1No.	0	0	0	0	0	0	0	0	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	29	29	29	27	19	18	13	8	28

HT No:	30453	Description	P9 : reya 8A furthest north	Mode
Project:	Sunlight House, Manchester			Octave Band
Eng:	WR			
Date:	24/10/2024			

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	1	8A To Office	81.0	81.0	81.0	79.0	71.0	70.0	65.0	60.0	79.5

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	0.7
Dimensions - Source Width (m)	0.9
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-43.4
Conformal Area	-52.3
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN 0.0 [Illuminated]

Rounding (x decimal places) 0

	Sound Level at Octave Band Centre Frequency (Hz) 63	125	250	500	1k	2k	4k	8k	dBA
8A To Office Sound Power Level (SWL)	81	81	81	79	71	70	65	60	80
Correction for 1No.	0	0	0	0	0	0	0	0	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	29	29	29	27	19	18	13	8	28

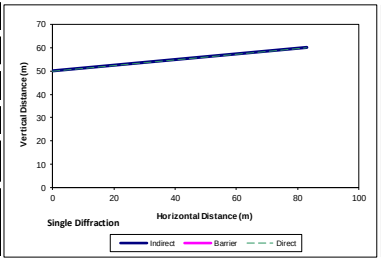
HT No:	30453
Project:	Sunlight House, Manchester
Eng:	WR
Date:	24/10/2024

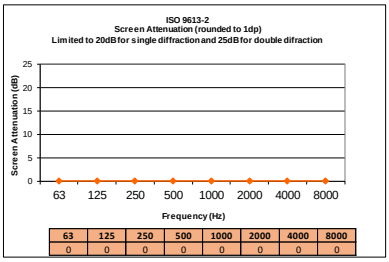
Description	P10	: reya 10A furthest north

Mode
Octave Band

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	1	10A To Office	81.0	81.0	82.0	79.0	74.0	71.0	68.0	62.0	80.6

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	0.7
Dimensions - Source Width (m)	0.9
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-43.4
Conformal Area	-52.3
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN	0.0	[Illuminated]

Rounding (x decimal places): 0

	Sound Level at Octave Band Centre Frequency (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
10A To Office Sound Power Level (SWL)	81	81	82	79	74	71	68	62	81
Correction for 1No.	0	0	0	0	0	0	0	0	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	29	29	30	27	22	19	16	10	29

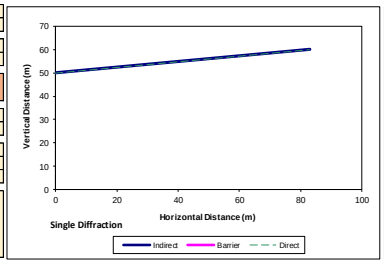
HT No:	30453
Project:	Sunlight House, Manchester
Eng:	WR
Date:	24/10/2024

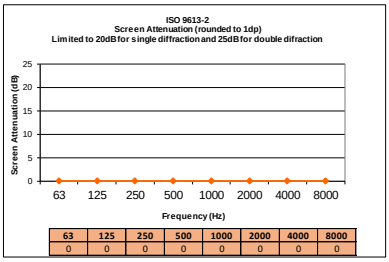
Description	P11	: reya 14A west

Mode
Octave Band

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	3	14A To Office	84.0	84.0	81.0	83.0	76.0	72.0	71.0	66.0	83.0

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	1.5
Dimensions - Source Width (m)	2.0
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-39.2
Conformal Area	-52.4
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN	0.0	[Illuminated]

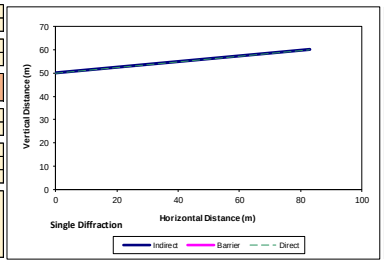
Rounding (x decimal places): 0

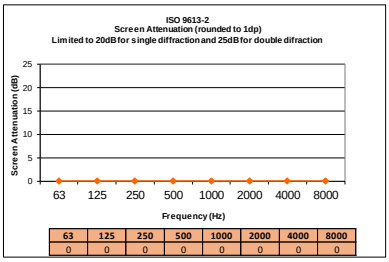
	Sound Level at Octave Band Centre Frequency (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
14A To Office Sound Power Level (SWL)	84	84	81	83	76	72	71	66	83
Correction for 3No.	5	5	5	5	5	5	5	5	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	37	37	34	36	29	25	24	19	36

HT No:	30453	Description	P12 : reya 14A southeast	Mode
Project:	Sunlight House, Manchester			Octave Band
Eng:	WR			
Date:	24/10/2024			

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	5	14A To Office	84.0	84.0	81.0	83.0	76.0	72.0	71.0	66.0	83.0

