

External Building Fabric Analysis
Calculation of Internal Noise Levels
 (BS 8233: 1999)

Job No.	4066	Job Title	Unite, Travis Perkins	Room Description	Typical Bedroom
Area of Windows (S_w)	1 m ²	Room Length	4 m	Analysis Type Night Leq	
Area of External Wall (S_{ew})	5.75 m ²	Room Width	2.5 m	Correction (reduction) to $L_{p,out}$ 0	
Area of Ceiling/Roof (S_r)	0 m ²	Room Height	2.7 m		
Total area (S)	6.75 m ²	Room Surface Area	55.1 m ²		
		Room Volume	27 m ³		

	Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
L_p out	65.8	60.8	57.5	58.5	61.4	57.4	50.8	45.8	64

Sound Reduction of Window	R_{wi}									R_w
		18	25	21	27	36	39	40	40	32

Glazing Type	Double glazed units	Glazing configuration	4/12/8
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Sound Reduction of External Wall	R_{ew}									R_w
		18	30	40	50	55	55	55	55	51
System Description	Alternative Unite modular external wall (Terracota or Aluminium cladding, 40mm cavity, 80mm Rockwool, 10mm OSB board, modular studs, 60mm Rockwool, 2 layers of plasterboard)									

External wall type	Lightweight External Wall Systems	System Description	Alternative Unite modular
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Insulation of Trickle Ventilator	$D_{n,e}$									$D_{n,e,w}$
		99	99	99	99	99	99	99	99	100

Trickle Ventilator Type	No trickle ventilation
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Sound Reduction of Roof/Ceiling	R_r									R_w
		99	99	99	99	99	99	99	99	100
System Description	No roof transmission									

Roof/Ceiling Type	Traditional Roofs	System Description	No roof transmission
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Reverberation Time	R_{T60}	0.53	0.44	0.32	0.29	0.25	0.25	0.25	0.25
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Equivalent Absorption Area	A	8	10	14	15	17	18	18	18
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L_p in	50	33	28	23	16	10	2	-3
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NR 19

A weight	-26	-16	-9	-3	0	1	1	-1
A weighted level	23.9	17.4	19.4	19.9	16.4	10.5	3.1	-4.0

$dBA_{(125-2k\text{Hz})}$ 24.7

$dBA_{(125-4k\text{Hz})}$ 24.7

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Job No.	4066	Job Title	Unite, Travis Perkins	Room Description	Typical Bedroom
Area of Windows (S_{wi})	1 m ²	Room Length	4 m	Analysis Type Night Lmax	
Area of External Wall (S_{ew})	5.75 m ²	Room Width	2.5 m	Correction (reduction) to $L_{p,out}$ 0	
Area of Ceiling/Roof (S_{tr})	0 m ²	Room Height	2.7 m		
Total area (S)	6.75 m ²	Room Surface Area	55.1 m ²		
		Room Volume	27 m ³		

	Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
L_p out	83.2	83.7	78.9	78.5	79.7	78.1	73.3	66.9	84

Sound Reduction of Window	R_{wi}	19	26	22	28	38	41	42	42	R_w 34
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Glazing Type	Double glazed units	Glazing configuration	4/12/8
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Sound Reduction of External Wall	R_{ew}	18	30	40	50	55	55	55	55	R_w 51
System Description	Alternative Unite modular external wall (Terracota or Aluminium cladding, 40mm cavity, 80mm Rockwool, 10mm OSB board, modular studs, 60mm Rockwool, 2 layers of plasterboard)									

External wall type	Lightweight External Wall Systems	System Description	Alternative Unite modular
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Insulation of Trickle Ventilator	$D_{n,e}$	99	99	99	99	99	99	99	99	$D_{n,e,w}$ 100
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Trickle Ventilator Type	No trickle ventilation
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Sound Reduction of Roof/Ceiling	R_{tr}	99	99	99	99	99	99	99	99	R_w 100
System Description	No roof transmission									

Roof/Ceiling Type	Traditional Roofs	System Description	No roof transmission
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Reverberation Time	R_{T60}	0.53	0.44	0.32	0.29	0.25	0.25	0.25	0.25
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Room Type and finishes	Bedroom (furnished)
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Equivalent Absorption Area	A	8	10	14	15	17	18	18	18
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L_p in	67	56	49	42	33	28	23	17
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NR 40

A weight	-26	-16	-9	-3	0	1	1	-1
A weighted level	41.2	39.9	39.9	38.9	32.9	29.5	24.0	15.6

$dB_{A(125-2kHz)}$ 44.8 $dB_{A(125-4kHz)}$ 44.8

External Building Fabric Analysis Calculation of Internal Noise Levels (BS 8233: 1999)

Job No. 4066 **Job Title** Unite, Travis Perkins **Room Description** Typical Studio Room

