BRUKL Output Document

HM Government

Compliance with England and Wales Building Regulations Part L

Project name

Linden Square

As built

Date: Fri Jan 22 12:51:15 2010

Administrative information

Building Details

Address: 123 Anystreet, Anytown, AB12 C34

Certification tool

Calculation engine: SBEM

Calculation engine version: v3.4.a

Interface to calculation engine: iSBEM

Interface to calculation engine version: v3.4.a

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: Steve McAnulla

Telephone number: 07971789959

Address: 56 Sevenacres, Somerton, TA11 6HG

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

1.1	Calculated CO2 emission rate from notional building	94.3 KgCO2/m2.annum
1.2	Improvement factor	0.2
1.3	LZC benchmark	0.1
1.4	Target CO2 Emission Rate (TER)	67.9 KgCO2/m2.annum
1.5	Building CO2 Emission Rate (BER)	38.4 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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Limit}$	$U_{i\text{-}Calc}$	Surface where this maximum value occurs*
Wall**	0.35	0.28	0.7	0.3	z0/office1/w
Floor	0.25	0.13	0.7	0.15	z0/wc/f
Roof	0.25	0.16	0.35	0.16	z2/office1/c
Windows***, roof windows, and rooflights	2.2	1.7	3.3	1.7	z0/office1/s/g
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"

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m2K)]
$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m2K)]
$U_{i\text{-}Limit}$ = Limiting individual element U-values [W/(m2K)]
$U_{i\text{-}Calc}$ = 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)
m3/(h.m2) at 50 Pa	10	7.83

2.3 Are all building services standards acceptable?

2.3a-1 Hvac HVAC system standard is acceptable

Efficiency check	Limiting heat source seasonal efficiency	This building
Heat source efficiency	2	4.5
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	5

2.3a-2 Panel HVAC system standard is acceptable

Efficiency check	Limiting heat source seasonal efficiency	This building
Heat source efficiency	Limiting heat source efficiency not specified	1

2.3b-1 Basic HWS HWS standard is acceptable

Efficiency check	Limiting HWS heat source seasonal efficiency	This building
HWS heat source efficiency	Limiting heat source efficiency not specified	1

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

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)
m3/(h.m2) at 50 Pa	10	7.83

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

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area (m2)	2092	2092
External area (m2)	4322	4322
Weather	NOR	NOR
Infiltration (m3/hm2 @ 50Pa)	8	10
Average conductance (W/K)	1486.9	4120.25
Average U-value (W/m2K)	0.34	0.95
Alpha value (%)	15.47	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	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] No Heating or Cooling, [HS] LTHW boiler, [HFT] Oil, [CFT] Grid Supplied Electricity										
	Actual	0	148.1	0	0	0	0	0	0	0
	Notional	0	2874.3	0	0	0	0	0	----	----
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Grid Supplied Electricity, [CFT] Grid Supplie										
	Actual	168.2	233.5	10.3	18.8	3.7	4.41	3.36	4.5	4.5
	Notional	268.7	462.6	89.9	76.9	28	0.83	1.67	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Grid Supplied Electricity, [CFT] Gr										
	Actual	446.6	129.2	151.2	0	25.4	0.8	0	1	0
	Notional	542.1	668.2	193	0	12.8	0.73	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