

## Project name

**182-184 Bitterne Road West****As built**

Date: Thu Apr 04 16:23:38 2024

## Administrative information

## Building Details

Address: Southampton, SO18 1BE

## Certifier details

Name: Samuel Coupland

Telephone number: 02392435050

Address: ITD Consultants Ltd, Unit 5 Acorn Business Park,  
Portsmouth, PO6 3TH, Portsmouth, PO63TH

## Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

BRUKL compliance module version: v6.1.e.1

Foundation area [m<sup>2</sup>]: 27.17The CO<sub>2</sub> emission and primary energy rates of the building must not exceed the targets

Target CO <sub>2</sub> emission rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> annum	16.08
Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> annum	13.47
Target primary energy rate (TPER), kWh <sub>PE</sub> /m <sup>2</sup> annum	140.54
Building primary energy rate (BPER), kWh <sub>PE</sub> /m <sup>2</sup> annum	125.07
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 <sub>a-Limit</sub>	U <sub>a-Calc</sub>	U <sub>i-Calc</sub>	First surface with maximum value
Walls*	0.26	0.14	0.14	Room 1/1 - Wall
Floors	0.18	0.12	0.12	Room 1/5 - Ext.Floor
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.14	0.14	Room 1/14 - Ceiling
Windows** and roof windows	1.6	0.8	0.8	Room 2/1 - Wall/Window 1
Rooflights***	2.2	-	-	No external rooflights
Personnel doors <sup>^</sup>	1.6	1	1	Room 1/1 - Wall/Door 1
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

U<sub>a-Limit</sub> = Limiting area-weighted average U-values [W/(m<sup>2</sup>K)]U<sub>i-Calc</sub> = Calculated maximum individual element U-values [W/(m<sup>2</sup>K)]U<sub>a-Calc</sub> = Calculated area-weighted average U-values [W/(m<sup>2</sup>K)]

\* 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.

<sup>^</sup> For fire doors, limiting U-value is 1.8 W/m<sup>2</sup>K

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

Air permeability	Limiting standard	This building
m <sup>3</sup> /(h.m <sup>2</sup> ) at 50 Pa	8	3

## Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

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

### 1- Underfloor Heating

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	0.94	-	-	-	-
<b>Standard value</b>	0.93*	N/A	N/A	N/A	N/A
<b>Automatic monitoring &amp; targeting with alarms for out-of-range values for this HVAC system</b>					NO
* Standard shown is for gas single boiler systems <=2 MW output and overall for multi-boiler systems. For single boiler systems >2 MW or any individual boiler in a multi-boiler system, limiting efficiency is 0.88.					

### 2- Electric Heating

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

### 1- HWS

	Water heating efficiency	Storage loss factor [kWh/litre per day]
<b>This building</b>	1	0.013
<b>Standard value</b>	1	N/A

### Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
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 balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

Zone name	SFP [W/(l/s)]										HR efficiency	
	A	B	C	D	E	F	G	H	I	Zone	Standard	
<b>ID of system type</b>												
<b>Standard value</b>	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1			
Entrance Lobby GF01 - 1	-	-	-	-	0.5	-	-	-	-	0.9	N/A	
Staff GF02 - 2	-	-	-	-	0.5	-	-	-	-	0.9	N/A	
Communal Zone GF04 - 3	-	-	-	-	0.5	-	-	-	-	0.9	N/A	
Staff WC GF03 - 6	-	-	-	-	0.5	-	-	-	-	0.9	N/A	

Zone name	General lighting and display lighting		General luminaire	Display light source	
	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]	
<b>Standard value</b>	95	0.3	80	0.3	
Bike Store GF06 - 4	115	-	-	-	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
	<b>Standard value</b>	95	80	0.3
Plant Room GF05 - 5		115	-	-
Plant Room TF06 - 26		115	-	-
Entrance Lobby GF01 - 1		115	-	-
Staff GF02 - 2		115	-	-
Communal Zone GF04 - 3		115	-	-
Staff WC GF03 - 6		115	-	-
Stairs GF07 - 7		110	-	-
Landing FF09 - 12		110	-	-
Landing SF09 - 21		110	-	-
Landing TF05 - 27		110	-	-

