STATEMENT OF CONFORMITY

Introduction

This Letter of Conformity with the Sustainable Design and Construction Statement has been produced by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development on behalf of St George West London Limited, in respect of the Petrol Filling Station (PFS) site, also known as Phase 1a, and is part of the wider Camden Goods Yard (CGY) redevelopment, shown in the site plan below.

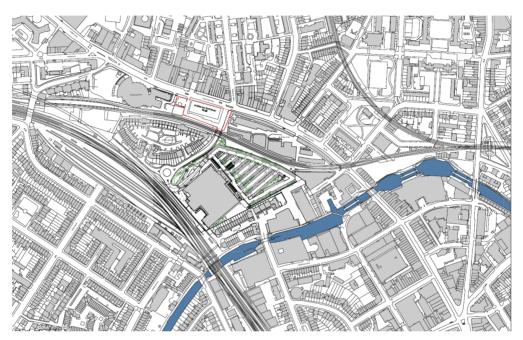


Figure 1: Existing Site Location Plan (Allies and Morrison LLP - October 2024)

Phase 1a comprised the demolition of an existing PFS and construction of a temporary structure for the temporary retail store, to be subsequently replaced by a 6-storey office building (the Juniper Building). This was granted permission by the London Borough of Camden (LBC) on 5th May 2020 (application ref: 2020/0034/P). This allowed the Morrisons to vacate the existing store on the main CGY site without the Juniper Building having to be constructed.

The 5th May 2020 permission also inserted a new planning condition (Condition 70), which ensured the use was discontinued on or before 50 months from the date of occupation.

The current application seeks to extend the permission of the temporary Morrisons store at the site by 25 months, from 50 to 75 months. The principle of the extension has been agreed through discussions with the LBC.



An 'Energy and Sustainability Statement' (January 2020) was produced to satisfy the policy requirements. An 'Energy and Sustainability Report: Planning Condition 72 and S106 Energy Plan Review' (March 2021) was produced to satisfy the planning conditions for the planning permission 2020/3116/P.

Since the submission and approval of the original application, the London Plan has been updated, whilst LBC's Adopted Local Plan remains the same. The Statement seeks to consider the findings of the Energy and Sustainability Report in the updated policy context. The document will assess whether the previous findings are still valid.

This document outlines the following energy and sustainability strategies for the temporary food store:

- > Energy Strategy
- > Construction Waste
- > BREEAM Benchmarking
- > Water Efficiency
- > Circular Economy

1 – Energy Strategy

SBEM assessments were carried out for the temporary store at the shell and core and fit-out stages. The original requirement was to achieve a 28% reduction in CO₂ emissions over the Part L 2013 baseline. The asbuilt assessments demonstrated that the temporary store has performed better than the required target. Table 1 demonstrates the reduction achieved following the GLA energy hierarchy of *Be Lean, Be Clean, and Be Green.*

Table 1: Reduction in regulated CO₂ emissions using SAP 10 carbon factors

	Baseline (kg CO₂/year)	Be Lean (kg CO₂/year)	Be Clean (kg CO₂/year)	Be Green (kg CO₂/year)	Reduction Achieved (%)
Temporary Store - Shell and Core Design Stage	39,400	32,400	32,400	27,600	30.0%
Temporary Store - Shell and Core As Built Stage	39,700	31,300	31,300	26,300	33.8%
Temporary Store – Fit-Out As Built Stage	21,300	15,000	15,000	11,400	46.3%



Since this assessment was undertaken, Part L 2021 has been adopted. However, the temporary store was built in line with Part L 2013, which was the relevant standard at the time. The results of the as-built assessment demonstrate that the CO₂ reduction performed better than the requirement, demonstrating a high level of energy performance and sustainability.

The BRUKLs and the GLA spreadsheet used to concert the results to SAP 10 carbon factors are shown in Appendices A – C.

A Building Management System (BMS) has been provided to monitor heating and cooling and the hours of use of the plant. Sub-meters were installed for the air source heat pumps and the other M&E equipment. The energy usage data is fed back to the BMS which is used to monitor and control the energy usage of the plant.

2 - Construction Waste

The approved Sustainability Plan required 85% of construction waste to be recycled. Waste was monitored and recorded during the construction phase. The waste records confirm that 6.1 tonnes of construction waste was generated per 100sqm of gross internal floor area (GIFA). This performs better than the target submitted in the benchmark report, which was a requirement of 11.1 tonnes per 100sqm GIFA. A total of 91% of waste has been diverted from landfill, which exceeds the BREEAM target.

As the construction of the temporary food store has been completed, the requirement has been achieved.

3 – Benchmark BREEAM Performance

In accordance with the approved Sustainability Plan, the temporary food store was assessed against the BREEAM Shell-only requirements, without certification. This assessment was undertaken in line with BREEAM New Construction 2014 requirements. Since this assessment, BREEAM New Construction Version 6.1 has come into effect. The assessment against the BREEAM New Construction 2014 remains the valid BREEAM regime in light of the fact that the store was completed in 2020.

The BREEAM Assessment achieved a score of 39.18%, which was a 3.02% uplift from the scope of 36.16% in the preliminary Benchmark Report. The following credits were targeted and achieved:

- > **Management 01:** All relevant third-party stakeholders were consulted by the design team on the minimum consultation content, as defined by BREEAM standards.
- > Management 02: The capital cost of the building was provided by the development as £1,231 per sqm, in line with BREEAM requirements.
- Management 03: To ensure the construction site was managed in an environmentally and socially considerate, responsible and accountable manner, the site was registered with the Considerate Constructors Scheme and achieved a score of 37. Water and energy consumption was also monitored



and recorded, which indicated 90 cubic metres of water was used on site during the construction period. Transport movements and impacts were monitored and recorded.

- Health and Wellbeing 01: All external lighting within the construction was specified in accordance with BS5489-1:2013 and BS EN 12464-2:214. The external lighting installed provides illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night.
- Energy 01: Using the modelled outputs from the SBEM software, an energy performance ratio (EPR) of 0.54 was achieved, which enabled 7 credits to be awarded.
- Energy 03: All external lighting located in the construction zone had an average initial luminous efficacy no less than 70 luminaire lumens per circuit watt. The fittings featured automatic control mechanisms to prevent operation during daylight hours along with presence detection capabilities in terms of intermittent pedestrian traffic.
- Energy 04: A feasibility study considered local low or zero carbon technologies was undertaken by Hodkinson Consultancy and recommendation were implemented within the scheme. This included the use of heat pumps, resulting in a CO₂ saving of 5.4%, which is above the minimum requirement of 5%.
- > **Transport 01:** The site has a high Public Transport Accessibility Level (PTAL) of 6a and an Accessibility Index of 29.82, indicating proximity to good public transport networks.
- > **Transport 02:** The building is located with 500m of accessible local amenities appropriate to the building type and its users.
- > **Transport 03:** BREEAM compliant cycle storage spaces have been provided, including cycle storage lockers and Sheffield stands. A total of 50 cycle parking spaces have been provided.
- > **Transport 05:** A Travel Plan was developed and tailored to the specific needs of the building users.
- > **Water 02:** A pulsed water meter was installed in the store to encourage water consumption management and monitoring in order to reduce the impacts of inefficiencies and leakage.
- Materials 01: Construction materials were selected to ensure a low environmental impact over the full life cycle of the building were possible. The Green Guide rating was used to determine the impact (where a rating of A+ represents a low impact where E represents a high impact):
 - > External walls: A
 - > Roof: A+
 - > Windows: D
- > **Materials 03:** A sustainable procurement plan was developed and implemented to ensure materials were responsibly sourced. A total of 80% of materials were sourced from suppliers who were certified to



BES 6001 and ISO 14001. All timber was sourced in accordance with the UK Governments Timber Procurement Policy.

- > **Materials 04:** Insulation with a low embodied environmental impact was specified. The insulation index calculation floor the specified insulation was 3, which is greater than the minimum of 2.5.
- Waste 01: Waste records confirm that 6.1 tonnes of construction waste was generated per 100 sqm. This exceeds the target submitted in the benchmark report, which was a requirement of 11.1 tonnes per 100sqm GIFA. A total of 91% of waste has been diverted from landfill, which exceeds the BREEAM target.
- > Land Use and Ecology 01: Drawings were provided which confirmed at least 75% of the development's footprint is on an area of land which was previously occupied.
- Pollution 03: The Flood Risk Assessment confirmed that the development is in a location that is at a low risk of flooding from sources including rivers, tidal, surface water, groundwater, sewers, reservoirs, and artificial sources.
- > Pollution 04: The external light strategy was designed in compliance with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011. All external lighting (except for safety and security light) can be automatically switched off between 23:00 and 07:00. This is in line with BREEAM requirements.
- Pollution 05: A Noise Impact Assessment compliant with BS 4142:2014 was carried out by Ardent in order to measure existing background noise levels and noise rating level from the assessed building. The noise level assessment is at least 5dB lower than the background noise, which is compliance with BREEAM requirements.

4 - Water Efficiency

Water efficiency was required to be assessed under BREEAM Fit-out and Refurbishment Wat 01 requirements. Wat 01 does not apply to BREEAM Shell-only assessments, which was the assessment undertaken and discussed in the previous section.

Flow rates were specified to achieve the required credits, which includes the following:

- > WCs: 6 litres effective flush volume
- > Urinals: Not specified
- > Basin taps: 8 litres/min
- > Kitchen taps: 8 litres/min
- > Showers: 11 litres/min



> Domestic dishwasher (staff room): 15 litres/min

The above specification allowed 1 credit to be achieved under the BREEAM scheme, demonstrating as 12.5% improvement in water consumption over the baseline.

Circular Economy

The London Plan Circular Economy Guidance (March 2022) came into effect after the completion of the temporary store. As such, the temporary store was built in accordance with the relevant standards at the time.

The principles of a Circular Economy have been considered within the design. At the end of the life of the temporary store, the slab will be crushed and used as pile mat for Phase 3 of the development. The main structure (i.e. cladding, steel) will be reused in a nearby development. A Reuse and Restoration Strategy will be submitted for approval prior to vacation of the store, as secured by with Condition 71. This will further detail how the building, materials and plant will be disassembled and reused.

Conclusion

This Statement of Conformity has considered the findings of the approved 'Energy and Sustainability Statement' (January 2020) and 'Energy and Sustainability Report: Planning Condition 72 and S106 Energy Plan Review' (March 2021) to support a full planning application for the extension of the temporary food store duration from 50 to 75 months.

This statement demonstrates the sustainability performance benefits the temporary food store has implemented. At the time of the works, the temporary store complied with the relevant planning regulations in effect. As the temporary store is operational, the updated regulations would not apply. Therefore, the building remains compliant as there has been no change to building design. The standards the building was assessed against remain valid and therefore this application fully satisfies policy requirements.





APPENDIX A: DESIGN STAGE BRUKLS AND GLA CARBON EMISSION REPORTING SPREADSHEET – SHELL AND CORE SBEM ASSESSMENT

BRUKL – Be Lean

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name

Temporary Store Be Lean

Date: Wed Jun 03 15:37:09 2020

Administrative information

Building Details

Address: Temporary Store, London, NW1

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: Telephone number:

Address: , ,

Certifier details

Name: Nimco Ali Telephone number: 02036031613

Address: Trinity Court Batchworth Island Church Street Rickmansworth, London, WD3 1RT

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

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	60.8
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	60.8
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	47.8
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	Ua-Limit	Ua-Calc	Ui-Calc	Surface where the maximum value occurs*
Wall**	0.35	0.2	0.2	BOH - Kitchen_W_8
Floor	0.25	0.2	0.2	BOH - Kitchen_S_3
Roof	0.25	0.18	0.2	BOH - Kitchen_R_4
Windows***, roof windows, and rooflights	2.2	1.5	1.5	General Retail - Entrance_draftlobby_G_6
Personnel doors	2.2	1.5	1.5	BOH - Store_various 1_D_8
Vehicle access & similar large doors	1.5	2.2	2.2	BOH - Store_various 1_D_9
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
Ua-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
m³/(h.m²) at 50 Pa	10	10

Shell and Core

As designed

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- Indirectly Heated by heat pump

	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					

* 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.

