Appendix 4 Facade Simulation Calculations

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FACSIM V2.7.9 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

PROJECT:	Former Friends School Fields
ROOM:	Bedroom
VARIANT:	Daytime average (LAeq,16hr)
NOTES:	

Room Dimensions [m] W 3.0 X L 4.0 X H 2.4

Room Volume = 28.8 m3
Partition Area = 9.5 m2
Ventilation ref area = 10.0 m2
SELECT Free Field or Façade SPL for model input >>>
Free Field SPL K = 3 dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	59.0								
		40.8	44.9	48.4	51.8	55.0	52.2	47.0	**Reference spectrum**

REVERBERATION TIME

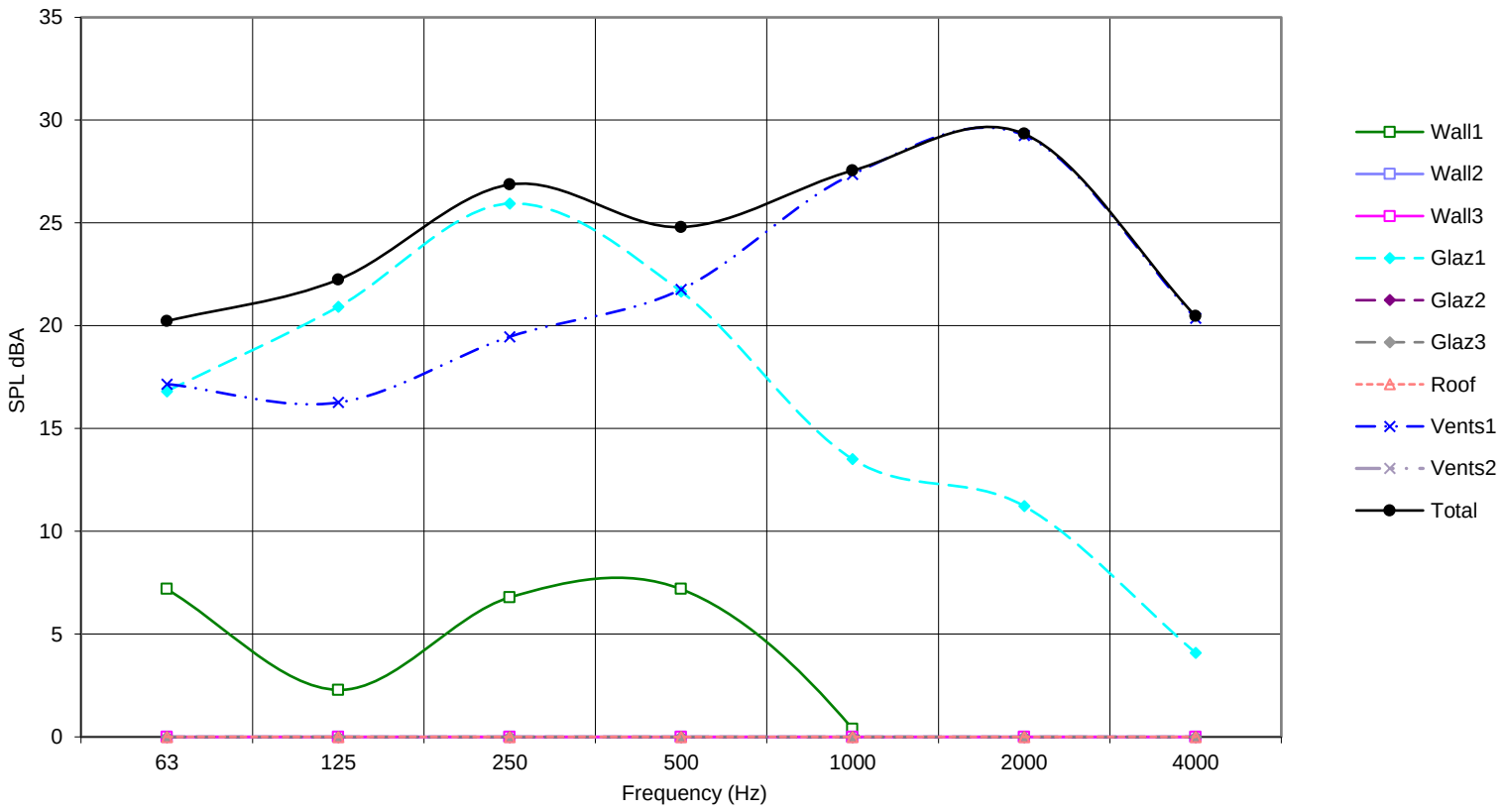
DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5		**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	1%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	26 dB Rw + Ctr - Standard Thermal Double Glazing	1.5	19	19	18	25	37	36	38	29%	26 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		27	27	26	33	44	44	46				
	Resultant SPL inside room excluding ventilators dB	28.9	17	21	26	22	14	11	4	30%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Hit and miss trickle (4000mm^2) e.g. Titon Trimvent XS13	2	30	35	35	36	34	29	33	70%	32	0	-1
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	32.6	17	16	19	22	27	29	20	70%			

