

# BRUKL Output Document



Compliance with England and Wales Building Regulations Part L

Project name

**Ebbw Vale**

As built

Date: Thu Jan 28 14:06:11 2010

## Administrative information

### Building Details

Address: Ebbw Vale Innovation Center, ,

### Certification tool

Calculation engine: SBEM

Calculation engine version: v3.4.a

Interface to calculation engine: DDB PartL

Interface to calculation engine version: v25.00

BRUKL compliance check version: v3.4.a

### Occupier Details

Name: Information not provided by the user

Telephone number: Information not provided by the user

Address: Information not provided by the user, Information not provided by the user, Information not provided by the user

### Certifier details

Name: Ben Gibbons

Telephone number: 01452 429820

Address: Meadow House, 12 Sabre Close, Green Farm, Quedgeley, Gloucester, GL2 4NZ

## Criterion 1: Predicted CO2 emission from proposed building does not exceed the target

1.1	Calculated CO2 emission rate from notional building	70.9 KgCO2/m2.annum
1.2	Improvement factor	0.2
1.3	LZC benchmark	0.1
1.4	Target CO2 Emission Rate (TER)	51 KgCO2/m2.annum
1.5	Building CO2 Emission Rate (BER)	39.6 KgCO2/m2.annum
1.6	Are emissions from building less than or equal to the target?	BER =< TER
1.7	Are as built details the same as used in BER calculations?	Separate submission

## Criterion 2: The performance of the building fabric and the building services systems should be no worse than the design limits

2.1 Are the U-values better than the design limits? Better than design limits

Element	U <sub>a</sub> -Limit	U <sub>a</sub> -Calc	U <sub>i</sub> -Limit	U <sub>i</sub> -Calc	Surface where this maximum value occurs*
Wall**	0.35	0.29	0.7	0.29	120 Wall 1
Floor	0.25	0.2	0.7	0.2	120 Exposed Floor 1
Roof	0.25	0.22	0.35	0.22	121 Exposed Roof 3
Windows***, roof windows, and rooflights	2.2	1.2	3.3	1.22	120 Door 1
Personnel doors	2.2	0	3	0	"No Personnel doors in project"
Vehicle access & similar large doors	1.5	0	4	0	"No Vehicle access doors in project"
High usage entrance doors	6	0	6	0	"No High usage entrance doors in project"

U<sub>a</sub>-Limit = Limiting area-weighted average U-values [W/(m2K)]

U<sub>a</sub>-Calc = Calculated area-weighted average U-values [W/(m2K)]

U<sub>i</sub>-Limit = Limiting individual element U-values [W/(m2K)]

U<sub>i</sub>-Calc = Calculated individual element U-values [W/(m2K)]

\* There might be more than one surface exceeding the limiting standards.

\*\* Automatic U-value check by the tool does not apply to curtain walls whose limiting standards are similar to those for windows.

\*\*\* Display windows and similar glazing are not required to meet the standard given in this table.

2.2 Is air permeability no greater than the worst acceptable standard? No greater than worst acceptable standard

Air Permeability	Worst acceptable standard	This building (Design value)
m <sup>3</sup> /(h.m <sup>2</sup> ) at 50 Pa	10	7

2.3 Are all building services standards acceptable?

2.3a-1 HVAC 1

HVAC system standard is acceptable

Efficiency check	Limiting heat source seasonal efficiency	This building
Heat source efficiency	2	4.68
Limiting efficiency applies to all types of heat pump except absorption and gas engine.		
Efficiency check	Limiting Cooling Nominal efficiency	This building
Cooling efficiency	2.4	3.02

2.3a-2 HVAC 2

HVAC system standard is acceptable

Efficiency check	Limiting heat source seasonal efficiency	This building
Heat source efficiency	0.84	0.9
0.84 is the overall limiting efficiency for a single or a multiple boiler system. For a multiple boiler system the limiting efficiency for any individual boiler is 0.80.		