2- Indirectly heated by VRF

This system 0.91 - - - - Standard value 0.91* N/A N/A N/A N/A		Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency
Standard value 0.91* N/A N/A N/A N/A	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	n 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.

3- Sales floor

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	4.2	-	-	-
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.

4- Training Room

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	4.57	-	-	-
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.					

5- General Office

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	4.57	-	-	-
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.					

6- Canteen / Staff Room

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	3.81	-	-	-
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 0.93					
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					
А	Local supply or extract ventilation units serving a single area					
В	Zonal supply system where the fan is remote from the zone					
С	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					
Е	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					
н	Fan coil units					
	Zenales (marks) stars, have the fact 's marks for a the same 'd server' film.					

I Zonal extract system where the fan is remote from the zone with grease filter

Zone name ID of system type		SFP [W/(I/s)]						HR efficiency			
		В	С	D	Е	F	G	н	I	пке	mciency
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
BOH - Kitchen	-	-	-	-	-	-	-	-	1	-	N/A
BOH - Circulation_private	-	-	-	1.5	-	-	-	-	-	0.74	0.65
BOH - Toilets	-	-	-	1.5	-	-	-	-	-	0.74	0.65
General Retail - General_retail	-	1	0.5	-	-	-	-	-	-	-	N/A
BOH - TrainingOffice	-	-	-	1.5	-	-	-	-	-	0.74	0.65
BOH - SecureOffice	-	-	-	1.5	-	-	-	-	-	0.74	0.65
BOH - Canteen	-	-	-	1.5	-	-	-	-	-	0.74	0.65

Shell and core configuration

Zone	Assumed shell?
BOH - Kitchen	NO
BOH - Store_various 1	NO
BOH - Circulation_private	NO
BOH - Toilets	NO
BOH - Plant	NO
General Retail - Entrance_draftlobby	NO
General Retail - ATM Room	NO
General Retail - General_retail	NO
BOH - TrainingOffice	NO
BOH - SecureOffice	NO
BOH - Canteen	NO

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
BOH - Kitchen	-	100	-	430
BOH - Store_various 1	100	-	-	198

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
BOH - Circulation_private	-	100	-	67
BOH - Toilets	-	100	-	97
BOH - Plant	100	-	-	55
General Retail - Entrance_draftlobby	-	100	-	70
General Retail - ATM Room	100	-	-	110
General Retail - General_retail	-	115	60	6714
BOH - TrainingOffice	100	-	-	135
BOH - SecureOffice	100	-	-	125
BOH - Canteen	-	100	60	67

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?
General Retail - ATM Room	N/A	N/A
General Retail - General_retail	NO (-88%)	NO
BOH - TrainingOffice	N/A	N/A
BOH - SecureOffice	N/A	N/A
BOH - Canteen	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	% Ar
Area [m ²]	1327.8	1327.8	100
External area [m ²]	3445.8	3445.8	
Weather	LON	LON	
Infiltration [m ³ /hm ² @ 50Pa]	10	3	
Average conductance [W/K]	794.33	1103.36	
Average U-value [W/m ² K]	0.23	0.32	
Alpha value* [%]	12.27	12.39	

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	22.43	17.77
Cooling	28.01	41.92
Auxiliary	29.28	30.65
Lighting	24.14	38.58
Hot water	3.21	3.4
Equipment*	154.67	154.67
TOTAL**	107.07	132.33

* 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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	547.58	619.3
Primary energy* [kWh/m ²]	281.27	358.55
Total emissions [kg/m ²]	47.8	60.8

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

Building Use

% Area Building Type

Others: Car Parks 24 hrs

Others: Stand alone utility block

H	VAC Sys	tems Per	formanc	9						
Sys	stem 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 he	eating using	g water: rad	iators, [HS]	LTHW boil	er, [HFT] N	atural Gas,	[CFT] Natu	ral Gas	
	Actual	125.5	48.9	42.9	0	17.8	0.81	0	0.91	0
	Notional	129.6	71.1	44	0	10.4	0.82	0		
[ST] Central he	eating using	g water: rad	iators, [HS]	LTHW boil	er, [HFT] N	atural Gas,	[CFT] Natu	ral Gas	
	Actual	277.8	323.4	95	0	2.6	0.81	0	0.91	0
	Notional	282.8	132.5	95.9	0	1.2	0.82	0		
[ST] Split or m	ulti-split sy	stem, [HS] I	LTHW boile	er, [HFT] Na	tural Gas, [CFT] Electr	icity		
	Actual	29.5	686.3	9.7	42	36.1	0.85	4.54	0.91	6.4
	Notional	4.5	803.8	1.5	62	41.5	0.82	3.6		
[ST] Split or m	ulti-split sy	stem, [HS]	LTHW boile	r, [HFT] Na	tural Gas, [CFT] Electr	icity		
	Actual	204.9	52.9	67.1	3.4	6.3	0.85	4.38	0.91	6.17
	Notional	323.9	334.4	109.8	25.8	3.8	0.82	3.6		
[ST] Split or m	ulti-split sy	stem, [HS]	LTHW boile	r, [HFT] Na	tural Gas, [CFT] Electr	icity		
	Actual	123.2	84	40.4	3.8	6.3	0.85	6.14	0.91	8.65
	Notional	171.4	326.9	58.1	25.2	3.8	0.82	3.6		
[ST] Split or m	ulti-split sy	stem, [HS]	LTHW boile	r, [HFT] Na	tural Gas, [CFT] Electr	icity		
	Actual	120.3	66.1	39.4	4.1	10.9	0.85	4.53	0.91	6.38
	Notional	99.8	301.3	33.8	23.2	5	0.82	3.6		

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 і-Тур	Ui-Min	Surface where the minimum value occurs*
Wall	0.23	0.2	BOH - Kitchen_W_8
Floor	0.2	0.2	BOH - Kitchen_S_3
Roof	0.15	0.18	BOH - Store_various 1_R_15
Windows, roof windows, and rooflights	1.5	1.5	General Retail - Entrance_draftlobby_G_6
Personnel doors	1.5	1.5	BOH - Store_various 1_D_8
Vehicle access & similar large doors	1.5	2.2	BOH - Store_various 1_D_9
High usage entrance doors	1.5	-	"No external high usage entrance doors"
U _{i-Typ} = Typical individual element U-values [W/(m ² K)]		U _{i-Min} = Minimum individual element U-values [W/(m ² K)]
* There might be more than one surface where the n	ninimum U	-value oc	curs.

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	10

GLA Carbon Emission Reporting Spreadsheet – Baseline

			Total area	VALIDAT	ION CHECK		REGULATED ENERGY	CONSUMPTION BY	r END USE (kWh/m²	p.a.) TER - SOURCI	E: BRUKL OUTPUT		REGULATED ENER	GY CONSUMPTION	BY FUEL TYPE (kWh	/m² p.a.) TER - SOU	RCE: BRUKL.INP or *SI	IM.CSV FILE	REGULATED	ENERGY CONSUM	PTION BY FUEL TYP	E (kWh/m² p.a.) - Ti	ER BRUKL	REGULATED C	D2 EMISSIONS
Building Use	Area per unit (m²)	Number of units	represented by model (m²)	Calculated TER 2012 (kgCO2 / m2)	BRUKL TER 2012 (kgCO2 / m2)	Space Heating	Fuel type Space Heating	Domestic Hot Water	Fuel type Domestic Hot Water	Lighting	Auxiliary	Cooling	Natural Gas	Grid Electricity			er	012 CO2 missions (CO2 p.a.)		Grid Electricity 0.233 kgCO2/kWh				SAP10 CO2 emissions (kgCO2 p.a.)	BRUKL TER SAP10 (kgCO2 / m2
tail	1327.8	1	1328	60.8	60.8	17.77	Natural Gas	3.4	Natural Gas	38.56	30.65	41.92	21	108				80,753	21	108				39,431	29.7
m	1,328	1	1,328	60.8		23,595	23,595	0	0	0	0	0	21	108	N/A	N/A	N/A 2	80,753	21	108	N/A	N/A	N/A	39,431	29.7

GLA Carbon Emission Reporting Spreadsheet – *Be Lean*

NON-DOI	MESTIC I	ENERGY	CONSUN	IPTION AND	CO2 ANALYS	5IS															_			NO	N-DOMESTIC	ENERGY DEM#	ND	
				Total area	VALIDAT	ION CHECK	REG	ULATED ENERGY COM	SUMPTION BY END	USE (kWh/m³ p.a.)) 'BE LEAN' BER - SO	OURCE: BRUKL OU	ITPUT	ILATED ENERG	Y CONSUMPTION BY	FUEL TYPE (kWh/m ³ p.a.) 'BE LEAN' BER - SOURCE: BR	UKLINP or *SIM.CS	~		REGULATED CO2 EMISSIONS PER UNIT				RE	GULATED ENERGY D	EMAND PER UNIT P	ER ANNUM (kWh	p.a.)
Building U	se Area	a per unit (m²)	Number of units	represented by model (m²)	Calculated BER 2012 (kgCO2 / m2)	BRUKL BER 2012 (kgCO2 / m2)	Space Heating (kWh/m ³ p.a.)	Fuel type Space Heating	Domestic Hot Water (kWh/m³ p.a.)	Fuel type Domestic Hot Water	Lighting (kWh/m³ p.a.)	Auxiliary (kWh/m² p.a.)	Cooling (kWh/m² p.a.)		s Grid Electricity		2012 CO2 emissions (kgCO2 p.a.)		Grid Electricity		SAP10 CO2 emissions (kgCO2 p.a.)	BRUKL BER SAP10 (kgCO2 / m2)		Space Heating (kWh p.a.)	Domestic Hot Water (kWh p.a.)	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)	Cooling (kWh p.a.)
Retail		327.8	1	1327.8	47.8	47.8	22.43	Natural Gas	3.22	Natural Gas	24.14	29.28	28.01	26	51		63.469	26	51		32,342	24.4	Ma					

BRUKL – Be Green

BRUKL Output Document

Compliance with England Building Regulations Part L 2013

Project name

Temporary Store Be Green

Date: Wed Jun 03 15:42:35 2020

Administrative information

Building Details

Address: Temporary Store, London, NW1,

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

Certifier details

Name: Nimco Ali Telephone number: 02036031613

Address: Trinity Court Batchworth Island Church Street Rickmansworth, , WD3 1RT

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

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	60
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	60
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	45.5
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 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	Ua-Limit	Ua-Calc	Ui-Calc	Surface where the maximum value occurs*
Wall**	0.35	0.2	0.2	BOH - Kitchen_W_8
Floor	0.25	0.2	0.2	BOH - Kitchen_S_3
Roof	0.25	0.18	0.2	BOH - Kitchen_R_4
Windows***, roof windows, and rooflights	2.2	1.5	1.5	General Retail - Entrance_draftlobby_G_6
Personnel doors	2.2	1.5	1.5	BOH - Store_various 1_D_8
Vehicle access & similar large doors	1.5	2.2	2.2	BOH - Store_various 1_D_9
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
Ua-Limit = Limiting area-weighted average U-values [W	V/(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
m³/(h.m²) at 50 Pa	10	10

Shell and Core

As designed

Owner Details Name:

Telephone number: Address: , ,

😻 HM Government

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- Indirectly Heated by heat pump

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency							
This system	4.1	-	-	-	-							
Standard value	2.5*	N/A	N/A	N/A	N/A							
Automatic moni	toring & targeting w	ith alarms for out-of	-range values for thi	s HVAC syster	n NO							
* Standard shown is f	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											

* 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- Indirectly heated by VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency							
This system	4.3	-	-	-	-							
Standard value	2.5*	N/A	N/A	N/A	N/A							
Automatic moni	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.

3- Sales floor

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency
This system	4.3	4.2	-	-	-
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 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.