Area of Windows (S_{w1})	2	m ²	Room Length	5	m	Analysis Type Day Leq
Area of External Wall (S_{ew})	10.96	m ²	Room Width	4.8	m	
Area of Ceiling/Roof (S_{rr})	0	m ²	Room Height	2.7	m	Correction (reduction) to L_{p,out} 0
Total area (S)	12.96	m ²	Room Surface Area	100.92	m ²	
			Room Volume	64.8	m ³	

	Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
L _{p, out}	72.0	67.6	63.1	63.0	65.4	63.8	56.8	49.7	69

Sound Reduction of Window	R _{wi}	Octave Band Centre Frequency (Hz)								R _w
		63	125	250	500	1k	2k	4k	8k	
		19	26	22	28	38	41	42	42	34

Glazing Type	Glazing configuration
Double glazed units	4/12/8

Sound Reduction of External Wall	R _{ew}	Octave Band Centre Frequency (Hz)								R _w
		63	125	250	500	1k	2k	4k	8k	
		18	30	40	50	55	55	55	55	51
System Description	Alternative Unite modular external wall (Terracota or Aluminium cladding, 40mm cavity, 80mm Rockwool, 10mm OSB board, modular studs, 60mm Rockwool, 2 layers of plasterboard)									

External wall type	System Description
Lightweight External Wall Systems	Alternative Unite modular

Insulation of Trickle Ventilator	D _{n,e}	Octave Band Centre Frequency (Hz)								D _{n,e,w}
		63	125	250	500	1k	2k	4k	8k	
		99	99	99	99	99	99	99	99	100

Trickle Ventilator Type
No trickle ventilation

Sound Reduction of Roof/Ceiling	R _{rr}	Octave Band Centre Frequency (Hz)								R _w
		63	125	250	500	1k	2k	4k	8k	
		99	99	99	99	99	99	99	99	100
System Description	No roof transmission									

Roof/Ceiling Type	System Description
Traditional Roofs	No roof transmission

Reverberation Time	R _{T60}	0.69	0.57	0.41	0.38	0.33	0.32	0.32	0.32
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Room Type and finishes
Bedroom (furnished)

Equivalent Absorption Area	A	15	18	25	27	31	32	32	32
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L _{p, in}	56	40	33	27	19	15	7	0
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NR 26

A weight	-26	-16	-9	-3	0	1	1	-1
A weighted level	30.2	24.1	24.4	23.8	18.9	15.5	7.8	-1.3

dBA_(125-2kHz) 29.5

dBA_(125-4kHz) 29.5

External Building Fabric Analysis Calculation of Internal Noise Levels (BS 8233: 1999)

Job No. 4066 **Job Title** Unite, Travis Perkins **Room Description** Typical Studio Room

Area of Windows (S_{wi}) 2 m² Room Length 5 m
 Area of External Wall (S_{ew}) 10.96 m² Room Width 4.8 m
 Area of Ceiling/Roof (S_{r}) 0 m² Room Height 2.7 m
 Total area (S) 12.96 m² Room Surface Area 100.92 m²
 Room Volume 64.8 m³

Analysis Type
Night Leq

Correction (reduction) to $L_{p,out}$
0

	Octave Band Centre Frequency (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
$L_{p, out}$	65.8	60.8	57.5	58.5	61.4	57.4	50.8	45.8	64

Sound Reduction of Window	R_{wi}	18	25	21	27	36	39	40	40	R_w
										32

Glazing Type Double glazed units
Glazing configuration 4/12/8

Sound Reduction of External Wall	R_{ew}	18	30	40	50	55	55	55	55	R_w
										51
System Description	Alternative Unite modular external wall (Terracota or Aluminium cladding, 40mm cavity, 80mm Rockwool, 10mm OSB board, modular studs, 60mm Rockwool, 2 layers of plasterboard)									

External wall type Lightweight External Wall Systems
System Description Alternative Unite modular e

Insulation of Trickle Ventilator	$D_{n,e}$	99	99	99	99	99	99	99	99	$D_{n,e,w}$
										100

Trickle Ventilator Type
No trickle ventilation

Sound Reduction of Roof/Ceiling	R_{r}	99	99	99	99	99	99	99	99	R_w
										100
System Description	No roof transmission									

Roof/Ceiling Type Traditional Roofs
System Description No roof transmission

Reverberation Time	R_{T60}	0.69	0.57	0.41	0.38	0.33	0.32	0.32	0.32

Room Type and finishes
Bedroom (furnished)

Equivalent Absorption Area	A	15	18	25	27	31	32	32	32

L_p in	50	34	29	23	17	10	2	-3

NR 19

A weight	-26	-16	-9	-3	0	1	1	-1
A weighted level	24.1	17.6	19.7	20.3	16.8	10.9	3.5	-3.6

$dBA_{(125-2kHz)}$ 25.0 $dBA_{(125-4kHz)}$ 25.1

External Building Fabric Analysis Calculation of Internal Noise Levels (BS 8233: 1999)