Total SPL inside room	**34.1**	20	22	27	25	28	29	20

Element contribution to total internal noise level



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FACSIM V2.7.9 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
PROJECT:	Former Friends School Fields	Room Dimensions [m]	3.0	X	4.0	X	2.4
ROOM:	Bedroom						
VARIANT:	Night-time average (LAeq,8hr)						
NOTES:							

Room Volume =	28.8	m3
Partition Area =	9.5	m2
Ventilation ref area =	10.0	m2
Free Field SPL K =	3	dB

SELECT Free Field or Façade SPL for model input >>>

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	51.0								
		32.8	36.9	40.4	43.8	47.0	44.2	39.0	**Reference spectrum**

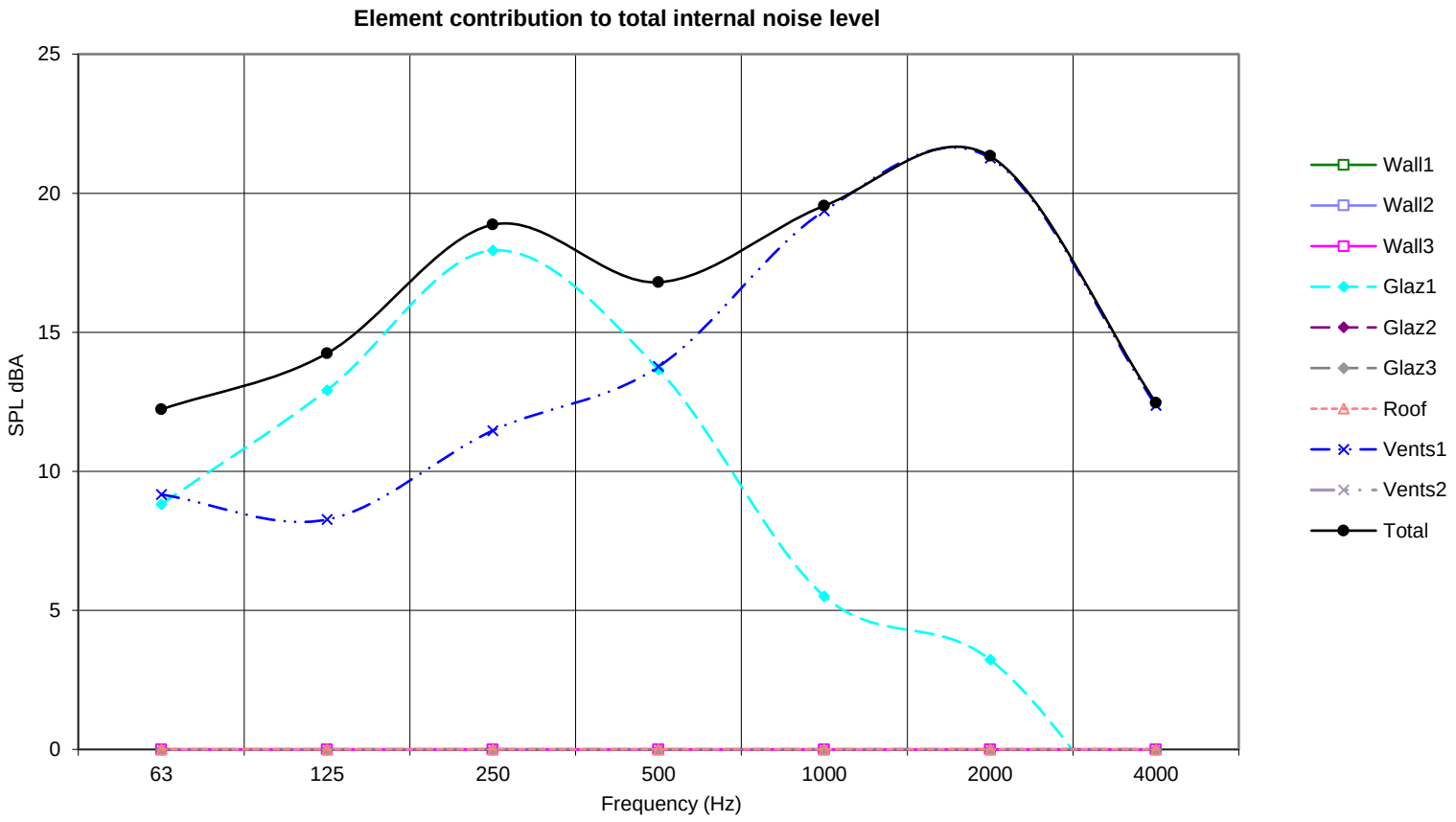
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	0%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	26 dB Rw + Ctr - Standard Thermal Double Glazing	1.5	19	19	18	25	37	36	38	29%	26 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		27	27	26	33	44	44	46				
	Resultant SPL inside room excluding ventilators dB	20.9	9	13	18	14	6	3	-4	30%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Hit and miss trickle (4000mm^2) e.g. Titon Trimvent XS13	2	30	35	35	36	34	29	33	70%	32	0	-1
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	24.6	9	8	11	14	19	21	12	70%			

