

Project name

Littlehampton PIX

As designed

Date: Tue Apr 21 23:28:21 2015

Administrative information

Building Details

Address: Roundstone Lane, East Preston,
LITTLEHAMPTON, BN16 1EB

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.2.d.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.2

BRUKL compliance check version: v5.2.d.2

Owner Details

Name: Whitbread Plc

Address: Whitbread Court, Houghton Hall Business Park,
Porz Avenue, DUNSTABLE, LU5 5XE

Certifier details

Name: Andrew John Kay

Address: Eventus Centre, Sunderland Road, Northfields
Industrial Estate, Market Deeping,
PETERBOROUGH, PE6 8FD

Criterion 1: The calculated CO₂ emission rate for the building should not exceed the target

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	68.5
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	68.5
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	59.5
Are emissions from the building less than or equal to the target?	BER ≤ TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and the building services should achieve reasonable overall standards of energy efficiency

Values not achieving standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	U _a -Limit	U _a -Calc	U _i -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.15	0.15	BD000014_W0_-1
Floor	0.25	0.15	0.15	NS000011_F_-1
Roof	0.25	0.1	0.1	NS000000_C_-1
Windows***, roof windows, and rooflights	2.2	0.9	0.9	BD000014_W0-W0
Personnel doors	2.2	2.19	2.19	GF000007_W1-W0
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"

U_a-Limit = Limiting area-weighted average U-values [W/(m²K)]

U_a-Calc = Calculated area-weighted average U-values [W/(m²K)]

U_i-Calc = Calculated maximum individual element U-values [W/(m²K)]

* There might be more than one surface where the maximum U-value occurs.

** 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.

N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	5

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	0.9 to 0.95

1- VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	5.43	4.4	-	-	-
Standard value	2.5*	2.6	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps. For types <=12 kW output, refer to EN 14825 for limiting standards.					

2- Stairwell

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

1- SYST0001-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	0.98	0.015
Standard value	0.9*	N/A
* Standard shown is for gas boilers >30 kW output. For boilers <=30 kW output, limiting efficiency is 0.73.		

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1			
En-Suite Bathroom	0.9	-	-	-	-	-	-	-	-	-	-	N/A
Bedroom	-	-	-	0.9	-	-	-	-	-	0.85	0.5	
En-Suite Bathroom	0.9	-	-	-	-	-	-	-	-	-	-	N/A
Bedroom	-	-	-	0.9	-	-	-	-	-	0.85	0.5	
En-Suite Bathroom	0.9	-	-	-	-	-	-	-	-	-	-	N/A
Bedroom	-	-	-	0.9	-	-	-	-	-	0.85	0.5	
En-Suite Bathroom	0.9	-	-	-	-	-	-	-	-	-	-	N/A
Bedroom	-	-	-	0.9	-	-	-	-	-	0.85	0.5	

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
Bedroom		-	211	-	35
En-Suite Bathroom		-	37	-	52
Bedroom		-	211	-	35
GF Corridor 1		-	127	-	48
GF Corridor 2		-	121	-	54
GF Fire Escape		-	93	-	84
GF Linen Room		-	100	-	53
GF Rear Stairs		-	55	-	28
GF Plantroom		21	-	-	37
GF Store		13	-	-	16
FF Corridor 1		-	127	-	48
FF Fire Escape		-	93	-	84
FF Linen Room		-	100	-	53
FF Corridor 2		-	111	-	54
FF Store		-	24	-	16
FF Rear Stairs		-	119	-	28

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Bedroom	NO (-82.9%)	NO
En-Suite Bathroom	N/A	N/A
Bedroom	NO (-61%)	NO
Bedroom	NO (-74.8%)	NO
Bedroom	NO (-87.7%)	NO
Bedroom	NO (-74.8%)	NO
Bedroom	NO (-74.8%)	NO
Bedroom	NO (-74.8%)	NO
Bedroom	NO (-81.3%)	NO
Bedroom	NO (-74.8%)	NO
Bedroom	NO (-90.7%)	NO
Bedroom	NO (-82.9%)	NO
En-Suite Bathroom	N/A	N/A
Bedroom	NO (-61%)	NO
Bedroom	NO (-74.8%)	NO
Bedroom	NO (-87.7%)	NO
Bedroom	NO (-74.8%)	NO
Bedroom	NO (-74.8%)	NO
Bedroom	NO (-74.8%)	NO
Bedroom	NO (-81.3%)	NO
Bedroom	NO (-74.8%)	NO
Bedroom	NO (-90.7%)	NO

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m ²]	659	659
External area [m ²]	1187.1	1187.1
Weather	SOU	SOU
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	211.98	558.07
Average U-value [W/m ² K]	0.18	0.47
Alpha value* [%]	30.75	17.02

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
	A1/A2 Retail/Financial and Professional services
	A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
	B1 Offices and Workshop businesses
	B2 to B7 General Industrial and Special Industrial Groups
	B8 Storage or Distribution
100	C1 Hotels
	C2 Residential Inst.: Hospitals and Care Homes
	C2 Residential Inst.: Residential schools
	C2 Residential Inst.: Universities and colleges
	C2A Secure Residential Inst.
	Residential spaces
	D1 Non-residential Inst.: Community/Day Centre
	D1 Non-residential Inst.: Libraries, Museums, and Galleries
	D1 Non-residential Inst.: Education
	D1 Non-residential Inst.: Primary Health Care Building
	D1 Non-residential Inst.: Crown and County Courts
	D2 General Assembly and Leisure, Night Clubs and Theatres
	Others: Passenger terminals
	Others: Emergency services
	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
	Others: Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	16.33	35.07
Cooling	1.34	3.3
Auxiliary	10.08	6.3
Lighting	13.4	13.08
Hot water	177.58	198.26
Equipment*	17.28	17.28
TOTAL**	218.73	256

* Energy used by equipment does not count towards the total for calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	149.51	304.4
Primary energy* [kWh/m ²]	341.71	378.92
Total emissions [kg/m ²]	59.5	68.5

* Primary energy is net of any electrical energy displaced by CHP generators, if applicable.

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	79.5	32.7	4.4	1.8	12.7	5.06	4.98	5.43	7.02
Notional	192.9	58.4	22	4.5	8.4	2.43	3.6	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity									
Actual	141.7	110.1	49.2	0	0.3	0.8	0	1	0
Notional	208.8	241.5	70.8	0	0.4	0.82	0	----	----

Key to terms

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 (for notional building, value depends on activity glazing class)
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

Key Features

The BCO can give particular attention to items with specifications that are better than typically expected.

Building fabric

Element	U _{i-Typ}	U _{i-Min}	Surface where the minimum value occurs*
Wall	0.23	0.15	BD000014_W0_-1
Floor	0.2	0.15	NS000011_F_-1
Roof	0.15	0.1	NS000000_C_-1
Windows, roof windows, and rooflights	1.5	0.9	BD000014_W0-W0
Personnel doors	1.5	2.19	GF000007_W1-W0
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"
U _{i-Typ} = Typical individual element U-values [W/(m²K)]			U _{i-Min} = Minimum individual element U-values [W/(m²K)]
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	5