



Part L2 Compliance Report
SRP1034-TAC-ZZ-XX-T-O-0010
Sandilands Primary School
PA1681

Consulting Engineers

TACE
Portland House
Oak Green
Earl Road
Cheadle Hulme
Cheshire
SK8 6QL

www.tace.co.uk

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<i>Prepared by:</i>	Josh Leigh		23/03/23
<i>Checked:</i>	Iain Jackson		23/03/23
<i>TACE Approved:</i>	Nicholas Thomas		23/03/23
<i>Client Approved:</i>			

Revision Record

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1.0 Introduction

The aim of this report is to describe the Part L modelling undertaken on the project and list the modelling inputs that are to be incorporated into the construction of the proposed development to ensure that the building complies with the requirements of Approved Document L2 (ADL2) 2021.

The resulting Building Emissions Rates (BER) for the new Sandilands Primary School, are summarised below:

Building	BER kgCO ₂ /m ² /year	TER kgCO ₂ /m ² /year	Status for Criterion 1: Carbon Emissions
Sandilands	-2.91	2.84	Pass

Building	BPER kWh/m ² /year	TPER kWh/m ² /year	Status for Criterion 1: Carbon Emissions
Sandilands	-36.47	30.47	Pass

2.0 Applicable Regulations

The development consists of a new two storeys school block. As the scheme was designed post June 2022, Part L2A 2021 applies and as a result the buildings have been modelled on this basis.

3.0 Software

TACE use TAS dynamic simulation software to demonstrate compliance with ADL2A. TAS compliance software has been approved by the Department for Communities and Local Government (DCLG) for use as a Dynamic Simulation Model (DSM) software package.

As part of its approval process, TAS has to demonstrate that it satisfies all of the tests and other requirements defined within sections 2 and 3 of the document *"CIBSE TM33:2006, CIBSE standard tests for the assessment of building services design software"*.

3.1 Building Fabric

The building envelope requirements for the new building are summarized in the tables that follow. These requirements should be considered minimum criteria (see appendix for details).

Building Parameter	Proposed U Values W/m ² K
External Wall	0.11
Exposed/Floor	0.1
Roof	0.1
Personal Door	1.53 (including frame)

Glazing

General glazing U-value of 1.1W/m². K (not including frame) and G-value of 0.35

3.2 Design Air Permeability

A design air permeability rate of 3m³/hour/m² at 50 Pa was applied to the building.

3.3 Mechanical Services Design Criteria

The modelled mechanical services systems, configurations and efficiencies are all based on the current TACE design. Any deviations need to be carefully considered to ensure the minimum efficiencies are achieved.

It is the responsibility of the contractor as part of his plant selection and installation to implement these measures. Should the contractor deviate from these assumptions he will be responsible for producing a revised Part L calculation and report to demonstrate compliance.

The following table summarises the strategy adopted by TACE to the mechanical services installation:

Type of system	System Performance Data	System Performance Values
Heating system Heating Coils & Radiant Panels All except areas served by DX System	a) Heat Source Generator Type b) Fuel Type c) Generator Seasonal Efficiency d) Heat Recovery Effectiveness e) Delivery Efficiency	ASHP Grid Supplied Electricity 363% N/A 100%
Heating system Zones supplied by DX System Server	a) Heat Source Generator Type b) Fuel Type c) Generator Seasonal Efficiency d) Heat Recovery Effectiveness e) Delivery Efficiency	ASHP Grid Supplied Electricity 363% N/A 100%
Cooling system Zones supplied by DX System Server	a) Chiller Type b) Cooling Generator Seasonal efficiency (SEER) c) Fuel Type	ASHP 4 Grid Supplied Electricity

DHW	a) Method of DHW generation, i.e., combi boilers, cylinder, etc. b) Size and type of DHW cylinder c) DHW delivery efficiency d) Fuel Type e) Generator Seasonal Efficiency	Hot Water Cylinder 1100L 90% Grid Supplied Electricity N/A
Mechanical Ventilation Systems – Local HRU	a) Details of all AHUs and which areas served by AHU b) Specific fan power of AHUs (W/l/s) c) Efficiency of heat recovery	Localized HRU'S 1.3 75%
Mechanical Ventilation Systems – Kitchen Zone	a) Details of all AHUs and which areas served by AHU b) Specific fan power of AHUs (W/l/s) c) Efficiency of heat recovery	S & E Ventilation 0.5 + 0.5 N/A
Control Corrections	a) Are there system provisions for metering? b) Does the system warn of 'out of range' values?	Yes No Following controls are installed on HVAC systems a) Central time control b) Optimum start/stop control c) Local time control

3.4 Electrical Services Design Criteria

The modelled services systems, configurations and efficiencies are all based on the current TACE design. Any deviations need to be carefully considered to ensure the minimum efficiencies are achieved. In the absence of detailed calculations, luminaire efficacy of 100lm/W has been assumed. At later stages when detailed calculations has been performed then lighting loads will be revised.

It is the responsibility of the contractor as part of his plant selection and installation to implement these measures. Should the contractor deviate from these assumptions he will be responsible for producing a revised Part L calculation and report to demonstrate compliance.