4- Training Room

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency	
This system	4.24	4.57	-	-	-	
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 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.						

5- General Office

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency	
This system	5.1	4.57	-	-	-	
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 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.

6- Canteen / Staff Room

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency	
This system	4.1	3.81	-	-	-	
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 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.						

1- Project DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]			
This building	0.93	0			
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
А	Local supply or extract ventilation units serving a single area
В	Zonal supply system where the fan is remote from the zone
С	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
Е	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
н	Fan coil units
	Zenales (marks) stars, have the fact 's marks for a the same 'd server' film.

I Zonal extract system where the fan is remote from the zone with grease filter

Zone name ID of system type		SFP [W/(I/s)]							HR efficiency		
		В	С	D	Е	F	G	н	I	пке	mciency
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
BOH - Kitchen	-	-	-	-	-	-	-	-	1	-	N/A
BOH - Circulation_private	-	-	-	1.5	-	-	-	-	-	0.74	0.65
BOH - Toilets	-	-	-	1.5	-	-	-	-	-	0.74	0.65
General Retail - General_retail	-	1	0.5	-	-	-	-	-	-	-	N/A
BOH - TrainingOffice	-	-	-	1.5	-	-	-	-	-	0.74	0.65
BOH - SecureOffice	-	-	-	1.5	-	-	-	-	-	0.74	0.65
BOH - Canteen	-	-	-	1.5	-	-	-	-	-	0.74	0.65

Shell and core configuration

Zone	Assumed shell?
BOH - Kitchen	NO
BOH - Store_various 1	NO
BOH - Circulation_private	NO
BOH - Toilets	NO
BOH - Plant	NO
General Retail - Entrance_draftlobby	NO
General Retail - ATM Room	NO
General Retail - General_retail	NO
BOH - TrainingOffice	NO
BOH - SecureOffice	NO
BOH - Canteen	NO

General lighting and display lighting	Lumino	ous effic		
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
BOH - Kitchen	-	100	-	430
BOH - Store_various 1	100	-	-	198

General lighting and display lighting	Lumino	ous effic		
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
BOH - Circulation_private	-	100	-	67
BOH - Toilets	-	100	-	97
BOH - Plant	100	-	-	55
General Retail - Entrance_draftlobby	-	100	-	70
General Retail - ATM Room	100	-	-	110
General Retail - General_retail	-	115	60	6714
BOH - TrainingOffice	100	-	-	135
BOH - SecureOffice	100	-	-	125
BOH - Canteen	-	100	60	67

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?
General Retail - ATM Room	N/A	N/A
General Retail - General_retail	NO (-88%)	NO
BOH - TrainingOffice	N/A	N/A
BOH - SecureOffice	N/A	N/A
BOH - Canteen	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	% Ar
Area [m ²]	1327.8	1327.8	100
External area [m ²]	3445.8	3445.8	
Weather	LON	LON	
Infiltration [m ³ /hm ² @ 50Pa]	10	3	
Average conductance [W/K]	794.33	1103.36	
Average U-value [W/m ² K]	0.23	0.32	
Alpha value* [%]	12.27	12.39	

* 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
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/m²]

	Actual	Notional
Heating	4.87	5.99
Cooling	28.01	41.92
Auxiliary	29.28	30.65
Lighting	24.14	38.58
Hot water	3.21	3.4
Equipment*	154.67	154.67
TOTAL**	89.51	120.55

* 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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	547.59	619.3
Primary energy* [kWh/m ²]	268.86	354.8
Total emissions [kg/m ²]	45.5	60

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

F	IVAC Sys	stems Per	formanc	9						
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] I					Heat pump	o (electric):	air source,	[HFT] Elect	tricity, [CFT] Natural G
	Actual	125.5	48.9	9.5	0	17.8	3.66	0	4.1	0
	Notional	129.6	71.1	14.8	0	10.4	2.43	0		
[ST] Central he	eating using	g water: rad	iators, [HS]	Heat pump	o (electric):	air source,	[HFT] Elect	tricity, [CFT] Natural G
	Actual	277.6	323.7	20.1	0	2.6	3.84	0	4.3	0
	Notional	282.8	132.5	32.3	0	1.2	2.43	0		
[ST] Split or m	ulti-split sy	stem, [HS]	Heat pump	(electric): a	ir source, [HFT] Electr	icity, [CFT]	Electricity	
	Actual	29.5	686.3	2	42	36.1	4.01	4.54	4.3	6.4
	Notional	4.5	803.8	0.5	62	41.5	2.43	3.6		
[ST] Split or m	ulti-split sy	stem, [HS]	Heat pump	(electric): a	ir source, [HFT] Electr	icity, [CFT]	Electricity	
	Actual	204.9	52.9	14.4	3.4	6.3	3.95	4.38	4.24	6.17
	Notional	323.9	334.4	37	25.8	3.8	2.43	3.6		
[ST] Split or m	ulti-split sy	stem, [HS]	Heat pump	(electric): a	ir source, [HFT] Electr	icity, [CFT]	Electricity	
	Actual	123.2	84	7.2	3.8	6.3	4.75	6.14	5.1	8.65
	Notional	171.4	326.9	19.6	25.2	3.8	2.43	3.6		
[ST] Split or m	ulti-split sy	stem, [HS]	Heat pump	(electric): a	ir source, [HFT] Electr	icity, [CFT]	Electricity	
	Actual	120.3	66.1	8.7	4.1	10.9	3.82	4.53	4.1	6.38
	Notional	99.8	301.3	11.4	23.2	5	2.43	3.6		

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 і-Тур	Ui-Min	Surface where the minimum value occurs*
Wall	0.23	0.2	BOH - Kitchen_W_8
Floor	0.2	0.2	BOH - Kitchen_S_3
Roof	0.15	0.18	BOH - Store_various 1_R_15
Windows, roof windows, and rooflights	1.5	1.5	General Retail - Entrance_draftlobby_G_6
Personnel doors	1.5	1.5	BOH - Store_various 1_D_8
Vehicle access & similar large doors	1.5	2.2	BOH - Store_various 1_D_9
High usage entrance doors	1.5	-	"No external high usage entrance doors"
U _{i-Typ} = Typical individual element U-values [W/(m ² K)]		U _{i-Min} = Minimum individual element U-values [W/(m ² K)]
* There might be more than one surface where the n	ninimum U	-value oc	curs.

Air Permeability	Typical value	This building					
m³/(h.m²) at 50 Pa	5	10					

GLA Carbon Emission Reporting Spreadsheet – *Be Green*

NON-I	DOMEST	OMESTIC LINERGY CONSUMPTION AND CO. NAULYSS																																					
					VALIDAT	TION CHECK					REG	GULATED ENERGY CO	INSUMPTION BY END	0 USE (kWh/m² p.a.) 1	IE GREEN' BER - SOURC	E: BRUKL OUTPUT							REGULATED EN	ERGY CONSUMPTI	ON BY FUEL TYPE (KW	Wh/m ² p.a.) '8E G	REEN' BER - SOURCE	E: BRUKLINP or *SIN	A.CSV FILE					REG	ULATED CO2 EMIS	SIONS PER UNIT			
U	Use A	rea per unit (m²)	Number of units	Total area represented by model (m ²)	Calculated BER 2012 (kgCO2 / m2)	BRUKL BER 2012 (kgCO2 / m2)	Space Heating	Fuel type Space Heating	Domestic Hot Wate	r Fuel type Domestic Hot Water							Electricity generated by OIP (-)	Electricity generated by renewable technology (-)	Lighting	Autilary	Cooling		Grid Electricity	Bespoke DH Factor	CHP (-)	Electricity generated by renewable technology (-) if applicable	Factor 1	Factor 2	Factor 3	2012 CO2 emissions (kgCO2 p.m.)	Natural Gas 0		Factor gene	cated by ge CHP n (-) to policable if	nerated by enewable echnology (-) applicable	Factor 1	ter Carbon Enter Carb Factor 2 Factor 1	emissions	
Retall		1327.8	1	1327.8	45.5	45.5	4.87	Grid Electricity	1.21	Natural Gas							if applicable	if applicable	24.14	29.28	28.01	0.216 keC02/kWh (0.519 keCO2/kWh 0	1000 keC02/kWh 0.	519 kpC02/kWh 0.51	0 0	000 keC02/kWh 0	0.000 keC02/kWh 0.	000 keCO2/kWA	60.392	v0.210 keC02/kWh 0	1233 krC02/kWh 0.0	00 krC02/kWh 0.2331	keCO2/kWh 0.2	33 krCO2/kWh 0.00	00 keC02/kWh 0.000	0 keCO2/kWh 0.000 keCO2	Wh 27,594	20.8
											ð	ð	¥	ş	\$4	an a																							
Sum		1,328	1	1,328	45.5		6,466	N/A	4,262	N/A							۰	0	32,053	38,878	37,192	3	86	0	0	0	0	0	•	60,392	3	86	0	0	•	0	0 0	27,594	20.8

	Table 1: Regulated CO ₂ Emissions using SAP 10 Carbon Factors from GLA Carbon Emission Reporting Spreadsheet										
	TFA (m²)	BER (kg/CO ₂ /m ²)	BER*TFA (kg/CO ₂)	TER (kg/CO ₂ /m ²)	TER*TFA (kg/CO ₂)	CO ₂ Reduction (%)					
Baseline		N/A	N/A			0					
Be Lean	1327.8	24.4	32398	29.7	39436	18%					
Be Green		20.8	27618			15%					
Overall CO ₂ Red	verall CO ₂ Reduction 30.0%										

	Table 2: Regulated CO ₂ Emissions in tonnes										
	TCO ₂	TCO ₂ Reduction	CO ₂ Reduction (%)								
Baseline	39.4	N/A	N/A								
Be Lean	32.4	7.0	17.8%								
Be Green	27.6	4.8	14.8%								
Total		11.8	30.0%								



BRUKL – Be Lean

BRUKL Output Document

Compliance with England Building Regulations Part L 2013

Project name

Petrol Filling Station

Date: Fri Nov 27 12:20:43 2020

Administrative information

Building Details

Address: Petrol Filling Station, Camden Goods Yard, Chalk Farm Road, London, NW1 8EH

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.b.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v6.1.7 BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Nimco Ali

Telephone number: 02036031613

Address: Trinity Court Batchworth Island Church Street, Rickmansworth, WD3 1RT

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

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	60.2
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	60.2
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	46.2
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	Ua-Limit	Ua-Calc	Ui-Calc	Surface where the maximum value occurs*
Wall**	0.35	0.18	0.23	"General Retail - ATM Room_W_4"
Floor	0.25	0.14	0.14	"General Retail - Entrance Lobby_S_3"
Roof	0.25	0.2	0.2	"General Retail - Entrance Lobby_R_12"
Windows***, roof windows, and rooflights	2.2	1.5	1.5	"General Retail - Entrance Lobby_G_8"
Personnel doors	2.2	1.5	1.5	"BOH - BOH_D_4"
Vehicle access & similar large doors	1.5	1.4	1.4	"BOH - BOH_D_5"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
Ua-Limit = Limiting area-weighted average U-values [W	//(m²K)]			

 $U_{a-Calc} = Calculated area-weighted average U-values [W/(m^2K)]$

 $U_{i\text{-Calc}}$ = 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
m³/(h.m²) at 50 Pa	10	4.46

)13

HM Government

As built

Shell and Core

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- Indirectly Heated

	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.							