Job No.	4066	Job Title	Unite, Travis Perkins	Room Description	Typical Studio Room
Area of Windows (S_{w1})	2 m ²	Room Length	5 m	Analysis Type	Night Lmax
Area of External Wall (S_{ew})	10.96 m ²	Room Width	4.8 m	Correction (reduction) to $L_{p,out}$	0
Area of Ceiling/Roof (S_{r1})	0 m ²	Room Height	2.7 m		
Total area (S)	12.96 m ²	Room Surface Area	100.92 m ²		
		Room Volume	64.8 m ³		

Octave Band Centre Frequency (Hz)								
63	125	250	500	1k	2k	4k	8k	dBA

$L_{p, out}$	83.2	83.7	78.9	78.5	79.7	78.1	73.3	66.9	84
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Sound Reduction of Window	R_{wi}	19	26	22	28	38	41	42	42	R_w	34
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Glazing Type	Glazing configuration
Double glazed units	4/12/8

Sound Reduction of External Wall	R_{ew}	18	30	40	50	55	55	55	55	R_w	51
	System Description	Alternative Unite modular external wall (Terracota or Aluminium cladding, 40mm cavity, 80mm Rockwool, 10mm OSB board, modular studs, 60mm Rockwool, 2 layers of plasterboard)									

External wall type	System Description
Lightweight External Wall Systems	Alternative Unite modular e

Insulation of Trickle Ventilator	D_{n,e}	99	99	99	99	99	99	99	99	D_{n,e,w}	100
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Trickle Ventilator Type
No trickle ventilation

Sound Reduction of Roof/Ceiling	R_{rr}	99	99	99	99	99	99	99	99	R_w	100
	System Description	No roof transmission									

Roof/Ceiling Type	System Description
Traditional Roofs	No roof transmission

Reverberation Time	R_{T60}	0.69	0.57	0.41	0.38	0.33	0.32	0.32	0.32
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Room Type and finishes
Bedroom (furnished)

Equivalent Absorption Area	A	15	18	25	27	31	32	32	32
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L_p in	67	56	49	42	33	29	23	17
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NR 40

A weight	-26	-16	-9	-3	0	1	1	-1
A weighted level	41.4	40.1	40.2	39.3	33.2	29.8	24.3	15.9

dBA_(125-2kHz) 45.1

dBA_(125-4kHz) 45.1

External Building Fabric Analysis
Calculation of Internal Noise Levels
 (BS 8233: 1999)

Job No. 4066 **Job Title** Unite, Travis Perkins **Room Description** Typical Kitchen/Living Room

Area of Windows (S_{wi}) 1 m² Room Length 6 m
 Area of External Wall (S_{ew}) 23.3 m² Room Width 3 m
 Area of Ceiling/Roof (S_{rr}) 0 m² Room Height 2.7 m
 Total area (S) 24.3 m² Room Surface Area 84.6 m²
 Room Volume 48.6 m³

Analysis Type
 Day Leq
Correction (reduction) to L_{p,out}
 0

Octave Band Centre Frequency (Hz)

	63	125	250	500	1k	2k	4k	8k	
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L _{p, out}	72.0	67.6	63.1	63.0	65.4	63.8	56.8	49.7	69
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Sound Reduction of Window	R _{wi}	19	23	24	23	32	38	35	35	R _w	31
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Glazing Type Double glazed units
Glazing configuration 4/6/4

Sound Reduction of External Wall	R _{ew}	18	30	40	50	55	55	55	55	R _w	51
System Description	Alternative Unite modular external wall (Terracota or Aluminium cladding, 40mm cavity, 80mm Rockwool, 10mm OSB board, modular studs, 60mm Rockwool, 2 layers of plasterboard)										

External wall type Lightweight External Wall Systems
System Description Alternative Unite modular e

Insulation of Trickle Ventilator	D _{n,e,w}	99	99	99	99	99	99	99	99	D _{n,e,w}	100
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Trickle Ventilator Type
 No trickle ventilation

Sound Reduction of Roof/Ceiling	R _{rr}	99	99	99	99	99	99	99	99	R _w	100
System Description	No roof transmission										

Roof/Ceiling Type Traditional Roofs
System Description No roof transmission

Reverberation Time	R _{T60}	0.62	0.51	0.37	0.34	0.30	0.29	0.29	0.29
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Room Type and finishes
 Bedroom (furnished)

Equivalent Absorption Area	A	13	15	21	23	26	27	27	27
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L _{p, in}	60	43	31	30	23	16	11	4
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NR 31

A weight	-26	-16	-9	-3	0	1	1	-1
A weighted level	33.8	27.3	21.8	26.6	22.7	17.1	12.4	3.3

dBA_(125-2kHz) 31.4 dBA_(125-4kHz) 31.5