2.3b- "No HWS in project, or hot water is provided by HVAC system"

2.4	Does fixed internal lighting comply with England and Wales Building Regulations Part L paragraphs 49 to 61?	Separate submission
2.5	Are energy meters installed in accordance with GIL65?	Separate submission

### Criterion 3: The spaces in the building without air-conditioning have appropriate passive control measures to limit the effects of solar gains

3.1	Method of showing compliance with England and Wales Building Regulations Part L in paragraph 64?	Separate submission
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### Criterion 4: The performance of the building, as built, is consistent with the BER

4.1	Have the key features of the design been included (or bettered) in practice?	Separate submission
4.2	Is the level of thermal bridging acceptable?	Separate submission
4.3	Has satisfactory documentary evidence of site inspection checks been produced?	Separate submission

4.4 Design air permeability

Air Permeability	Worst acceptable standard	This building (Design value)
m <sup>3</sup> /(h.m <sup>2</sup> ) at 50 Pa	10	7

4.5	Has evidence been provided that demonstrates that the design air permeability has been achieved satisfactorily?	Separate submission
4.6	Has commissioning been completed satisfactorily?	Separate submission
4.7	Has evidence been provided that demonstrates that the ductwork is sufficiently airtight?	Separate submission

### Criterion 5: Providing information

5.1	Has a suitable building log-book been prepared?	Separate submission
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# Technical Data Sheet (Actual vs. Notional Building)

## Building Global Parameters

	Actual	Notional
Area (m2)	1777	1777
External area (m2)	3091	3091
Weather	CAR	CAR
Infiltration (m3/hm2 @ 50Pa)	7	10
Average conductance (W/K)	1027.99	2382.31
Average U-value (W/m2K)	0.33	0.77
Alpha value (%)	11.47	10

## Building Use

% area	Building Type
100	Office

Primary school  
 Secondary school  
 Further education universities  
 Primary health care buildings  
 Nursing residential homes and hostels  
 Hospital  
 Hotel  
 Restaurant/public house  
 Sports centre/leisure centre  
 Sports ground arena  
 Retail  
 Warehouse and storage  
 Theatres/cinemas/music halls and auditoria  
 Social clubs  
 Community/day centre  
 Libraries/museums/galleries  
 Prisons  
 Emergency services  
 Crown and county courts  
 Airport terminals  
 Bus station/train station/seaport terminal  
 Workshops/maintenance depot  
 Telephone exchanges  
 Industrial process building  
 Launderette  
 Dwelling  
 Retail warehouses  
 Miscellaneous 24hr activities

## HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2 (electric)	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
<b>[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Grid Supplied Electricity, [CFT] Grid Supplied Electricity</b>									
Actual	124.4	300.1	7.9	25.1	4.9	4.36	3.32	4.68	4.68
Notional	218.3	405.7	73.1	67.5	27.5	0.83	1.67	-----	-----
<b>[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Grid Supplied Electricity</b>									
Actual	141.3	18.9	48.9	0	8.3	0.8	0	0.9	0
Notional	190.8	67	68	0	4	0.73	0	-----	-----
<b>[ST] No Heating or Cooling, [HS] LTHW boiler, [HFT] Oil, [CFT] Grid Supplied Electricity</b>									
Actual	0	3.4	0	0	0	0	0	0	0
Notional	0	13.7	0	0	0	0	0	-----	-----

## Key to terms

Alpha value (%) = percentage of the building's average heat transfer coefficient which is due to thermal bridging  
 Heat dem (MJ/m2) = Heating energy demand  
 Cool dem (MJ/m2) = Cooling energy demand  
 Heat con (kWh/m2) = Heating energy consumption  
 Cool con (kWh/m2) = Cooling energy consumption  
 Aux con (kWh/m2) = Auxiliary energy consumption  
 Heat SSEFF = Heating system seasonal efficiency  
 Cool SSEER = Cooling system seasonal energy efficiency ratio  
 Heat gen SSEFF = Heating generator seasonal efficiency  
 Cool gen SSEER = Cooling generator seasonal energy efficiency ratio  
 ST = System type  
 HS = Heat source  
 HFT = Heating fuel type  
 CFT = Cooling fuel type