2- Sales floor

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency	
This system	0.91	4.2	-	-	-	
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	0.91	0.001					
Standard value	0.9*	N/A					
* Standard shown is for ga	* 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

טו	System type in Non-domestic Building Services Compliance Guide
А	Local supply or extract ventilation units serving a single area
В	Zonal supply system where the fan is remote from the zone
С	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
Н	Fan coil units
Ι	Zonal extract system where the fan is remote from the zone with grease filter

Zone name		SFP [W/(I/s)]				UD officionay					
ID of system type	Α	В	С	D	Е	F	G	Н	I	HR efficiency	
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
General Retail - Store	-	1	0.5	-	-	-	-	-	-	-	N/A

Shell and core configuration

Zone	Excluded from calculation?
General Retail - Entrance Lobby	NO
BOH - BOH	NO
General Retail - Store	NO
General Retail - ATM Room	NO

General lighting and display lighting	Lumino	ous effic		
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
General Retail - Entrance Lobby	-	100	-	69
BOH - BOH	100	-	-	304
General Retail - Store	-	115	60	6717
General Retail - ATM Room	100	-	-	110

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?
General Retail - Store	NO (-89.4%)	NO
General Retail - ATM Room	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	% Are
Area [m ²]	1327.8	1327.8	100
External area [m ²]	3388.9	3388.9	
Weather	LON	LON	
Infiltration [m ³ /hm ² @ 50Pa]	4	3	
Average conductance [W/K]	708.42	985.3	
Average U-value [W/m ² K]	0.21	0.29	
Alpha value* [%]	12	10.39	

* 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
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/m²]

	Actual	Notional
Heating	23.84	23.76
Cooling	30.16	41.75
Auxiliary	24.91	28.03
Lighting	23.52	38.52
Hot water	1.31	1.33
Equipment*	144.83	144.83
TOTAL**	103.74	133.38

* 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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	575.68	619.86
Primary energy* [kWh/m ²]	271.96	354.76
Total emissions [kg/m ²]	46.2	60.2

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

H	HVAC Systems Performance									
Sys	stem Type	Heat dem MJ/m2	Cool dem MJ/m2		Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST	[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Natural Gas									
	Actual	174.3	36.1	59.6	0	2.6	0.81	0	0.91	0
	Notional	203.5	26.2	69	0	1.2	0.82	0		
[ST	[ST] Split or multi-split system, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
	Actual	17.9	741.5	5.9	45.3	36.1	0.85	4.54	0.91	6.4
	Notional	3	813	1	62.7	41.5	0.82	3.6		

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 і-Тур	Ui-Min	Surface where the minimum value occurs*
Wall	0.23	0.18	"General Retail - Entrance Lobby_W_7"
Floor	0.2	0.14	"General Retail - Entrance Lobby_S_3"
Roof	0.15	0.2	"General Retail - Entrance Lobby_R_12"
Windows, roof windows, and rooflights	1.5	1.5	"General Retail - Entrance Lobby_G_8"
Personnel doors	1.5	1.5	"BOH - BOH_D_4"
Vehicle access & similar large doors	1.5	1.4	"BOH - BOH_D_5"
High usage entrance doors	1.5	-	"No external high usage entrance doors"
U _{i-Typ} = Typical individual element U-values [W/(m ² K)]		U _{i-Min} = Minimum individual element U-values [W/(m ² K)]
* There might be more than one surface where the r	ninimum L	J-value oc	curs.

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	4.46

GLA Carbon Emission Reporting Spreadsheet – Baseline

DOMESTIC E				cens including in	ionnation on the i	modelled units, the a	irea per unit, the m	uniber of units, the ba	seline energy consu	mption figures, the	TER and the TFEE.					SAP 2012 CO2	PERFORMANCE					S	AP10 CO2 PERFOR	MANCE			
	ENERG	GY CONS	UMPTIO	N AND CO2	ANALYSIS																						DEMAND
					VALIDAT	TION CHECK		REGULATE	D ENERGY CONSUM	PTION PER UNIT (k	Wh p.a.) - TER WOF	RKSHEET			REGUL	ATED CO2 EMISSIC	ONS PER UNIT (kgC	:O2 p.a.)				REGUL	ATED CO2 EMISSIC	ONS PER UNIT			Fabric Energy Efficiency (FEE)
Unit identifier (e.g. plot number dwelling type etc.)	er, floc	del total or area (m²)	Number of units	Total area represented by model (m²)	Calculated TER 2012 (kgCO2 / m2)	TER Worksheet TER 2012 (kgCO2 / m2)	Space Heating	Fuel type Space Heating	Domestic Hot Water	Fuel type Domestic Hot Water	Lighting	Auxiliary	Cooling	Space Heating	Domestic Hot Water	Lighting	Auxiliary	Cooling	2012 CO2 emissions (kgCO2 p.a.)	Space Heating	Domestic Hot Water	Lighting	Auxiliary	Cooling	SAP10 CO2 emissions (kgCO2 p.a.)	Calculated TER SAP10 (kgCO2 / m2)	Target Fabric Energy Efficiency (TFEE) (kWh/m ²)
		TER rksheet				TER Worksheet (Row 273)	TER Worksheet (Row 211)		TER Worksheet (Row 219)		TER Worksheet (Row 232)	TER Worksheet (Row 231)	N / A														
	(R	Row 4)																									
Sum		0	0	0	#DIV/0!	-	0	N/A	0	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	о	#DIV/0!	#DIV/0!
NON-DOME	ESTIC E	ENERGY	CONSUN	1PTION AND	CO2 ANALYS		11													П							
Building Use		per unit (m²)	Number of units	Total area represented by model	VALIDAT Calculated TER 2012	TION CHECK BRUKL TER 2012	Space Heating	REGULATED ENERG Fuel type Space Heating	Y CONSUMPTION B Domestic Hot Water	Fuel type Domestic Hot	² p.a.) TER - SOURCE Lighting	BRUKL OUTPUT	Cooling	REGULATED ENERG		I BY FUEL TYPE (kv	Wh/m² p.a.) TER - S	SOURCE: BRUKL.IN	2012 CO2 emissions		O ENERGY CONSUN Grid Electricity	MPTION BY FUEL T	YPE (kWh/m² p.a.)	- TER BRUKL	REGULATED C SAP10 CO2 emissions	CO2 EMISSIONS BRUKL TER SAP10	
Retail	13	327.8	1	(m²) 1328	(kgCO2 / m2) 60.2	(kgCO2 / m2) 60.2	23.76	Natural Gas	1.33	Water Natural Gas	38.52	28.03	41.75	######################################	//////////////////////////////////////				(kgCO2 p.a.) 79,963	######################################	######################################				(kgCO2 p.a.) 39,664	(kgCO2 / m2) 29.9	_
																										L	-1

Su	n	1,328		1	1,3	328	60.2	-	31,549	31,549	0	0	0	0	0	25	106	N/A	N/A	N/A	79,963	25	106	N/A	N/A	N/A	39,664	29.9
S	TE-WIDE EI	NERGY CO	ONSU	ΙΜΡΤΙΟ	ON AND	CO2 A	NALYSIS																					
							Calculated		_		REGULATEI	D ENERGY CONSU	MPTION								REGULATED CO2 EMISSIONS						REGULATED CO2 E	EMISSIONS PER UNIT
	Use		Tot	tal Area (n	n²)		Calculated TER 2012 (kgCO2 / m2)	-	ace Heating kWh p.a.)	MA	Domestic Hot Water (kWh p.a.)	4112	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)	Cooling (kWh p.a.)						2012 CO2 emissions (kgCO2 p.a.)						SAP10 CO2 emissions (kgCO2 p.a.)	Calculated TER SAP10 (kgCO2 / m2)
Su	n	-		1,328			60.2	-	31,549		0		0	0	0						79,963						39,664	29.9

GLA Carbon Emission Reporting Spreadsheet – *Be Lean*

The applicant should con	plete all the	e light blue cell	s including inf	ormation on the	'be lean' energy co	nsumption figures,	the 'be lean' DER, the	DFEE and the regu	ated energy demar	nd of the 'be lean' s	scenario.				SAP 2012 CO2 PE	RFORMANCE					SA	AP10 CO2 PERFORMANC	CE							
DOMESTIC ENERG	GY CONSI	UMPTION	AND CO2	ANALYSIS		Ţ																					DOMI		DEMAND DATA	Ą
Unit identifier Moc	el total		Total area				REGULATED ENERG			-						S PER UNIT (kgCO2						TED CO2 EMISSIONS P				Fabric Energy Efficiency (FEE)			MAND PER UNIT PER AI	
dwolling type	r area ^{Ni} m²)		epresented by model (m²)	Calculated DER 2012 (kgCO2 / m2)	DER Worksheet DER 2012 (kgCO2 / m2) DER Sheet	Space Heating DER Sheet	Fuel type Space Heating Select fuel type	Domestic Hot Water DER Sheet	Fuel type Domestic Hot Water Select fuel type	Lighting DER Sheet	Auxiliary DER Sheet	Cooling DER Sheet		omestic Hot Water	Lighting	Auxiliary	Cooling	2012 CO2 emissions (kgCO2 p.a.)	Space Heating CO2 emissions (kgCO2 p.a.)	Domestic Hot Water CO2 emissions (kgCO2 p.a.)	Lighting CO2 emissions (kgCO2 p.a.)	CO2 emissions CO	D2 emissions	SAP10 CO2 emissions kgCO2 p.a.)	Calculated DER SAP10 (kgCO2 / m2)	Dwelling Fabric Energy Efficiency (DFEE) (kWh/m²)		Domestic Hot Water (kWh p.a.)		Auxiliary Cooling kWh p.a.) (kWh p.a.)
					(Row 384)	[(Row 307a) ÷ (Row 367a x 0.01)]		[(Row 310a) ÷ (Row 367a x 0.01)]			(Row 313 + 331)																			
NON-DOMESTIC			Total area epresented	VALIDAT	ION CHECK		N/A ULATED ENERGY CON	SUMPTION BY END			DURCE: BRUKL OUT	TPUT	0 LATED ENERGY CONSUM	MPTION BY FUEL				2012 CO2				0 ITED CO2 EMISSIONS PE	ER UNIT	0 SAP10 CO2	#DIV/0!	#DIV/0!	NON- REGUL	DOMESTIC E	0 NERGY DEMAND MAND PER UNIT PER AI) NNUM (kWh p.a.)
	m²) 27.8	units 1	by model (m²) 1327.8	Calculated BER 2012 (kgCO2 / m2) 46.2	BRUKL BER 2012 (kgCO2 / m2) 46.2	Space Heating (kWh/m ² p.a.) 23.84	Fuel type Space Heating Natural Gas	Domestic Hot Water (kWh/m ² p.a.) 1.31	Fuel type Domestic Hot Water Natural Gas	Lighting (kWh/m² p.a.) 23.52	Auxiliary (kWh/m² p.a.) 24.91	Cooling (kWh/m² p.a.) 30.16	Natural Gas Grid ####################################				-	emissions (kgCO2 p.a.) 61,372		Grid Electricity ################# 79			(emissions (kgCO2 p.a.) 31,327	BRUKL BER SAP10 (kgCO2 / m2) 23.6		Space Heating (kWh p.a.)	Domestic Hot Water (kWh p.a.)		Auxiliary Cooling ‹Wh p.a.) (kWh p.a.)
																										NIA				
			1,328	46.2	-	31,655	N/A	1,739	N/A	31,230	33,075	40,046	25	79	N/A	N/A	N/A	61,372	25	79				31,327	23.6		0	0	0	0 0
SITE-WIDE ENERG	n-consu	SWIPTION	AND CO2	ANALYSIS				REGULATE	D ENERGY CONSUN	1PTION								REGULATED CO2						REGULATED O	CO2 EMISSIONS		REGUL	ATED ENERGY DEI	AND PER UNIT PER AI	NNUM (kWh p.a.)
Use	Tota	al Area (m²)		Calculated BER 2012 (kgCO2 / m2)	-	Space Heating (kWh p.a.)	MA	Domestic Hot Water (kWh p.a.)	HIP	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)	Cooling (kWh p.a.)						2012 CO2 emissions (kgCO2 p.a.)						SAP10 CO2 emissions kgCO2 p.a.)	Calculated BER SAP10 (kgCO2 / m2)	NIA	Space Heating (kWh p.a.)	Domestic Hot Water (kWh p.a.)	Lighting A	Auxiliary Cooling kWh p.a.) (kWh p.a.)
Sum		1,328		46.2	-	31,655		1,739		31,230	33,075	40,046						61,372						31,327	23.6		0	0	0	0 0

