



Jonathan Richard Associates
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ENERGY EFFICIENCY STATEMENT

**ROYAL SCHOOL SPORTS HALL
65 ROSSLYN HILL
HAMPSTEAD
CAMDEN**

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1.0 INTRODUCTION

Jonathan Richard Associates have been commissioned to advise how carbon dioxide emissions will be minimised for the proposed sports hall at 65 Rosslyn Hill, Hampstead in Camden. The development will aim to reduce emissions in accordance with current Building Regulations Approved Document L2A – Conservation of fuel and power for new buildings other than dwellings (ADL2A).

This report gives a brief background to Part L2A and the method used to assess compliance, that being the Simplified Building Energy Model (SBEM).

The data input is listed and given in section 3.0 for reference and the aim during construction where feasible should be to better these values.

The results from the SBEM assessment are summarised in section 4.0 to indicate compliance with Part L2A. The SBEM calculation is provided in appendix 5.1.

2.0 BACKGROUND TO PART L & SBEM

2.1 Compliance with Part ADL2A

To demonstrate compliance with Approved Document L2A, five criteria are identified.

- 1) Building carbon dioxide emission rating (BER) must be less than or equal to the target emission rating (TER)
- 2) Fabric, Heating, HWS and Lighting to be within specified limits.
- 3) For non air-conditioned spaces, solar gains must be limited to avoid overheating.
- 4) The building construction should be consistent with the BER.
- 5) Building systems should be operated in an energy efficient manner.

2.2 Criterion 1,2 and 3

Criteria 1, 2 and 3 are part of the Hevacomp part L software check, however criteria 4 and 5 are the responsibility of the Main Contractor.

The Hevacomp software used within this report will perform the following checks to ascertain compliance with Part L2A (2010)

- Carbon Dioxide emissions for the actual building are computed by the software using the National Calculation Method (NCM) and compared to that of the “Target Building” to ascertain compliance.
- U Values for all construction elements are checked against the limiting U values given in table 4 of ADL2A. Checks are made on single element and area weighted values. Efficiencies of mechanical plant are also checked against the limiting values set out in the non domestic heating, cooling and ventilation compliance guide.

- The limits on solar gains are checked using the simplified method to ensure the combined solar and internal gains do not exceed 35W/m² averaged over the period of 06:30 to 16:30 for July.
- Where this simplified method fails, Appendix C of this report gives details of the alternative route to compliance using design simulation software to show the internal temperatures will not exceed 28°C for more than 1% of the year using approved CIBSE design data.

2.3 Criterion 4

Criterion 4 of ADL2A is concerned with the consistency of design and construction. It is the responsibility of the Main Contractor to demonstrate that the construction, building fabric and continuity of insulation of the actual building is in compliance with the values used within the SBEM calculation.

Air permeability testing will be required upon completion of the development. The contractor shall demonstrate that the air permeability figure used within the SBEM calculation and identified in section 3.0 of this report has been achieved on site. Where this figure is not achieved, the Contractor shall be responsible for remedial works and re-testing to ensure this figure is achieved of compensating improvements elsewhere in the design to achieve compliance with Criterion 1.

2.4 Criterion 5

Criterion 5 of ADL2A is concerned with the provision of information. The contractor shall ensure that a building log book is prepared and issued on handover in compliance with CIBSE TM31.

3.0 ENERGY EFFICIENCY REQUIREMENTS

3.1 Building Zoning

Zone	Areas	HVAC Systems
Zone 1	Sports Hall	LTHW Underfloor Heating & Natural Ventilation
Zone 2	Plant Room & Store Rooms	No Heating
Zone 3	Toilets	LTHW Underfloor Heating & Mechanical Extract
Zone 4	Circulation Areas	LTHW Radiators

3.2 HVAC System Efficiencies

Zone	Heating	Heating Controls	Lighting	Lighting Controls	DHWS
Zone 1	92% Gas Condensing Boiler	Time, Temperature & Weather Compensation	T5 Fluorescent tube, High Frequency	Manual On / Automatic Off	Zone 1 Heat Source

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Zone 2	N/A	N/A	T5 Fluorescent tube, High Frequency	Manual On / Automatic Off	Zone 1 Heat Source
Zone 3	92% Gas Condensing Boiler	Time, Temperature & Weather Compensation	Compact Fluorescent	Manual On / Automatic Off	Zone 1 Heat Source
Zone 4	92% Gas Condensing Boiler	Time, Temperature & Weather Compensation	Compact Fluorescent	Manual On / Automatic Off	Zone 1 Heat Source

3.3 Fabric Data

External Walls	0.25	W/m ² K
Exposed Roof	0.15	W/m ² K
Exposed Floor	0.2	W/m ² K
Glazing	1.5	W/m ² K
Air Permeability	5	m ³ /hr/m ² @50Pa

4.0 SBEM & PART L2A COMPLIANCE

4.1 CO₂ Emissions

Target Building (TER)	9.3	kgCO ₂ /m ² /annum
Actual Building (BER)	9.0	kgCO ₂ /m ² /annum

Refer to the appendix for the BRUKL SBEM calculation for issue to Building Control.

4.2 Summary of Results

The proposed sports hall has passed the SBEM assessment against the Part L2A criteria. To achieve a pass the following energy efficiency measures have been adopted:

- Very good building fabric U-Values.
- Very good Air Permeability.
- 92% high efficiency gas fired boiler plant.
- Heating system designed to achieve a high system operating efficiency with low temperature underfloor heating specified to ensure that the gas boiler operates in condensing mode.
- Heating system controls to include time, temperature and weather compensation to reduce boiler gas consumption taking account the external ambient temperature.
- Controllable natural ventilation to be provided to the Sports Hall to avoid additional energy consumption associated with mechanical fans.
- High efficiency lighting with manual on / automatic off controls specified.

The Contractor shall refer to section 3.0 for full details of the fabric U-Values, air permeability and HVAC system efficiencies input within the calculation. Where feasible during construction the Contractor should aim to better the energy efficiency measures outlined within this report.

5.0 APPENDIX

5.1 Part L2A 2010 Design Stage SBEM Calculation