

Project name

Paddington Packet Boat - Lean

As designed

Date: Wed Jun 19 08:28:18 2024

Administrative information

Building Details

Address:

Certifier details

Name: George Farr

Telephone number:

Address: , ,

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Foundation area [m²]: 328.94The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	5.17
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	4.66
Target primary energy rate (TPER), kWh _{PE} /m ² annum	54.3
Building primary energy rate (BPER), kWh _{PE} /m ² annum	49.2
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 _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.18	0.3	00000055_W4_A0
Floors	0.18	0.12	0.12	00000005_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.13	0.45	00000084_C_A0
Windows** and roof windows	1.6	1.2	1.2	00000058_W-1_O0
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* 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.

^ For fire doors, limiting U-value is 1.8 W/m²K

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 ³ /(h.m ²) at 50 Pa	8	4

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	YES
Whole building electric power factor achieved by power factor correction	<0.9

1- LTHW HEAT PUMP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.82	-	-	-	-
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.					

1- SYST0000-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	0.002
Standard value	N/A	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	
	ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
	Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A
BATHROOM		-	-	0.3	-	-	-	-	-	-	-	N/A

[illegible]

General lighting and display lighting	General luminaire	Display light source	
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3
BATHROOM	120	-	-

[illegible]

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
WC		120	-	-
PLANT		120	-	-

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?
BEDROOM	NO (-18%)	NO
BEDROOM	NO (-24.9%)	NO
BEDROOM	NO (-17.1%)	NO
BEDROOM	YES (+0.6%)	NO
BEDROOM	NO (-34%)	NO
BEDROOM	NO (-38.7%)	NO
BEDROOM	NO (-28%)	NO
BEDROOM	NO (-47.6%)	NO
BEDROOM	NO (-12.6%)	NO
BEDROOM	NO (-38.7%)	NO
BEDROOM	NO (-11%)	NO
BEDROOM	NO (-23%)	NO
BEDROOM	NO (-44.4%)	NO
BEDROOM	NO (-41.5%)	NO
BEDROOM	NO (-12.8%)	NO
BEDROOM	NO (-32.2%)	NO
BEDROOM	NO (-30.7%)	NO
RECEPTION	NO (-40.2%)	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 ²]	1662.1	1662.1
External area [m ²]	2292.9	2292.9
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	4	3
Average conductance [W/K]	623.95	975.12
Average U-value [W/m ² K]	0.27	0.43
Alpha value* [%]	17.49	26.81

* 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
 Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools

100 Residential Institutions: Universities and Colleges

Secure Residential Institutions
 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/m²]

	Actual	Notional
Heating	14.89	19.63
Cooling	0	0
Auxiliary	2.6	2.83
Lighting	5.79	6.03
Hot water	8.67	7.58
Equipment*	13.71	13.71
TOTAL **	31.95	36.07

* 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/m²]

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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	245.96	262.73
Primary energy [kWh _{PE} /m ²]	49.2	54.3
Total emissions [kg/m ²]	4.66	5.17

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] Central heating using water: radiators, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	143.2	90	15	0	2.4	2.64	0	2.82	0
	Notional	188.5	62.4	19.8	0	2.1	2.64	0	----	----
[ST] No Heating or Cooling										
	Actual	0	1454.8	0	0	0	0	0	0	0
	Notional	0	1382.1	0	0	0	0	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