BRUKL – Be Green

BRUKL Output Document

Compliance with England Building Regulations Part L 2013

Project name

Petrol Filling Station

Date: Fri Nov 27 12:04:38 2020

Administrative information

Building Details

Address: Petrol Filling Station, Camden Goods Yard, Chalk Farm Road, London, NW1 8EH

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.b.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v6.1.7 BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Nimco Ali

Telephone number: 02036031613

Address: Trinity Court Batchworth Island Church Street, Rickmansworth, WD3 1RT

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

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	59.1
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	59.1
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	43.7
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	Ua-Limit	Ua-Calc	Ui-Calc	Surface where the maximum value occurs*
Wall**	0.35	0.18	0.23	"General Retail - ATM Room_W_4"
Floor	0.25	0.14	0.14	"General Retail - Entrance Lobby_S_3"
Roof	0.25	0.2	0.2	"General Retail - Entrance Lobby_R_12"
Windows***, roof windows, and rooflights	2.2	1.5	1.5	"General Retail - Entrance Lobby_G_8"
Personnel doors	2.2	1.5	1.5	"BOH - BOH_D_4"
Vehicle access & similar large doors	1.5	1.4	1.4	"BOH - BOH_D_5"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
Ua-Limit = Limiting area-weighted average U-values [W	//(m²K)]			

 $U_{a-Calc} = Calculated area-weighted average U-values [W/(m^2K)]$

 $U_{i\text{-Calc}}$ = 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
m³/(h.m²) at 50 Pa	10	4.46

Shell and Core

As built

HM Government

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- Indirectly Heated by heat pump

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency					
This system	4.3	-	-	-	-					
Standard value 2.5* N/A N/A N/A										
Automatic moni	toring & targeting w	ith alarms for out-of	-range values for thi	s HVAC syster	n 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- Sales floor

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency				
This system	4.3	4.2	-	-	-				
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 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.

1- Project DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]						
This building	0.93	0.001						
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.								

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
Α	Local supply or extract ventilation units serving a single area
В	Zonal supply system where the fan is remote from the zone
С	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
Н	Fan coil units
Ι	Zonal extract system where the fan is remote from the zone with grease filter

Zone name		SFP [W/(I/s)]						HR efficiency			
ID of system type		В	С	D	Е	F	G	Н	I	пке	inciency
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
General Retail - Store	-	1	0.5	-	-	-	-	-	-	-	N/A

Shell and core configuration

Zone	Excluded from calculation?
General Retail - Entrance Lobby	NO
BOH - BOH	NO
General Retail - Store	NO
General Retail - ATM Room	NO

General lighting and display lighting	Lumino	ous effic		
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
General Retail - Entrance Lobby	-	100	-	69
BOH - BOH	100	-	-	304
General Retail - Store	-	115	60	6717
General Retail - ATM Room	100	-	-	110

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?	
General Retail - Store	NO (-89.4%)	NO	
General Retail - ATM Room	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	% Ar
1327.8	1327.8	100
3388.9	3388.9	
LON	LON	
4	3	
708.42	985.3	
0.21	0.29	
12	10.39	
	3388.9 LON 4 708.42 0.21	1327.81327.83388.93388.9LONLON43708.42985.30.210.29

* 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
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/m²]

	Actual	Notional
Heating	5.05	8.01
Cooling	30.16	41.75
Auxiliary	24.91	28.03
Lighting	23.52	38.52
Hot water	1.28	1.33
Equipment*	144.83	144.83
TOTAL**	84.92	117.63

* 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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	575.68	619.86
Primary energy* [kWh/m ²]	258.32	349.74
Total emissions [kg/m ²]	43.7	59.1

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

F	HVAC Systems Performance									
Sys	stem 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	[ST] Central heating using water: radiators, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Natural Gas									
	Actual	174.3	36.1	12.6	0	2.6	3.84	0	4.3	0
	Notional	203.5	26.2	23.3	0	1.2	2.43	0		
[ST] Split or m	ulti-split sy	stem, [HS]	Heat pump	(electric): a	air source, [HFT] Electr	icity, [CFT]	Electricity	
	Actual	17.9	741.5	1.2	45.3	36.1	4.01	4.54	4.3	6.4
	Notional	3	813	0.3	62.7	41.5	2.43	3.6		

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		Ui-Min	Surface where the minimum value occurs*
Wall	0.23	0.18	"General Retail - Entrance Lobby_W_7"
Floor	0.2	0.14	"General Retail - Entrance Lobby_S_3"
Roof	0.15 0.2 "General Retail - Entrance		"General Retail - Entrance Lobby_R_12"
Windows, roof windows, and rooflights	1.5	1.5	"General Retail - Entrance Lobby_G_8"
Personnel doors	1.5	1.5	"BOH - BOH_D_4"
Vehicle access & similar large doors	1.5	1.4	"BOH - BOH_D_5"
High usage entrance doors		-	"No external high usage entrance doors"
U _{i-Typ} = Typical individual element U-values [W/(m ² K)]		U _{i-Min} = Minimum individual element U-values [W/(m ² K)]
* There might be more than one surface where the r	ninimum L	J-value oc	curs.

Air Permeability	Typical value	This building		
m³/(h.m²) at 50 Pa	5	4.46		

GLA Carbon Emission Reporting Spreadsheet – *Be Green*

The applicant should complete all the light b	blue cells including infor	mation on the 'be	e green' energy co	onsumption figures a	nd the 'be green' D	ER.																SAP 2012	CO2 PERFORMANCE	E							SAP10 CO2 PE	RFORMANCE			
DOMESTIC ENERGY CONSUMPT	TION AND CO2 AI	NALYSIS																																	
Unit identifier (a.a. alet number Model total	Total area	VALIDATIO							REGULATED ENI	ERGY CONSUMPTION		n.) - 'BE GREEN' SAP DE											AISSIONS PER UNIT (REGULATED CO2 E				
(e.g. plot number, floor area Number dwelling type (m²) etc.)	s by model	DER 2012 kgCO2 / m2)	DER Worksheet DER 2012 (kgCO2 / m2) DER Sheet		Fuel type Space Heating Select fuel type	Domestic Hot Wat (Heat Source 1) DER Sheet		if applicable) Space Heating	(Heat source a	Domestic Hot W 2)	Vater Domestic Ho Water from Ch if applicable	t IP if applicable	generated by () if applicabl	CHP (- generate renewabl le if applica	d by le (-) able			Space Heating	Water ar	nd DHW from g CHP	generated by	generated by renewable	Lighting A	uxiliary Cooli	ng 2012 CO2 emissions (kgCO2 p.a.		iting Domestic Ho Water	and DHW from CHP	Electricity generated by CHP if applicable	renewable	Lighting	Auxiliary Coolir	ng SAP10 CO2 emissions (kgCO2 p.a.)	DER SAP10
			(Row 384)	[Row 307b ÷ (Row 367b x 0.01)]		[Row 310b ÷ (Row 367b x 0.01)	1	[Row 307c ÷ (Row 367c x 0.01)]		[Row 310c ÷ (Row 367c x 0.0		[(Row 307a + 31 ÷ (Row 362 x 0.0		× (Row 361 ÷ 3	310a) Row 38 362)]			331) Row 315																	
Sum 0 0	0	#DIV/0!	-	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	0	0	0 0	0	#DIV/0!
NON-DOMESTIC ENERGY CONS	SUMPTION AND C			I																															
Area per unit Number Use (m²) units	r of represented	VALIDATIO Calculated BER 2012 kgCO2 / m2)	BRUKL BER 2012 (kgCO2 / m2)	Space Heating	Fuel type Space Heating	Domestic Hot Wat	er Fuel type Domestic Hot Wat		GULATED ENERGY C	ONSUMPTION BY EN	ND USE (kWh/m² p.a.	.) 'BE GREEN' BER - SO	URCE: BRUKL OUTP	Electricity	y Electric CHP generate renewal technolo	d by ble	ıg Auxiliaı	ry Cooling			Bespoke DH	Electricity generated by § CHP	Electricity En	nter Carbon Ent	BRUKL.INP or *SIM.CSV er Carbon Enter Ca actor 2 Facto	rbon 2012 CO2		Gas Grid Electrici	ty Bespoke DH Factor	Electricity generated by CHP (-)	REGULATED CO2 EN Electricity generated by renewable technology	Enter Carbon E	nter Carbon Enter Ca Factor 2 Factor		
Retail 1327.8 1	1327.8	43.7	43.7	5.05	Grid Electricity	1.28	Natural Gas	_						if applicabl	(-) le if applica	able 23.52	24.91	30.16	######################################	######################################		if applicable 		****	****	58,006	######################################	******		if applicable # ###################################	(-) if applicable # ###################################	****	***	###### 26,233	19.8
								MA	NIA	MA	NIA	NIA	NIA																						
Sum 1,328 1	1,328	43.7	-	6,705	N/A	1,700	N/A							0	0	31,23(0 33,07	5 40,046	1	84	0	0	0	0	0 0	58,006	1	84	0	0	0	0	0 0	26,233	19.8
SITE-WIDE ENERGY CONSUMPT	TION AND CO 2 A	NALYSIS								REG	GULATED CO2 EMISSI	ONS							REGULATED CO2 EN	NISSIONS											REGULATED CO2 E	MISSIONS PER UNIT			
Use Total Area	a (m²)	Calculated BER 2012 kgCO2 / m2)	-	Space Heating (kWh p.a.)	NIA	Domestic Hot Wat (kWh p.a.)	er NIP	Space Heating (kWh p.a.)	NIA	Domestic Hot Water (kWh p.a.)	t	Space and Domestic Hot Water from CH (kWh p.a.)	t IP	Electricity generated by (kWh p.a. <i>if applicabl</i>	CHP	d by ble (kwb p	ng Auxilian .a.) (kWh p.	ry Cooling a.) (kWh p.a.)	Space Heating CO2 emissions	S Domestic Hot ar Water CO2 emissions C	pace Heating nd DHW from g CHP O2 emissions	Electricity generated by generated by CHP CO2 savings	Electricity generated by renewable CO2 savings	Lighting A 2 emissions CO2	uxiliary Cooli emissions CO2 emis	ng 2012 CO2 sions emissions	Space Hea CO2 emissi	Domestic Ho ating Water ions CO2 emission	Space Heating and DHW from CHP CO2 emissions if applicable	Electricity generated by CHP CO2 savings	Electricity generated by renewable CO2 savings	Lighting CO2 emissions C	Auxiliary Coolii D2 emissions CO2 emis	ing SAP10 CO2 ssions emissions	Calculated BER SAP10 (kgCO2 / m2)
Sum 1,328	8	0.0	-	6,705		1,700		0		0		0		0	, <i>appile</i>	31,230	0 33,075	5 40,046	1	i 84	if applicable 0	if applicable 0	if applicable 0	0	0 0	58,006	1	84	0	if applicable 0	if applicable 0	0	0 0	26,233	19.8

	SAP10 CO2	PERFORMANCE				
	REGULATED CO2	EMISSIONS PER UN	NIT			
ру	Electricity generated by	Lighting	Auxiliary	Cooling	SAP10 CO2 emissions	Calculated DER SAP10
e	renewable if applicable				(kgCO2 p.a.)	(kgCO2 / m2)
	0	0	0	0	0	#DIV/0!
	REGULATED CO2	EMISSIONS PER UN	NIT			
у	Electricity generated by	Enter Carbon Factor 1	Enter Carbon Factor 2	Enter Carbon Factor 3	SAP10 CO2 emissions	BRUKL BER SAP10
-	renewable technology					(kgCO2 / m2)
e	(-) if applicable					
###	* ******	****	################	#######################################	26,233	19.8
	•	^	^	0	26 222	19.8
	0	0	0	0	26,233	8.61
			NIT			
,	REGULATED CO2 Electricity	EMISSIONS PER UN	NIT			
ру		Lighting	Auxiliary	Cooling	SAP10 CO2	Calculated BER SAP10
ру s	Electricity generated by renewable CO2 savings			Cooling CO2 emissions	SAP10 CO2 emissions	Calculated BER SAP10 (kgCO2 / m2)
	Electricity generated by renewable	Lighting	Auxiliary			BER SAP10