Total SPL inside room	**26.1**	12	14	19	17	20	21	12



FACSIM V2.7.9
- MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

PROJECT:	Former Friends School Fields
ROOM:	Bedroom
VARIANT:	Night-time max (LAmax)
NOTES:	

Room Dimensions [m]	W		L		H
	3.0	X	4.0	X	2.4

Room Volume =	28.8	m3
Partition Area =	9.5	m2
Ventilation ref area =	10.0	m2
Free Field SPL K =	3	dB

SELECT Free Field or Façade SPL for model input >>>

NOTES:
-11.2

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	65.0	21.8	42.7	49.6	56.6	59.8	60.2	57.5	
Road traffic spectrum (according to BS 8233:1999 section 6)									
		21.8	42.7	49.6	56.6	59.8	60.2	57.5	**Direct input**

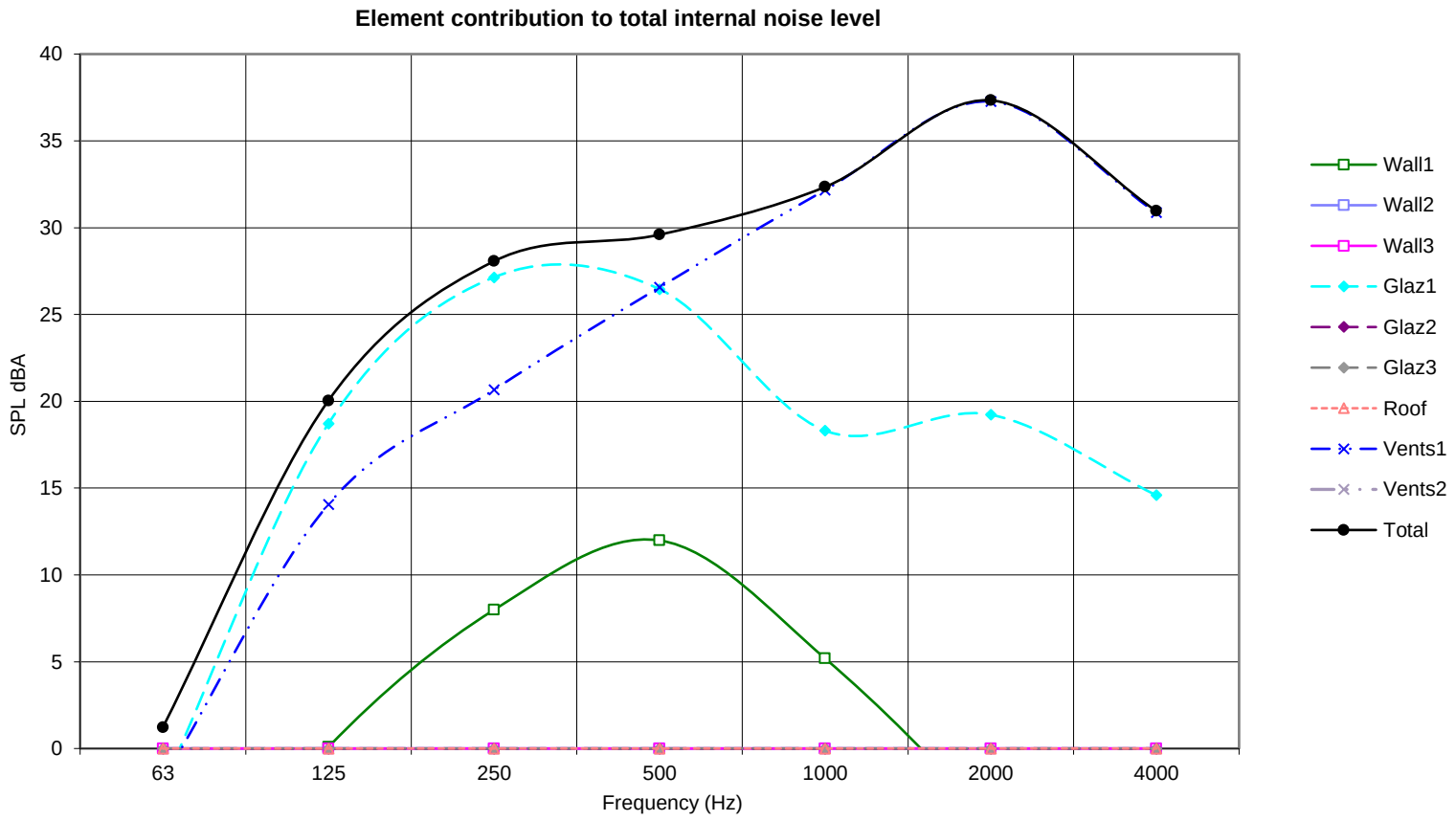
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	0%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	26 dB Rw + Ctr - Standard Thermal Double Glazing	1.5	19	19	18	25	37	36	38	12%	26 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		27	27	26	33	44	44	46				
	Resultant SPL inside room excluding ventilators dB	30.9	-2	19	27	27	19	19	15	12%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Hit and miss trickle (4000mm^2) e.g. Titon Trimvent XS13	2	30	35	35	36	34	29	33	88%	32	0	-1
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	39.4	-2	14	21	27	32	37	31	88%			

Total SPL inside room	**40.0**	1	20	28	30	32	37	31



FACSIM V2.7.9 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
PROJECT:	Former Friends School Fields	Room Dimensions [m]	4.0	X	5.0	X	2.4
ROOM:	Living room						
VARIANT:	Daytime average (LAeq,16hr)						
NOTES:							

Room Volume =	48.0	m3
Partition Area =	14.5	m2
Ventilation ref area =	10.0	m2
Free Field SPL K =	3	dB

SELECT Free Field or Façade SPL for model input >>>

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	59.0								
		40.8	44.9	48.4	51.8	55.0	52.2	47.0	**Reference spectrum**

REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**	

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	12.0	36	45	44	47	57	67	77	1%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	26 dB Rw + Ctr - Standard Thermal Double Glazing	2.5	19	19	18	25	37	36	38	31%	26 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		26	27	25	33	44	44	46				
	Resultant SPL inside room excluding ventilators dB	28.8	17	21	26	22	14	11	4	32%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Hit and miss trickle (4000mm^2) e.g. Titon Trimvent XS13	3	30	35	35	36	34	29	33	68%	32	0	-1
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	32.2	17	16	19	21	27	29	20	68%			

Total SPL inside room	**33.8**	20	22	27	25	27	29	20