ABBEYCONSULTANTS

Appendix G

BRUKL - Health Facility

217 High Street Yiewsley

Taylor Wimpey West London

Appendix to report No: PA-ES-YHS-TWWL-20-02

Report Date: July 2020

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name

217 High Street Yiewsley - Be Lean

As designed

Date: Thu Feb 27 16:36:38 2020

Administrative information

Building Details

Address: 217 High Street, Yiewsley, West Drayton, UB7

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.a.1

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v6.1.0

BRUKL compliance check version: v5.6.a.1

Owner Details

Name: Taylor Wimpey West London

Telephone number:

Address: 17 Bartley Wood Business Park Barley Way, Hook, RH27 9XA

Certifier details

Name: Matt Fitzpatrick

Telephone number: 01923 274427

Address: 2 Dronken House 43A High Street, Kings Langley, WD4 8FG

Criterion 1: The calculated CO_2 emission rate for the building must not exceed the target

CO_2 emission rate from the notional building, kgCO_2/m^2.annum	15.7
Target CO_2 emission rate (TER), kgCO_2/m^2.annum	15.7
Building CO_2 emission rate (BER), kgCO_2/m^2.annum	10.8
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 fixed building services should achieve reasonable overall standards of energy efficiency

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

Building fabric

Element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	Surface where the maximum value occurs*
Wall**	0.35	0.18	0.18	Health Hub - Admin Area_W_7
Floor	0.25	0.12	0.12	Health Hub - Admin Area_S_3
Roof	0.25	-	-	"No heat loss roofs"
Windows***, roof windows, and rooflights	2.2	1.2	1.2	Health Hub - Admin Area_G_8
Personnel doors	2.2	1.4	1.4	Health Hub - Entrance Foyer_D_6
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m^{2}K)]
$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m^{2}K)]
$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m^{2}K)]

* 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

1- Gas Boiler

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	0.91	-	-	-	-
Standard value	0.91*	N/A	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 gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.

1- Project DHW

	Water heating efficiency	**Storage loss factor [kWh/litre per day]**
This building	Hot water provided by HVAC system	-
Standard value	N/A	N/A

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	**Zone**	**Standard**
Health Hub - Admin Area	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Staff Support Spaces	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Group Room	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 8	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Interview Room	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Treatment 3	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 6	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 3	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 5	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 2	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Treatment 1	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 4	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 1	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 9	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 11	-	-	-	0.8	-	-	-	-	-	0.75	0.5

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	Zone	Standard
Health Hub - Pharmacy	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Entrance Foyer	-	-	-	0.8	-	-	-	-	-	0.75	0.5

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
Health Hub - Admin Area	140	-	-	185
Health Hub - Staff Support Spaces	140	-	-	651
Health Hub - Group Room	140	-	-	187
Health Hub - Treatment Weighting Area	-	140	-	263
Health Hub - Consult 8	140	-	-	105
Health Hub - Interview Room	140	-	-	150
Health Hub - Treatment 3	140	-	-	107
Health Hub - Consult 6	140	-	-	104
Health Hub - Consult 3	140	-	-	100
Health Hub - Consult 5	140	-	-	106
Health Hub - Consult 2	140	-	-	100
Health Hub - Treatment 1	140	-	-	107
Health Hub - Consult 4	140	-	-	105
Health Hub - Consult 1	140	-	-	109
Health Hub - Weighting Area	-	140	-	99
Health Hub - Consult 9	140	-	-	104
Health Hub - Utility Room	140	-	-	12
Health Hub - Store	140	-	-	13
Health Hub - Consult 11	140	-	-	106
Health Hub - Pharmacy	140	-	-	204
Health Hub - Entrance Foyer	-	140	40	69

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?
Health Hub - Admin Area	NO (-34.4%)	YES
Health Hub - Staff Support Spaces	NO (-64.9%)	YES
Health Hub - Group Room	N/A	N/A
Health Hub - Consult 8	NO (-60.4%)	YES
Health Hub - Interview Room	NO (-17.3%)	YES
Health Hub - Treatment 3	N/A	N/A
Health Hub - Consult 6	NO (-60.2%)	YES
Health Hub - Consult 3	NO (-33.4%)	YES
Health Hub - Consult 5	NO (-31.2%)	YES
Health Hub - Consult 2	NO (-32.7%)	YES
Health Hub - Treatment 1	N/A	N/A
Health Hub - Consult 4	NO (-62.1%)	YES