The following table summarises the assumptions made to the electrical services installation:

Spaces	Power correction factor	Lighting level (Lux)	Luminaire efficacy (lm/W)	Day light dimming	Local manual switching
Teaching Zones	0.95	300	100	Yes (daylight permitting)	Absence Detection
Circulation	0.95	100	100	No	PIR
Stairs	0.95	150	100	No	PIR
Entrance	0.95	100	100	No	Manual
Gen Office, Head Office	0.95	300	100	Yes (daylight permitting)	Absence Detection
Toilets/ Changing Rooms	0.95	100	100	No	PIR
Stores	0.95	100	100	No	Manual
Main Hall	0.95	300	100	Yes (daylight permitting)	Manual
Plant	0.95	200	100	No	Manual
Sick Room	0.95	300	100	No	PIR
Kitchen	0.95	500	100	No	Manual
staff work	0.95	300	100	Yes (daylight permitting)	Absence Detection
Meeting Room	0.95	300	100	No	Absence Detection
Server	0.95	200	100	No	Manual
Hygiene	0.95	300	100	No	Manual
SEN	0.95	300	100	Yes (daylight permitting)	Absence Detection
Reprographics	0.95	300	100	No	Absence Detection
Small Group Room	0.95	300	100	No	Absence Detection
Large Group Room	0.95	300	100	Yes (daylight permitting)	Absence Detection
Medical Treatment	0.95	300	100	No	Absence Detection
Interview	0.95	300	100	Yes (daylight permitting)	Absence Detection

3.5 Renewables

As this building is targeting net zero carbon in operation there is a significant amount of PV included on the project. The final number of PVs will be determined by a TM54 energy calculation, which is to be refined as the project progresses.

For the purposes of this calculation a nominal 600m² has been modelled at 20% efficiency. This is to be reviewed at the next stage and updated once the panel efficiency and final PV layout has been confirmed.

4.0 Conclusion

From this report, with the above modelling inputs the building exceeds the requirements set out in Part L 2021.

It should be noted that the calculation and subsequent results outlined within this report have been produced from concept design information.

It is the responsibility of the MEP subcontractor as part of his plant selection and installation to implement these measures. Should the contractor deviate from these assumptions he will be responsible for producing a revised Part L calculation and report to demonstrate compliance.

The use of passive design measures, building services strategy and renewable energy on the project ensures we meet and exceed the minimum TER (target emission rate) requirements of Part L2A – The Conservation of Fuel and Power in New Non-Domestic Buildings by achieving net zero carbon in operation.

Appendix I – BRUKL Report

BRUKL Output Document



HM Government

Compliance with England Building Regulations Part L 2021

Project name

Sandiland School

As designed

Date: Fri Mar 24 09:09:14 2023

Administrative information

Building Details

Address: Manchester, M23 9JX

Certification tool

Calculation engine: TAG

Calculation engine version: "v9.5.4"

Interface to calculation engine: TAG

Interface to calculation engine version: v9.5.4

BRUKL compliance check version: v8.1.b.0

Certifier details

Name: Stephen Senior

Telephone number: 01614860429

Address: Portland House, Oak Green Business Park,
Cheadle Hulme, Manchester, SK8 6QL

Foundation area [m²]: 1121.89

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m² annum	2.84
Building CO ₂ emission rate (BER), kgCO ₂ /m² annum	-2.91
Target primary energy rate (TPER), kWh/m² annum	30.47
Building primary energy rate (BPER), kWh/m² annum	-36.47
Do the building's emission and primary energy rates exceed the targets?	BER ≤ TER BPER ≤ TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _{o-limit}	U _{o-calc}	U _{i-calc}	First surface with maximum value
Walls*	0.26	0.11	0.11	External Wall
Floors	0.18	0.1	0.1	Ground Floor
Pitched roofs	0.16	-	-	No pitched roofs in project
Flat roofs	0.18	0.1	0.1	Roof
Windows** and roof windows	1.6	1.25	1.61	D3 UPPER
Rooflights***	2.2	-	-	No rooflights in project
Personnel doors^	1.6	1.35	1.61	PLANT DOOR PANE
Vehicle access & similar large doors	1.3	-	-	No vehicle access or similar large doors in project
High usage entrance doors	3	-	-	No high usage entrance doors in project
U _{o-limit} = Limiting area-weighted average U-values [W/(m²K)] U _{o-calc} = Calculated area-weighted average U-values [W/(m²K)] U _{i-calc} = Calculated maximum individual element U-values [W/(m²K)] * Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows. ** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position. ^ For fire doors, limiting U-value is 1.8 W/m²K N.B.: Neither roof ventilators (no. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air permeability	Limiting standard	This building
m³/(h.m²) at 50 Pa	8	3

Appendix II – EPC

Energy Performance Certificate		HM Government														
Non-Domestic Building																
Manchester M23 9JX	Certificate Reference Number: 7893-4000-4322-8931-6930															
This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document <i>Energy Performance Certificates for the construction, sale and let of non-dwellings</i> available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.																
Energy Performance Asset Rating																
More energy efficient A+ 10 This is how energy efficient the building is. Net zero CO₂ emissions <table border="1"> <tr> <td>A</td> <td>0-25</td> </tr> <tr> <td>B</td> <td>26-50</td> </tr> <tr> <td>C</td> <td>51-75</td> </tr> <tr> <td>D</td> <td>76-100</td> </tr> <tr> <td>E</td> <td>101-125</td> </tr> <tr> <td>F</td> <td>126-150</td> </tr> <tr> <td>G</td> <td>Over 150</td> </tr> </table> Less energy efficient			A	0-25	B	26-50	C	51-75	D	76-100	E	101-125	F	126-150	G	Over 150
A	0-25															
B	26-50															
C	51-75															
D	76-100															
E	101-125															
F	126-150															
G	Over 150															
Technical information		Benchmarks														
Main heating fuel:	Grid Supplied Electricity	Buildings similar to this one could have ratings as follows:														
Building environment:	Mixed-mode with Natural Ventilation	10 If newly built														
Total useful floor area (m ²):	2288	39 If typical of the existing stock														
Building complexity:	Level 5															
Building emission rate (kgCO ₂ /m ² per year):	-2.91															
Primary energy use (kWh/m ² per year):	-36.47															