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	3.0
Dimensions - Source Width (m)	4.5
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-48.8
Conformal Area	-52.4
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN | 0.0 | [Illuminated]

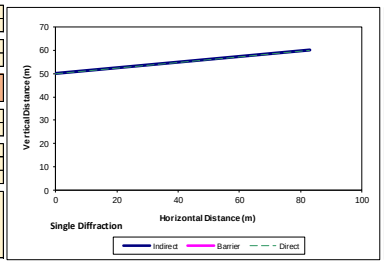
Rounding (x decimal places): 0

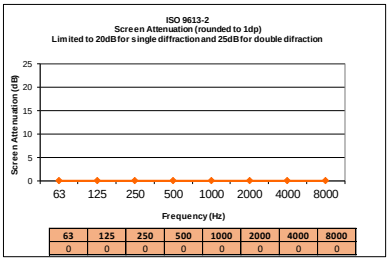
	Sound Level at Octave Band Centre Frequency (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
14A To Office Sound Power Level (SWL)	84	84	81	83	76	72	71	66	83
Correction for 5No.	7	7	7	7	7	7	7	7	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	39	39	36	38	31	27	26	21	38

HT No:	30453	Description	P13 : reya 14A east middle	Mode
Project:	Sunlight House, Manchester			Octave Band
Eng:	WR			
Date:	24/10/2024			

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	2	14A To Office	84.0	84.0	81.0	83.0	76.0	72.0	71.0	66.0	83.0

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	3.0
Dimensions - Source Width (m)	4.5
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-48.8
Conformal Area	-52.4
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN | 0.0 | [Illuminated]

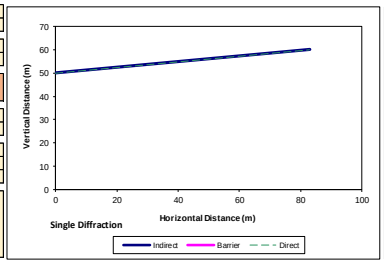
Rounding (x decimal places): 0

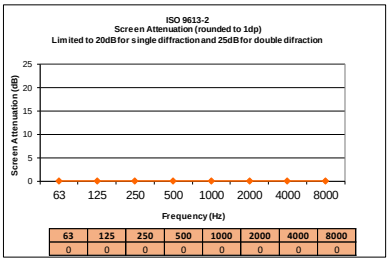
	Sound Level at Octave Band Centre Frequency (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
14A To Office Sound Power Level (SWL)	84	84	81	83	76	72	71	66	83
Correction for 2No.	3	3	3	3	3	3	3	3	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	35	35	32	34	27	23	22	17	34

HT No:	30453	Description	P14 : reya 18A north	Mode
Project:	Sunlight House, Manchester			Octave Band
Eng:	WR			
Date:	24/10/2024			

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	1	18A To Office	85.0	85.0	83.0	85.0	77.0	75.0	76.0	69.0	85.3

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	1.1
Dimensions - Source Width (m)	0.9
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-43.4
Conformal Area	-52.3
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN 0.0 [Illuminated]

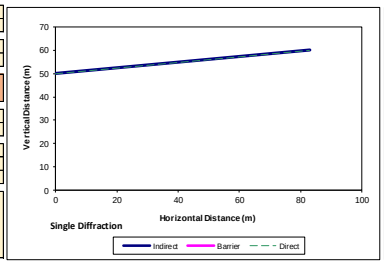
Rounding (x decimal places) 0

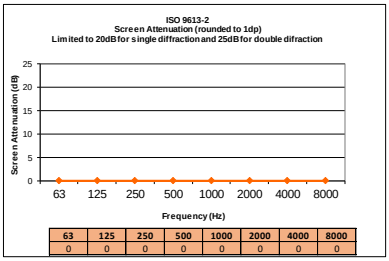
	Sound Level at Octave Band Centre Frequency (Hz) 63	125	250	500	1k	2k	4k	8k	dBA
18A To Office Sound Power Level (SWL)	85	85	83	85	77	75	76	69	85
Correction for 1No.	0	0	0	0	0	0	0	0	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	33	33	31	33	25	23	24	17	33

HT No:	30453	Description	P15 : reya 18A middle	Mode
Project:	Sunlight House, Manchester			Octave Band
Eng:	WR			
Date:	24/10/2024			

Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m
0.0	Hemispherical	1	18A To Office	85.0	85.0	83.0	85.0	77.0	75.0	76.0	69.0	85.3

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	1.1
Dimensions - Source Width (m)	0.9
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-43.4
Conformal Area	-52.3
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

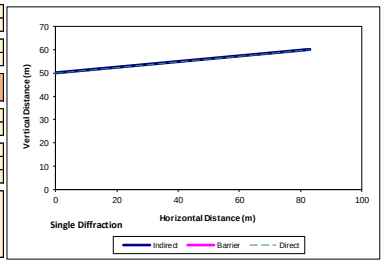
CRTN 0.0 [Illuminated]