	Table 1: Regulated CO ₂ Emissions using SAP 10 Carbon Factors from GLA Carbon Emission Reporting Spreadsheet									
	TFA (m²)	BER (kg/CO ₂ /m ²)	BER*TFA (kg/CO ₂)	TER (kg/CO ₂ /m ²)	TER*TFA (kg/CO ₂)	CO ₂ Reduction (%)				
Baseline		N/A	N/A			0				
Be Lean	1327.8	23.6	23.6 31336 29.9	39701	21%					
Be Green		19.8	26290			16%				
Overall CO ₂ Red	Overall CO ₂ Reduction									

	Table 2: Regulated CO ₂ Emissions in tonnes										
	TCO ₂	TCO ₂ Reduction	CO ₂ Reduction (%)								
Baseline	39.7	N/A	N/A								
Be Lean	31.3	8.4	21.1%								
Be Green	26.3	5.0	16.1%								
Total		13.4	33.8%								



APPENDIX B: AS BUILT STAGE BRUKLS AND GLA CARBON EMISSION REPORTING SPREADSHEET – SHELL AND CORE SBEM ASSESSMENT

BRUKL – Be Lean

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name

Morrison's Camden Temp. Store - Gas Boiler

As built

Date: Thu Feb 18 11:47:01 2021

Administrative information

Building Details

Address: Morrison's, 93 Juniper Crescent, Camden Town, LONDON, NW1 8HQ

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.5.1"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.5.1

BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Andrew Parry

Telephone number: 01924 265757

Address: RCM Business Centres, Dewsbury Road, Ossett, Wakefield, WF5 9ND

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

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	33.7
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	33.7
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	20.4
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	Ua-Limit	Ua-Calc	U i-Calc	Surface where the maximum value occurs*
Wall**	0.35	0.2	0.2	External Wall
Floor	0.25	0.2	0.2	Ground Floor
Roof	0.25	0.18	0.18	Roof
Windows***, roof windows, and rooflights	2.2	1.37	1.5	Service Hatch
Personnel doors	2.2	1.5	1.5	Solid Door - Door
Vehicle access & similar large doors	1.5	1.4	1.4	Roller Shutter
High usage entrance doors	3.5	1.5	1.5	Main Entrance Door - Door
Ua-Limit = Limiting area-weighted average U-values [W	//(m²K)]			

 U_{a-Calc} = Calculated area-weighted average U-values [W/(mrK)]

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

* 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			
m³/(h.m²) at 50 Pa	10	4.46			

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

1- VRF with Mech. Vent - Sales Floor (Sales Floor - RetWareSales 1)

			,				
	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency		
This system	0.91	7	-	1.21	-		
Standard value	0.91*	2.6	N/A	N/A	N/A		
Automatic moni	toring & targeting w	ith alarms for out-of	-range values for thi	is HVAC syster	n YES		
		ns <=2 MW output. For sing nulti-boiler system, limiting	le boiler systems >2 MW o efficiency is 0.82.	r multi-boiler system	ns, (overall) limiting		

2- VRF With Mech. Vent (Canteen - EatDrink 1)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency		
This system	0.91	7.3	-	1.5	0.75		
Standard value	0.91*	2.6	N/A	N/A	0.5		
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system YES							

* 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.

3- VRF With Mech. Vent (3 Zones)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency		
This system	0.91	7.85	-	1.5	0.75		
Standard value	0.91*	2.6	N/A	N/A	0.5		
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system YES							

* 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.

4- Extract Only - Grease Filter (Market Kitchen - FoodPrep 1)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency		
This system	0	-	-	-	-		
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 YES							

5- Bake-Off Mech. Vent. (Bake Off - FoodPrep 3)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency			
This system	1	-	-	1.71	-			
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 YES								

6- Natural Ventilation

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency		
This system	1	-	-	-	-		
Standard value	0.86	N/A	N/A	N/A	N/A		
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system YES							

7- Mechanical Ventilation (4 Zones)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency		
This system	1	-	-	0.75	0.75		
Standard value	N/A	N/A	N/A	N/A	0.5		
Automatic monitoring 8 targeting with alarma for out of range values for this HVAC system							

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system YES

8- Extract Only (Staff Change - Store 2)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency		
This system	1	-	-	0.3	-		
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 YES							

1- ece380/1220

	Water heating efficiency	Storage loss factor [kWh/litre per day]				
This building	0.91	0				
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
А	Local supply or extract ventilation units serving a single area
В	Zonal supply system where the fan is remote from the zone
С	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
Е	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
Н	Fan coil units
Ι	Zonal extract system where the fan is remote from the zone with grease filter

Zone name		SFP [W/(I/s)]									
ID of system type	Α	В	С	D	Е	F	G	Н	I	HR efficiency	
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
Admin Corridor - Circulation 2	-	-	-	0.8	-	-	-	-	-	-	N/A
Market Kitchen - FoodPrep 1	-	-	-	-	-	-	-	-	0.8	-	N/A
Canteen - EatDrink 1	-	-	-	1.5	-	-	-	-	-	-	N/A
Training Room - Office 1	-	-	-	1.5	-	-	-	-	-	-	N/A
General Office - Office 2	-	-	-	1.5	-	-	-	-	-	-	N/A
WC 1 - Toilet 1	-	-	-	0.8	-	-	-	-	-	-	N/A
WC 2 - Toilet 2	-	-	-	0.8	-	-	-	-	-	-	N/A
Acc. WC - Toilet 4	-	-	-	0.8	-	-	-	-	-	-	N/A
Office 2 - Office 3	-	-	-	1.5	-	-	-	-	-	-	N/A
Staff Change - Store 2	0.3	-	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting	Lumino	us effic		
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
Sales Floor - RetWareSales 1	-	128	117	5566

General lighting and display lighting	Lumino	ous effic		
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
Entrance Lobby - Circulation 1	-	138	-	48
Admin Corridor - Circulation 2	-	132	-	30
Market Kitchen - FoodPrep 1	-	122	-	417
Bake Off - FoodPrep 3	-	105	-	406
BOH Warehouse - Store 1	155	-	-	108
Canteen - EatDrink 1	-	132	22	34
Training Room - Office 1	124	-	-	77
General Office - Office 2	124	-	-	51
Plant Room - Plant 1	132	-	-	55
WC 1 - Toilet 1	-	132	-	15
WC 2 - Toilet 2	-	132	-	15
Acc. WC - Toilet 4	-	132	-	16
Office 2 - Office 3	124	-	-	46
Plant deck - Plant 2	60	-	-	238
Staff Change - Store 2	132	-	-	5

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?		
Sales Floor - RetWareSales 1	NO (-94%)	NO		
Canteen - EatDrink 1	N/A	N/A		
Training Room - Office 1	N/A	N/A		
General Office - Office 2	N/A	N/A		
Office 2 - Office 3	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?							
Is evidence of such assessment available as a separate submission?							
Are any such measures included in the proposed design?	YES						

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional	% Ar
Area [m ²]	1315	1315	100
External area [m ²]	3457	3457	
Weather	LON	LON	
Infiltration [m ³ /hm ² @ 50Pa]	4	5	
Average conductance [W/K]	781	881	
Average U-value [W/m ² K]	0.23	0.25	
Alpha value* [%]	4.27	4.27	

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	20.15	6.95
Cooling	2.08	11.44
Auxiliary	6.74	4.51
Lighting	18.27	45.29
Hot water	3.74	3.74
Equipment*	35.23	35.23
TOTAL**	50.99	71.94

* 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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	125.1	177.66
Primary energy* [kWh/m ²]	119.23	195.88
Total emissions [kg/m ²]	20.4	33.7

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

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
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
Othere, Cor Darks 24 hrs

Others: Car Parks 24 hrs

Others: Stand alone utility block

H	IVAC Sys	tems Per	formanc	9						_				
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] Split or multi-split system, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity Actual 15.4 86.9 4.8 3.5 5.7 0.89 7 0.91 7														
	Actual	15.4	86.9	4.8	3.5	5.7	0.89	7	0.91	7				
	Notional	11	247	3.7	19.1	4.4	0.82	3.6						
[ST] Split or m	ulti-split sy	stem, [HS] I	LTHW boile	er, [HFT] Na	tural Gas, [CFT] Electr	icity		-				
	Actual	42.6	54.5	13.3	2	8.1	0.89	7.7	0.91	7.7				
	Notional	50.4	110.5	17.1	8.5	5	0.82	3.6						
[ST] No Heatin	g or Coolin	g											
	Actual	0	0	0	0	50.5	0	0	0	0				
	Notional	0	0	0	0	25.3	0	0						
[ST] No Heatin	g or Coolin	g											
	Actual	3.9	0	1.1	0	15.2	1	0	1	0				
	Notional	0.1	0	0	0	9.9	0.82	0						
[ST] Other loca	al room hea	ter - unfanr	ned, [HS] Ui	nflued radia	ant heater, [HFT] Electi	ricity, [CFT]	Electricity	-				
	Actual	83.7	0	23.3	0	0	1	0	1	0				
	Notional	77.3	0	26.2	0	0	0.82	0						
[ST] Central he	eating using	g air distribu	ution, [HS]	Air heater,	[HFT] Elect	ricity, [CFT	Electricity						
	Actual	21	0	5.8	0	3.6	1	0	1	0				
	Notional	22.7	0	7.7	0	7	0.82	0						
[ST] No Heatin	g or Coolin	g											
	Actual	83.5	0	23.2	0	5.8	1	0	1	0				
	Notional	88.5	0	30	0	7.7	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 і-тур	Ui-Min	Surface where the minimum value occurs*
Wall	0.23	0.2	External Wall
Floor	0.2	0.2	Ground Floor
Roof	0.15	0.18	Roof
Windows, roof windows, and rooflights	1.5	1.37	Sales Floor Main Window - Glazing
Personnel doors	1.5	1.5	Solid Door - Door
Vehicle access & similar large doors	1.5	1.4	Roller Shutter
High usage entrance doors	1.5	1.5	Main Entrance Door - Door
U _{i-Typ} = Typical individual element U-values [W/(m ² K)]		U _{i-Min} = Minimum individual element U-values [W/(m ² K)]
* There might be more than one surface where the m	ninimum U	-value occ	curs.