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Health Hub - Consult 1	NO (-70%)	YES
Health Hub - Consult 9	NO (-59.9%)	YES
Health Hub - Consult 11	NO (-60.9%)	YES
Health Hub - Pharmacy	NO (-88.4%)	YES
Health Hub - Entrance Foyer	N/A	N/A

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]	909.1	909.1
External area [m^2]	1355.5	1355.5
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	5	3
Average conductance [W/K]	289.26	521.28
Average U-value [W/m^2K]	0.21	0.38
Alpha value* [%]	14.65	14.99

* 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
	C1 Hotels
	C2 Residential Institutions: Hospitals and Care Homes
	C2 Residential Institutions: Residential schools
	C2 Residential Institutions: Universities and colleges
	C2A Secure Residential Institutions
	Residential spaces
	D1 Non-residential Institutions: Community/Day Centre
	D1 Non-residential Institutions: Libraries, Museums, and Galleries
	D1 Non-residential Institutions: Education
100	**D1 Non-residential Institutions: Primary Health Care Building**
	D1 Non-residential Institutions: 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/m^2]

	Actual	Notional
Heating	10.8	14.64
Cooling	0	0
Auxiliary	4.15	2.63
Lighting	11.54	21.34
Hot water	0.6	0.79
Equipment*	23.87	23.87
TOTAL**	**27.09**	**39.4**

* 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^2]

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

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	118.79	153.38
Primary energy* [kWh/m^2]	63.18	91.96
Total emissions [kg/m^2]	10.8	15.7

* 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 SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Natural Gas										
	Actual	31.6	87.2	10.8	0	4.1	0.81	0	0.91	0
	Notional	43.2	110.2	14.6	0	2.6	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 Building Control Body is advised to give particular attention to items whose specifications are better than typically expected.

Building fabric

Element	$U_{i\text{-}Typ}$	$U_{i\text{-}Min}$	Surface where the minimum value occurs*
Wall	0.23	0.18	Health Hub - Admin Area_W_7
Floor	0.2	0.12	Health Hub - Admin Area_S_3
Roof	0.15	-	"No heat loss roofs"
Windows, roof windows, and rooflights	1.5	1.2	Health Hub - Admin Area_G_8
Personnel doors	1.5	1.4	Health Hub - Entrance Foyer_D_6
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"

$U_{i\text{-}Typ}$ = Typical individual element U-values [W/(m²K)] $U_{i\text{-}Min}$ = 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

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name

217 High Street Yiewsley - Be Clean

As designed

Date: Thu Feb 27 16:42:00 2020

Administrative information

Building Details

Address: 217 High Street, Yiewsley, West Drayton, UB7

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.a.1

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v6.1.0

BRUKL compliance check version: v5.6.a.1

Owner Details

Name: Taylor Wimpey West London

Telephone number:

Address: 17 Bartley Wood Business Park Barley Way, Hook, RH27 9XA

Certifier details

Name: Matt Fitzpatrick

Telephone number: 01923 274427

Address: 2 Dronken House 43A High Street, Kings Langley, WD4 8FG

Criterion 1: The calculated CO_2 emission rate for the building must not exceed the target

CO_2 emission rate from the notional building, $kgCO_2/m^2.annum$	15
Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	15
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	9.7
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 fixed building services should achieve reasonable overall standards of energy efficiency

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

Building fabric

Element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	Surface where the maximum value occurs*
Wall**	0.35	0.18	0.18	Health Hub - Admin Area_W_7
Floor	0.25	0.12	0.12	Health Hub - Admin Area_S_3
Roof	0.25	-	-	"No heat loss roofs"
Windows***, roof windows, and rooflights	2.2	1.2	1.2	Health Hub - Admin Area_G_8
Personnel doors	2.2	1.4	1.4	Health Hub - Entrance Foyer_D_6
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [$W/(m^2K)$]
$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [$W/(m^2K)$]
$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [$W/(m^2K)$]

* 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

1- Ecodan ASHP

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	3.54	-	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* 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.