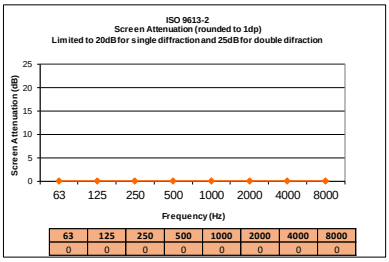
Rounding (x decimal places) 0

	Sound Level at Octave Band Centre Frequency (Hz) 63	125	250	500	1k	2k	4k	8k	dBA
18A To Office Sound Power Level (SWL)	85	85	83	85	77	75	76	69	85
Correction for 1No.	0	0	0	0	0	0	0	0	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	33	33	31	33	25	23	24	17	33

HT No:	30453	Description	P16 : reya 18A middle											Mode			
Project:	Sunlight House, Manchester													Octave Band			
Eng:	WR	Source Data @ distance (m) and measurement conditions		Qty	Plant Description	63	125	250	500	1000	2000	4000	8000	dBA @ 0m			
Date:	24/10/2024	0.0	Hemispherical	5	18A To Office	85.0	85.0	83.0	85.0	77.0	75.0	76.0	69.0	85.3			

Source Height (m) (see notes)	50.0
Receiver Height (m) (see notes)	60.0
Source to centre barrier (m)	2.0
Receiver to centre barrier (m)	81.0
Direct S to R distance (m to 1dp)	83.6
Barrier Height (m)	0.0
Barrier Thickness (<4m)	0.0
Dimensions - Source Length (m)	2.2
Dimensions - Source Width (m)	4.1
Dimensions - Source Height (m)	1.7
On-site Radiating Conditions	Hemispherical





63	125	250	500	1000	2000	4000	8000
0	0	0	0	0	0	0	0

Sound Power to Sound Pressure	
Distance Loss Based On Hemispherical Noise Data And Hemispherical On Site Radiating Conditions	
Point Source	-49.4
Rathe Method (Based on Width and Height)	-48.1
Conformal Area	-52.4
Line Source	-30.2
Select Distance Loss Method (see above numbers 1 to 4)	Conformal Area

Octave Band Plant Noise Calculation

CRTN	0.0	[Illuminated]

Rounding (x decimal places): 0

	Sound Level at Octave Band Centre Frequency (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
18A To Office Sound Power Level (SWL)	85	85	83	85	77	75	76	69	85
Correction for 5No.	7	7	7	7	7	7	7	7	
Barrier Loss (ISO 9613-2)	0	0	0	0	0	0	0	0	
Conformal Area Distance Loss (SWL to SPL 0m to 83.6m)	-52	-52	-52	-52	-52	-52	-52	-52	
Custom 1									
Custom 2									
Custom 3									
Custom 4									
Total Noise Level at Receiver (SPL)	40	40	38	40	32	30	31	24	40

The below image illustrates the cumulative level of all plant at the nearby office receptor:

HT No:	30453	Project:	Sunlight House, Manchester	Octave Band
Date:	24/10/2024	Eng:	WR	

Rounding (to x decimal places): 0 *cumulative rounding limited by rounding for each individual plant item.

Plant Item	Plant Description at Receptor	63	125	250	500	1k	2k	4k	8k	dBA	Test Attenuation	Attenuated Level
1	3No. 16A To Office	40	40	37	39	37	29	28	21	41		41
2	2No. 16A To Office	38	38	35	37	35	27	26	19	39		39
3	1No. 16A To Office	35	35	32	34	32	24	23	16	36		36
4	2No. 16A To Office	38	38	35	37	35	27	26	19	39		39
5	1No. 20A To Office	38	38	36	37	31	16	17	19	37		37
6	2No. 20A To Office	41	41	39	40	34	19	20	22	40		40
7	8No. 20A To Office	42	41	39	38	31	14	12	11	38		38
8	1No. 8A To Office	29	29	29	27	19	18	13	8	28		28
9	1No. 8A To Office	29	29	29	27	19	18	13	8	28		28
10	1No. 10A To Office	29	29	30	27	22	19	16	10	29		29
11	3No. 14A To Office	37	37	34	36	29	25	24	19	36		36
12	5No. 14A To Office	39	39	36	38	31	27	26	21	38		38
13	2No. 14A To Office	35	35	32	34	27	23	22	17	34		34
14	1No. 18A To Office	33	33	31	33	25	23	24	17	33		33
15	1No. 18A To Office	33	33	31	33	25	23	24	17	33		33
16	5No. 18A To Office	40	40	38	40	32	30	31	24	40		40
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
Cumulative Noise Level At Receptor		50	50	47	48	44	37	36	31	49		49

Yours sincerely

Will Robertson

for HANN TUCKER ASSOCIATES