**The spaces in the building should have appropriate passive control measures to limit solar gains in summer**

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Staff GF02 - 2	NO (-86.1%)	NO
Communal Zone GF04 - 3	NO (-46.5%)	NO

**Regulation 25A: Consideration of high efficiency alternative energy systems**

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

# Technical Data Sheet (Actual vs. Notional Building)

## Building Global Parameters

	Actual	Notional
Floor area [m <sup>2</sup> ]	136.6	136.6
External area [m <sup>2</sup> ]	502.2	502.2
Weather	SOU	SOU
Infiltration [m <sup>3</sup> /hm <sup>2</sup> @ 50Pa]	3	3
Average conductance [W/K]	90.81	206.28
Average U-value [W/m <sup>2</sup> K]	0.18	0.41
Alpha value* [%]	40.87	23.04

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

## Building Use

### % Area Building Type

Retail/Financial and Professional Services  
 Restaurants and Cafes/Drinking Establishments/Takeaways  
 Offices and Workshop Businesses  
 General Industrial and Special Industrial Groups  
 Storage or Distribution  
 Hotels

### 77 Residential Institutions: Hospitals and Care Homes

Residential Institutions: Residential Schools  
 Residential Institutions: Universities and Colleges  
 Secure Residential Institutions

### 23 Residential Spaces

Non-residential Institutions: Community/Day Centre  
 Non-residential Institutions: Libraries, Museums, and Galleries  
 Non-residential Institutions: Education  
 Non-residential Institutions: Primary Health Care Building  
 Non-residential Institutions: Crown and County Courts  
 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/m<sup>2</sup>]

	Actual	Notional
Heating	72.61	88.65
Cooling	0	0
Auxiliary	1.83	1.82
Lighting	12.85	12.31
Hot water	5.85	3.61
Equipment*	53.67	53.67
<b>TOTAL**</b>	<b>93.15</b>	<b>106.39</b>

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

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

## Energy Production by Technology [kWh/m<sup>2</sup>]

	Actual	Notional
Photovoltaic systems	6.91	7.21
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>6.91</i>	<i>7.21</i>

## Energy & CO<sub>2</sub> Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m <sup>2</sup> ]	395.22	664.1
Primary energy [kWh <sub>PE</sub> /m <sup>2</sup> ]	125.07	140.54
Total emissions [kg/m <sup>2</sup> ]	13.47	16.08

## HVAC Systems Performance

System Type	Heat dem MJ/m <sup>2</sup>	Cool dem MJ/m <sup>2</sup>	Heat con kWh/m <sup>2</sup>	Cool con kWh/m <sup>2</sup>	Aux con kWh/m <sup>2</sup>	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
<b>[ST] No Heating or Cooling</b>									
<b>Actual</b>	80.6	1189.8	0	0	0	0	0	0	0
<b>Notional</b>	86.2	1220.9	0	0	0	0	0	----	----
<b>[ST] Central heating using water: floor heating, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity</b>									
<b>Actual</b>	109.5	64.5	36.3	0	4.8	0.84	0	0.94	0
<b>Notional</b>	199.9	104.2	64.6	0	4.7	0.86	0	----	----
<b>[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity</b>									
<b>Actual</b>	333.4	39.9	115.8	0	0	0.8	0	1	0
<b>Notional</b>	607.8	189.5	126	0	0	1.34	0	----	----

### Key to terms

Heat dem [MJ/m <sup>2</sup> ]	= Heating energy demand
Cool dem [MJ/m <sup>2</sup> ]	= Cooling energy demand
Heat con [kWh/m <sup>2</sup> ]	= Heating energy consumption
Cool con [kWh/m <sup>2</sup> ]	= Cooling energy consumption
Aux con [kWh/m <sup>2</sup> ]	= 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