1- Project DHW

	Water heating efficiency	**Storage loss factor [kWh/litre per day]**
This building	Hot water provided by HVAC system	-
Standard value	N/A	N/A

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	**Zone**	**Standard**
Health Hub - Admin Area	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Staff Support Spaces	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Group Room	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 8	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Interview Room	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Treatment 3	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 6	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 3	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 5	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 2	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Treatment 1	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 4	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 1	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 9	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Consult 11	-	-	-	0.8	-	-	-	-	-	0.75	0.5

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	Zone	Standard
Health Hub - Pharmacy	-	-	-	0.8	-	-	-	-	-	0.75	0.5
Health Hub - Entrance Foyer	-	-	-	0.8	-	-	-	-	-	0.75	0.5

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
Health Hub - Admin Area	140	-	-	185
Health Hub - Staff Support Spaces	140	-	-	651
Health Hub - Group Room	140	-	-	187
Health Hub - Treatment Weighting Area	-	140	-	263
Health Hub - Consult 8	140	-	-	105
Health Hub - Interview Room	140	-	-	150
Health Hub - Treatment 3	140	-	-	107
Health Hub - Consult 6	140	-	-	104
Health Hub - Consult 3	140	-	-	100
Health Hub - Consult 5	140	-	-	106
Health Hub - Consult 2	140	-	-	100
Health Hub - Treatment 1	140	-	-	107
Health Hub - Consult 4	140	-	-	105
Health Hub - Consult 1	140	-	-	109
Health Hub - Weighting Area	-	140	-	99
Health Hub - Consult 9	140	-	-	104
Health Hub - Utility Room	140	-	-	12
Health Hub - Store	140	-	-	13
Health Hub - Consult 11	140	-	-	106
Health Hub - Pharmacy	140	-	-	204
Health Hub - Entrance Foyer	-	140	40	69

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?
Health Hub - Admin Area	NO (-34.4%)	YES
Health Hub - Staff Support Spaces	NO (-64.9%)	YES
Health Hub - Group Room	N/A	N/A
Health Hub - Consult 8	NO (-60.4%)	YES
Health Hub - Interview Room	NO (-17.3%)	YES
Health Hub - Treatment 3	N/A	N/A
Health Hub - Consult 6	NO (-60.2%)	YES
Health Hub - Consult 3	NO (-33.4%)	YES
Health Hub - Consult 5	NO (-31.2%)	YES
Health Hub - Consult 2	NO (-32.7%)	YES
Health Hub - Treatment 1	N/A	N/A
Health Hub - Consult 4	NO (-62.1%)	YES

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Health Hub - Consult 1	NO (-70%)	YES
Health Hub - Consult 9	NO (-59.9%)	YES
Health Hub - Consult 11	NO (-60.9%)	YES
Health Hub - Pharmacy	NO (-88.4%)	YES
Health Hub - Entrance Foyer	N/A	N/A

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]	909.1	909.1
External area [m^2]	1355.5	1355.5
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	5	3
Average conductance [W/K]	289.26	521.28
Average U-value [W/m^2K]	0.21	0.38
Alpha value* [%]	14.65	14.99

* 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
	C1 Hotels
	C2 Residential Institutions: Hospitals and Care Homes
	C2 Residential Institutions: Residential schools
	C2 Residential Institutions: Universities and colleges
	C2A Secure Residential Institutions
	Residential spaces
	D1 Non-residential Institutions: Community/Day Centre
	D1 Non-residential Institutions: Libraries, Museums, and Galleries
	D1 Non-residential Institutions: Education
100	**D1 Non-residential Institutions: Primary Health Care Building**
	D1 Non-residential Institutions: 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/m^2]

	Actual	Notional
Heating	2.59	4.93
Cooling	0	0
Auxiliary	4.03	2.63
Lighting	11.54	21.34
Hot water	0.6	0.79
Equipment*	23.87	23.87
TOTAL**	**18.75**	**29.69**

* 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^2]

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

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	116.68	153.38
Primary energy* [kWh/m^2]	57.58	88.87
Total emissions [kg/m^2]	9.7	15

* 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 SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Central heating using water: floor heating, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Natural Gas										
	Actual	31	85.7	2.6	0	4	3.33	0	3.54	0
	Notional	43.2	110.2	4.9	0	2.6	2.43	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 Building Control Body is advised to give particular attention to items whose specifications are better than typically expected.

Building fabric

Element	$U_{i\text{-}Typ}$	$U_{i\text{-}Min}$	Surface where the minimum value occurs*
Wall	0.23	0.18	Health Hub - Admin Area_W_7
Floor	0.2	0.12	Health Hub - Admin Area_S_3
Roof	0.15	-	"No heat loss roofs"
Windows, roof windows, and rooflights	1.5	1.2	Health Hub - Admin Area_G_8
Personnel doors	1.5	1.4	Health Hub - Entrance Foyer_D_6
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"

$U_{i\text{-}Typ}$ = Typical individual element U-values [W/(m²K)] $U_{i\text{-}Min}$ = 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