



SAP Report Submission for Building Regulations Compliance

Client: Nick Kenny
The Draughtsman

Project: Nursery School Extension
Bourne Green School

Contact: Justin Barker- Assessor

Report Issue Date:

EXCELLENCE
IN ENERGY
ASSESSMENT

U-VALUE CALCULATOR REPORT



U-VALUE CALCULATOR REPORT



Property Reference	Bourne Green School update	Issued on Date	17/03/2026
Assessment Reference		Prop Type Ref	SBEM extension/NB
Project	The Nursery,, Bourne Green School , Burlescoombe Road , Southend-on-sea, SS1 3PX		
Calculation Type	New Build (As Designed)		

SAP Rating		DER		TER	
Environmental		% DER<TER			
CO ₂ Emissions (t/year)		DFEE		TFEE	
General Requirements Compliance		% DFEE<TFEE			

Assessor Details	Mr. Justin Barker, Justin Barker (OCDEA), Tel: 07800 654 321, jwjbarker7@gmail.com	Assessor ID	AR07-0001
Client	Draughtsman Architectural Ltd, Nick Kenney		

Building Elements

Wall 2.08 external stud walls - timber frame

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)	Density (kg/m ³)	Heat Cap. (J/kgK)
Ext surface				0.0400			
Layer 1	Render - Cement and Sand						
	Main construction	16	1.0000	0.0160	100.00		
Layer 2	airspace/timber battens						
	Main construction	22	0.1222	0.1800	89.63		
	Main construction	22	0.1243	0.1770	10.37		
	Corrections - Cavity Unventilated, Emissivity: Normal						
Layer 3	Breather membrane						
	Main construction	1.5	0.0000	0.0000	100.00		
Layer 4	APR 1200 (100mm +)						
	Main construction	100	0.0430	2.3256	87.85		
	Main construction	100	0.1300	0.7692	12.15		
	Corrections - Air Gap: Level 1, Fasteners: None or plastic						
Layer 5	APR 1200 (100mm +)						
	Main construction	100	0.0430	2.3256	87.85		
	Main construction	100	0.1300	0.7692	12.15		
	Corrections - Air Gap: Level 1, Fasteners: None or plastic						
Layer 6	Polythene,1000 gauge						
	Main construction	1.5	0.0000	0.0000	100.00		
Layer 7	Kooltherm K17 Insulated Plasterboard (52.5mm)						
	Main construction	52.5	0.0269	1.9500	100.00		
	Corrections - Air Gap: Level 1, Fasteners: None or plastic						
Layer 8	Plaster, standard						
	Main construction	3	0.4000	0.0075	100.00	600	1000
Int surface				0.1300			

Total resistance:	Upper limit = 6.498 m ² K/W	Lower limit = 6.056 m ² K/W	Average = 6.277 m ² K/W
	Total correction = 0.0027 m ² K/W	U-value (unrounded) = 0.16 W/m ² K	

Unheated space: None

Total thickness: 297 mm

U-value: 0.16 W/m² K

Kappa: 1.80 kJ/m² K

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Assessor Details	Mr. Justin Barker, Justin Barker (OCDEA), Tel: 07800 654 321, jwbarker7@gmail.com		Assessor ID
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Building Elements

Wall internal stud walls - internal insulated

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	Plasterboard, standard				
	Main construction	12.5	0.2100	0.0595	100.00
Layer 2	Plasterboard, standard				
	Main construction	12.5	0.2100	0.0595	100.00
Layer 3	Fibreboard, plain				
	Main construction	12.5	0.1300	0.0962	100.00
Layer 4	Standard cavity				
	Main construction	50	0.2778	0.1800	87.85
	Main construction	50	0.1300	0.3846	12.15
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 5	APR 1200 (*50mm to 99mm)				
	Main construction	50	0.0410	1.2195	87.85
	Main construction	50	0.1300	0.3846	12.15
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 6	Fibreboard, plain				
	Main construction	12.5	0.1300	0.0962	100.00
Layer 7	Plasterboard, standard				
	Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1300	

Total resistance: Upper limit = 1.801 m² K/W Lower limit = 1.698 m² K/W Average = 1.750 m² K/W
Total correction = 0.0030 m² K/W U-value (unrounded) = 0.39 W/m² K

Unheated space: StairwellStairwell1

Total thickness: 163 mm

U-value: 0.39 W/m² K

Kappa: n/a

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Building Elements

Floor Nursery floor - floor - slab-on-ground floor

Floor Type: Slab On Ground Floor

Area = 91.10 m², Perimeter = 36.98 m, Wall thickness = 297.00 mm, Soil: Clay

Horizontal edge insulation: none

Vertical edge insulation: Width D = 1000.0 mm, Thickness dn = 25.0 mm, Lambda = 0.000

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	1200g Visqueen DPM				
	Main construction	1	0.0000	0.0000	100.00
Layer 2	Cordek filcor 70				
	Main construction	100	0.0350	2.8571	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	Concrete, reinforced (2% steel)				
	Main construction	200	2.5000	0.0800	100.00
Layer 4	1000g VCL				
	Main construction	1	0.0000	0.0000	100.00
Layer 5	Screed				
	Main construction	50	1.1500	0.0435	100.00
Int surface				0.1700	

Total resistance: Upper limit = 2.981 m² K/W Lower limit = 2.981 m² K/W Average = 2.981 m² K/W

Total correction = 0.0092 m² K/W

U-value (unrounded) = 0.21 W/m² K

Unheated space: None

Total thickness: 352 mm

U-value: 0.21 W/m² K

Kappa: n/a

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Building Elements

Roof flat roof, ceiling grid

Roof Type: Pitched Roof, insulated sloping ceiling

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0346	
Layer 1	Felt/bitumen layers				
	Main construction	6	0.2300	0.0226	100.00
Layer 2	Plywood				
	Main construction	18	0.1300	0.1199	100.00
Layer 3	Celotex XR4000				
	Main construction	150	0.0220	5.9047	88.25
	Main construction	150	0.1300	0.9993	11.75
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	Mild Steel Roofdeck D60				
	Main construction	1	50.0000	0.0000	100.00
Layer 5	Standard cavity				
	Main construction	0	0.0600	0.0600	100.00
Layer 6	Fibreboard, plain with ceiling grid				
	Main construction	15	0.1300	0.1154	99.33
	Main construction	15	0.1300	0.1154	0.67
Int surface				0.1000	

Total resistance:	Upper limit = 4.551 m ² K/W	Lower limit = 4.197 m ² K/W	Average = 4.374 m ² K/W
	Total correction = 0.0073 m ² K/W	U-value (unrounded) = 0.24 W/m ² K	

Unheated space: None

Total thickness: 190 mm

U-value: 0.24 W/m² K

Kappa: n/a