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	4.46

GLA Carbon Emission Reporting Spreadsheet – Baseline

			cells including inf		nodelled units, the a	irea per unit, the nur										ERFORMANCE							MANCE			
MESTIC EN		ISUMPTIO	N AND CO2 A	ANALYSIS		1							1													DEMAND
it identifier	Model total		Total area		TON CHECK				1PTION PER UNIT (k						TED CO2 EMISSION			[ATED CO2 EMISSIC				Fabric Ener Efficiency (F
plot number, velling type etc.)	floor area (m²)	Number of units	represented by model (m²)	Calculated TER 2012 (kgCO2 / m2)	TER Worksheet TER 2012 (kgCO2 / m2)	Space Heating	Fuel type Space Heating	Domestic Hot Water	Fuel type Domestic Hot Water	Lighting	Auxiliary	Cooling	Space Heating	Domestic Hot Water	Lighting	Auxiliary	Cooling	2012 CO2 emissions (kgCO2 p.a.)	Space Heating	Domestic Hot Water	Lighting	Auxiliary	Cooling	SAP10 CO2 emissions (kgCO2 p.a.)	Calculated TER SAP10 (kgCO2 / m2)	Target Fabr Energy Efficie (TFEE) (kWh/
	TER Worksheet (Row 4)				TER Worksheet (Row 273)	TER Worksheet (Row 211)		TER Worksheet (Row 219)		TER Worksheet (Row 232)	TER Worksheet (Row 231)	N / A														
	0	0	0	#DIV/0!	-	0	N/A	0	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV
MEST	FIC ENERGY	Y CONSUM	1PTION AND	CO2 ANALYS	IS ION CHECK	I	REGULATED ENERGY			² n n) TER - SOUR			REGULATED ENERG			$h/m^2 p \ge TEP = S($		or *SIM CSV EII E	PEGULATER	ENERGY CONSUM		$V PE (k W h m^2 n a)$		REGULATED	O2 EMISSIONS	
Use	Area per unit			Calculated	BRUKL	Space Heating	Fuel type	Domestic Hot	Fuel type	Lighting	Auxiliary	Cooling		_				2012 CO2						SAP10 CO2	BRUKL	_
	(m²)	units	by model (m²)	TER 2012 (kgCO2 / m2)	TER 2012 (kgCO2 / m2)		Space Heating	Water	Domestic Hot Water				Natural Gas					emissions (kgCO2 p.a.)	Natural Gas ####################################					emissions (kgCO2 p.a.)	TER SAP10 (kgCO2 / m2)	
	1315	1	1315	33.3	33.3	6.95	Natural Gas	3.74	Natural Gas	45.29	4.51	11.44	11	60				43,787	11	60				21,247	16.2	
																			II							

S		1,315		1	1,315	33.3		-	9,139	9,139	0	0	0	0	0	11	60	N/A	N/A	N/A	43,787	11	60	N/A	N/A	N/A	21,247	16.2
S	ITE-WIDE ENI	ERGY CO	DNSUN	MPTION	AND CO2						REGULATEI	D ENERGY CONSU	MPTION								REGULATED CO2 EMISSIONS						REGULATED CO2 E	EMISSIONS PER UNIT
	Use		Tota	al Area (m²)		Calculat TER 20 (kgCO2 /	12	-	Space Heating (kWh p.a.)	NIA	Domestic Hot Water (kWh p.a.)	HIP	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)	Cooling (kWh p.a.)						2012 CO2 emissions (kgCO2 p.a.)						SAP10 CO2 emissions (kgCO2 p.a.)	Calculated TER SAP10 (kgCO2 / m2)
S	m			1,315		33.3		-	9,139		0		0	0	0						43,787						21,247	16.2

GLA Carbon Emission Reporting Spreadsheet – *Be Lean*

DOMESTIC E							the 'be lean' DER, the				
					ON CHECK		REGULATED ENERG		PER UNIT (kWh p.a.) - 'BE LEAN' SAP	DER WORKS
Unit identifier (e.g. plot number, dwelling type etc.)	Model total floor area (m²)	Number of units	Total area represented by model (m²)	Calculated DER 2012 (kgCO2 / m2)	DER Worksheet DER 2012 (kgCO2 / m2)	Space Heating	Fuel type Space Heating	Domestic Hot Water	Fuel type Domestic Hot Water	Lighting	Auxilia
					DER Sheet (Row 384)	DER Sheet [(Row 307a) ÷ (Row 367a x 0.01)]	Select fuel type	DER Sheet [(Row 310a) ÷ (Row 367a x 0.01)]	Select fuel type	DER Sheet Row 332	DER Sh (Row 313
Sum	0	0	0	#DIV/0!	<u>-</u>	0	N/A	0	N/A	0	0
NON-DOMES	STIC ENERG		ΛΡΤΙΟΝ ΑΝ		(SIS	Π					
			Total area	VALIDATI	ON CHECK	REG	JLATED ENERGY CONS	SUMPTION BY END	USE (kWh/m² p.a.)	'BE LEAN' BER - S	SOURCE: BRI
Building Use	Area per unit (m²)	units	represented by model (m²)	Calculated BER 2012 (kgCO2 / m2)	BRUKL BER 2012 (kgCO2 / m2)	Space Heating (kWh/m ² p.a.)	Fuel type Space Heating	Domestic Hot Water (kWh/m² p.a.)	Fuel type Domestic Hot Water	Lighting (kWh/m² p.a.)	
Retail	1315	1	1315	19.3	19.3	20.61	Natural Gas	3.74	Natural Gas	18.27	6.74
Sum	1,315	1	1,315	19.3	-	27,102	N/A	4,918	N/A	24,025	8,86
SITE-WIDE EI	NERGY CON	ISUMPTIO	N AND CO2	ANALYSIS				RECULATE	D ENERGY CONSUN	ΛΡΤΙΩΝ	
Use		Total Area (m²)	Calculated BER 2012 (kgCO2 / m2)	-	Space Heating (kWh p.a.)	NIP	Domestic Hot Water (kWh p.a.)	NIP	Lighting (kWh p.a.)	Auxilia (kWh p
Sum		1,315		19.3	-	27,102		4,918	ì	24,025	8,863

).				SAP 2012 CO2	PERFORMANCE					SA	P10 CO2 PERFORM	MANCE								
																DON	IESTIC ENERG	Y DEMAND [ΟΑΤΑ	
RKSHEET			REGULA	ATED CO2 EMISSIO	ONS PER UNIT (kgCC	02 p.a.)				REGULA	TED CO2 EMISSIO	NS PER UNIT			Fabric Energy Efficiency (FEE)	REG	ULATED ENERGY DE	MAND PER UNIT	PER ANNUM (kWh	o.a.)
xiliary	Cooling	Space Heating	Domestic Hot Water	Lighting	Auxiliary	Cooling	2012 CO2 emissions (kgCO2 p.a.)	Space Heating CO2 emissions (kgCO2 p.a.)	Domestic Hot Water CO2 emissions (kgCO2 p.a.)	Lighting CO2 emissions (kgCO2 p.a.)	Auxiliary CO2 emissions (kgCO2 p.a.)	Cooling CO2 emissions (kgCO2 p.a.)	SAP10 CO2 emissions (kgCO2 p.a.)	Calculated DER SAP10 (kgCO2 / m2)	Dwelling Fabric Energy Efficiency (DFEE) (kWh/m²)	Space Heating (kWh p.a.)	Domestic Hot Water (kWh p.a.)	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)	Cooling (kWh p.a.)
8 Sheet 913 + 331)	DER Sheet Row 315																			
0	0			•		•			•						#DIV/01	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	0 NON	I-DOMESTIC E	0 ENERGY DEM	0 AND	0
BRUKL OUTP	PUT	LATED ENERGY CO	DNSUMPTION BY FU	UEL TYPE (kWh/m	² p.a.) 'BE LFAN' RF	R - SOURCF: BRI	KL.INP or *SIM CS			REGULA	TED CO2 EMISSIO	NS PER UNIT							PER ANNUM (kWh	p.a.)
							2012 CO2						SAP10 CO2	BRUKL			Domestic Hot			
xiliary /m² p.a.) 5.74	Cooling (kWh/m² p.a.) 2.08		Grid Electricity ####################################				emissions (kgCO2 p.a.) 25,405	Natural Gas ####################################	Grid Electricity ####################################				emissions (kgCO2 p.a.) 15,024	BR SAP10 (kgCO2 / m2) 11.4	-	Space Heating (kWh p.a.)	Water (kWh p.a.)	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)	Cooling (kWh p.a.)
													-,							
															NIA					

BRUKL OUT	PUT	LATED ENERGY (ONSUMPTION BY	FUEL TYPE	PE (kWh/m² p.a.)	BE LEAN' BER	- SOURCE: BRUKI	.INP or *SIM.CS			REGULATED CO2 EMISSIONS PER UNIT				REGU	LATED ENERGY DEI	MAND PER UNIT P	PER ANNUM (kWh p	o.a.)
kiliary	Cooling (kWh/m ² p.a.)	Natural Gas	Grid Electricity	,				2012 CO2 emissions (kgCO2 p.a.)	Natural Gas	Grid Electricity		SAP10 CO2 emissions (kgCO2 p.a.)	BRUKL BER SAP10 (kgCO2 / m2)		Space Heating (kWh p.a.)	Domestic Hot Water (kWh p.a.)	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)	Cooling (kWh p.a.)
.74	2.08	24	27	<u>"</u>			-	25,405	24	27		15,024	11.4						
														NIA					
,863	2,735	24	27	N	N/A	N/A	N/A	25,405	24	27		15,024	11.4		0	0	0	0	0
								EGULATED CO2 MISSIONS				REGULATED C	CO2 EMISSIONS		REGU	LATED ENERGY DEI	MAND PER UNIT P	PER ANNUM (kWh p	o.a.)
kiliary h p.a.)	Cooling (kWh p.a.)							2012 CO2 emissions (kgCO2 p.a.)				SAP10 CO2 emissions (kgCO2 p.a.)	Calculated BER SAP10 (kgCO2 / m2)	MA	Space Heating (kWh p.a.)	Domestic Hot Water (kWh p.a.)	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)	Cooling (kWh p.a.)
,863	2,735							25,405				15,024	11.4		0	0	0	0	0

N/A24,0258,8632,7352427N/AN/AN/A2,405242711.4 11.4 0 0 0 0 0 0 LENEGY CONSETION LightingAuxilary (kWh p.a.)Cooling (kWh p.a.) 11.4 11.4 0 </th <th></th> <th>NIA</th> <th></th> <th></th> <th></th> <th></th> <th></th>															NIA					
EMISSION EMISSION NP Lighting (kWh p.a.) Auxiliary (kWh p.a.) NP Lighting (kWh p.a.)	N/A	24,025	8,863	2,735	24	27	N/A	N/A	N/A	25,405	24	27	15,024	11.4		0	0	0	0	0
Lighting Advitary Cooling emissions BER SAP10 Water Lighting Advitary Cooling (kWh p.a.)	ENERGY CONSUN	ΛΡΤΙΟΝ											REGULATED	CO2 EMISSIONS		REGU	LATED ENERGY DE	MAND PER UNIT P	ER ANNUM (kWh p).a.)
24,025 8,863 2,735 <u>25,405</u> 11.4 0 0 0 0 0	NIA									emissions			emissions	BER SAP10	NIA		Water			
		24,025	8,863	2,735						25,405			15,024	11.4		0	0	0	0	0

BRUKL – Be Green

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name

Morrison's Camden Temp. Store

As built

Date: Mon Feb 08 10:05:19 2021

Administrative information

Building Details

Address: Morrison's, 93 Juniper Crescent, Camden Town, LONDON, NW1 8HQ

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.5.1"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.5.1

BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Andrew Parry

Telephone number: 01924 265757

Address: RCM Business Centres, Dewsbury Road, Ossett, Wakefield, WF5 9ND

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

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	33.6
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	33.6
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	18.5
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 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	Ua-Limit	Ua-Calc	U i-Calc	Surface where the maximum value occurs*
Wall**	0.35	0.2	0.2	External Wall
Floor	0.25	0.2	0.2	Ground Floor
Roof	0.25	0.18	0.18	Roof
Windows***, roof windows, and rooflights	2.2	1.37	1.5	Service Hatch
Personnel doors	2.2	1.5	1.5	Solid Door - Door
Vehicle access & similar large doors	1.5	1.4	1.4	Roller Shutter
High usage entrance doors	3.5	1.5	1.5	Main Entrance Door - Door
Ua-Limit = Limiting area-weighted average U-values [W	//(m²K)]			

 U_{a-Calc} = Calculated area-weighted average U-values [W/(mrK)]

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

* 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
m³/(h.m²) at 50 Pa	10	4.46

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

1- VRF with Mech. Vent - Sales Floor (Sales Floor - RetWareSales 1)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency						
This system	4.4	7	-	1.21	-						
Standard value	2.5*	2.6	N/A	N/A	N/A						
Automatic moni	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											

* 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- VRF With Mech. Vent (Canteen - EatDrink 1)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency
This system	4.3	7.3	-	1.5	0.75
Standard value	2.5*	2.6	N/A	N/A	0.5
Automatic moni	toring & targeting w	ith alarms for out-of	-range values for thi	is HVAC syster	n YES

 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.</td>

3- VRF With Mech. Vent (3 Zones)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency
This system	4.71	7.85	-	1.5	0.75
Standard value	2.5*	2.6	N/A	N/A	0.5

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.

4- Extract Only - Grease Filter (Market Kitchen - FoodPrep 1)

	Heating efficiency	Cooling efficiency Radiant efficiency SFP [W/(I/s)] H		HR efficiency				
This system	0	-	-	-	-			
Standard value	N/A	N/A	N/A	N/A	N/A			
Automatic moni	Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system YES							

5- Bake-Off Mech. Vent. (Bake Off - FoodPrep 3)

	Heating efficiency	Cooling efficiency Radiant efficiency SFP [W/(I/s)] H		HR efficiency				
This system	1	-	-	1.71	-			
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 YES								

6- Natural Ventilation

	Heating efficiency	Cooling efficiency Radiant efficiency SFP [W/(I/s)]		HR efficiency			
This system	1	-	-	-	-		
Standard value	0.86	N/A	N/A	N/A	N/A		
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system YES							

7- Mechanical Ventilation (4 Zones)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency		
This system	1	-	-	0.75	0.75		
Standard value	N/A	N/A	N/A	N/A	0.5		
Automatic monitoring 8 targeting with alarma for out of range values for this HVAC system							

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system YES

8- Extract Only (Staff Change - Store 2)

	Heating efficiency	Cooling efficiency Radiant efficiency SFP [W/(I/s)]		HR efficiency			
This system	1	-	-	0.3	-		
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 YES							

1- ece380/1220

	Water heating efficiency	Storage loss factor [kWh/litre per day]					
This building	0.97	0					
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
А	Local supply or extract ventilation units serving a single area
В	Zonal supply system where the fan is remote from the zone
С	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
Е	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
Н	Fan coil units
Ι	Zonal extract system where the fan is remote from the zone with grease filter

Zone name				SF	P [W/	(l/s)]				UD officiancy	
ID of system type	Α	В	С	D	Е	F	G	Н	I	HR efficiency	
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
Admin Corridor - Circulation 2	-	-	-	0.8	-	-	-	-	-	-	N/A
Market Kitchen - FoodPrep 1	-	-	-	-	-	-	-	-	0.8	-	N/A
Canteen - EatDrink 1	-	-	-	1.5	-	-	-	-	-	-	N/A
Training Room - Office 1	-	-	-	1.5	-	-	-	-	-	-	N/A
General Office - Office 2	-	-	-	1.5	-	-	-	-	-	-	N/A
WC 1 - Toilet 1	-	-	-	0.8	-	-	-	-	-	-	N/A
WC 2 - Toilet 2	-	-	-	0.8	-	-	-	-	-	-	N/A
Acc. WC - Toilet 4	-	-	-	0.8	-	-	-	-	-	-	N/A
Office 2 - Office 3	-	-	-	1.5	-	-	-	-	-	-	N/A
Staff Change - Store 2	0.3	-	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting	Lumino	us effic		
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
Sales Floor - RetWareSales 1	-	128	117	5566

General lighting and display lighting	Lumino	ous effic	acy [lm/W]	
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
Entrance Lobby - Circulation 1	-	138	-	48
Admin Corridor - Circulation 2	-	132	-	30
Market Kitchen - FoodPrep 1	-	122	-	417
Bake Off - FoodPrep 3	-	105	-	406
BOH Warehouse - Store 1	155	-	-	108
Canteen - EatDrink 1	-	132	22	34
Training Room - Office 1	124	-	-	77
General Office - Office 2	124	-	-	51
Plant Room - Plant 1	132	-	-	55
WC 1 - Toilet 1	-	132	-	15
WC 2 - Toilet 2	-	132	-	15
Acc. WC - Toilet 4	-	132	-	16
Office 2 - Office 3	124	-	-	46
Plant deck - Plant 2	60	-	-	238
Staff Change - Store 2	132	-	-	5

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?
Sales Floor - RetWareSales 1	NO (-94%)	NO
Canteen - EatDrink 1	N/A	N/A
Training Room - Office 1	N/A	N/A
General Office - Office 2	N/A	N/A
Office 2 - Office 3	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?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional	% Ar
Area [m ²]	1315	1315	100
External area [m ²]	3457	3457	
Weather	LON	LON	
Infiltration [m ³ /hm ² @ 50Pa]	4	5	
Average conductance [W/K]	781	881	
Average U-value [W/m ² K]	0.23	0.25	
Alpha value* [%]	4.27	4.27	

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	7.06	5.13
Cooling	2.08	11.44
Auxiliary	6.74	4.51
Lighting	18.27	45.29
Hot water	3.51	3.74
Equipment*	35.23	35.23
TOTAL**	37.66	70.12

* 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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	125.1	177.66
Primary energy* [kWh/m ²]	109.12	195.3
Total emissions [kg/m ²]	18.5	33.6

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

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
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
Othere: Car Barka 24 hrs

Others: Car Parks 24 hrs

Others: Stand alone utility block

	IVAC Sys	tems Per	formanc	e								
Sys	stem 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	[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity											
	Actual	15.4	86.9	1	3.5	5.7	4.4	7	4.4	7		
	Notional	11	247	1.3	19.1	4.4	2.43	3.6				
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity												
	Actual	42.6	54.5	2.6	2	8.1	4.6	7.7	4.6	7.7		
	Notional	50.4	110.5	5.8	8.5	5	2.43	3.6				
[ST] No Heating or Cooling												
	Actual	0	0	0	0	50.5	0	0	0	0		
	Notional	0	0	0	0	25.3 0		0				
[ST] No Heatin	g or Coolin	g									
	Actual	3.9	0	1.1	0	15.2	1	0	1	0		
	Notional	0.1	0	0	0	9.9	0.82	0				
[ST] Other loca	al room hea	ter - unfanr	ned, [HS] Ui	nflued radia	ant heater, [[HFT] Electr	icity, [CFT]	Electricity			
	Actual	83.7	0	23.3	0	0	1	0	1	0		
	Notional	77.3	0	26.2	0	0	0.82	0				
[ST] Central he	eating using	g air distribu	ution, [HS]	Air heater,	[HFT] Elect	ricity, [CFT]	Electricity				
	Actual	21	0	5.8	0	3.6	1	0	1	0		
	Notional	22.7	0	7.7	0	7	0.82	0				
[ST] No Heatin	g or Coolin	g									
	Actual	83.5	0	23.2	0	5.8	1	0	1	0		
	Notional	88.5	0	30	0	7.7	0.82	0				

Key to terms	
Key to terms Heat dem [MJ/m2] Cool dem [MJ/m2] Heat con [kWh/m2] Aux con [kWh/m2] Heat SSEFF Cool SSEER Heat gen SSEFF	 Heating energy demand Cooling energy demand Heating energy consumption Cooling energy consumption Auxiliary energy consumption Heating system seasonal efficiency (for notional building, value depends on activity glazing class) Cooling system seasonal energy efficiency ratio Heating generator seasonal efficiency
Cool gen SSEER ST HS HFT CFT	 = Cooling generator seasonal energy efficiency ratio = System type = Heat source = Heating fuel type = 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 і-Тур	Ui-Min	Surface where the minimum value occurs*
Wall	0.23	0.2	External Wall
Floor	0.2	0.2	Ground Floor
Roof	0.15	0.18	Roof
Windows, roof windows, and rooflights	1.5	1.37	Sales Floor Main Window - Glazing
Personnel doors	1.5	1.5	Solid Door - Door
Vehicle access & similar large doors	1.5	1.4	Roller Shutter
High usage entrance doors	1.5	1.5	Main Entrance Door - Door
U _{i-Typ} = Typical individual element U-values [W/(m ² K)]		U _{i-Min} = Minimum individual element U-values [W/(m ² K)]
* There might be more than one surface where the n	ninimum U	-value occ	curs.

Air Permeability	Typical value	This building					
m³/(h.m²) at 50 Pa	5	4.46					

GLA Carbon Emission Reporting Spreadsheet – *Be Green*

	mplete all the light blue				consumption figures	and the 'be green' D	DER.															SAP 2	2012 CO2 PERFORMA	ANCE							SAP10 CO2	PERFORMANCE			
DOMESTIC ENER	GY CONSUMPTIC	ON AND CO2	I		ľ									CUEFT															_						
Unit identifier M(e.g. plot number,	del total Number of	Total area of represented		TION CHECK DER Worksheet	Space Heating	Fuel type	Domestic Hot Wate	er Fuel type	Space Heating		Domestic Hot	R UNIT (kWh p.a.) - Fuel type	'BE GREEN' SAP DER WORKS Space and Fi		Total Electricity	Electricity	Lighting	Auxiliary	Cooling Sr	ace Heating Domestic H	lot Space Heating		D2 EMISSIONS PER UN	Lighting	Auxiliary	Cooling 20	12 CO2 Spac	e Heating Dome	stic Hot Space Heat	ing Electricit		EMISSIONS PER UNIT	Auxiliary Cooling	SAP10 CO2	Calculated
(e.g. plot number, f dwelling type etc.)	or area units (m²)	by model (m²)	DER 2012 (kgCO2 / m2)		(Heat Source 1)	Space Heating		Domestic Hot Wate	if applicable		(Heat source 2) if applicable		er Domestic Hot Water from CHP if applicable i	ger if applicable	nerated by CHP (-) if applicable	generated by renewable (-) if applicable				Water	СНР	generated by CHP if applicable	generated by renewable if applicable				nissions CO2 p.a.)	W	ater and DHW free commension of the commension o	rom generated CHP able if applicat	renewable			emissions (kgCO2 p.a.)	
				DER Sheet (Row 384)	DER Sheet [Row 307b ÷ (Row 367b x 0.01)]	Select fuel type	DER Sheet [Row 310b ÷ (Row 367b x 0.01)	Select fuel type	DER Sheet [Row 307c ÷ (Row 367c x 0.01)]	Select fuel type	DER Sheet [Row 310c ÷ (Row 367c x 0.01)]	Select fuel type	DER Sheet Se [(Row 307a + 310a) ÷ (Row 362 x 0.01)]	[(R	DER Sheet tow 307a + 310a) [Row 361 ÷ 362)]			DER Sheet I ow 313 + 331)																	
Sum			#DIV/0!	-	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	0	0	0	0	0 0	0	0	0	0	0	0	0	0	0 0	0	0	0	0 0	0	#DIV/0!
NON-DOMESTIC	ENERGY CONSO	JWIPTION AN	VALIDAT	TION CHECK			2		REG	GULATED ENERGY COM	NSUMPTION BY END US	SE (kWh/m² p.a.) 'B	E GREEN' BER - SOURCE: BR	RUKL OUTPUT							D ENERGY CONSUMPT		E (kWh/m² p.a.) 'BE G	GREEN' BER - SOUR							REGULATED CO2				
Ar Use Ar	a per unit Number of (m²) units	Total area of represented by model (m ²)	Calculated BER 2012 (kgCO2 / m2)	BRUKL BER 2012 (kgCO2 / m2)	Space Heating	Fuel type Space Heating	Domestic Hot Wat	er Fuel type Domestic Hot Wate	er					ge	Electricity enerated by CHP (-)	Electricity generated by renewable technology	Lighting	Auxiliary	Cooling I	atural Gas Grid Electri	city Bespoke DH Factor	Electricity generated by CHP (-)	Electricity generated by renewable technology	Enter Carbon Factor 1		Factor 3 em	12 CO2 Nat nissions CO2 p.a.)	tural Gas Grid E	lectricity Bespoke Facto		y Electricity by generated by renewable technology		nter Carbon Enter Carbo Factor 2 Factor 3		
Retail	1315 1	1315	18.5	18.5	7.06	Grid Electricity	3 51	Natural Gas	_					_	if applicable	(-) if applicable	18.27	6.74	2.08	1#####################################	****	if applicable # ###################################	(-) if applicable # ###################################	****	****	****	#####	4 4	######################################	if applicat ##### ###########	(-) ble if applicable #### ################################	#######################################	****	11,433	8.7
Retail	1315 1	1315	18.5	18.5	7.06	Gna Electricity	3.51	Natural Gas							0		18.27	0.74	2.08	4 34			0			2	24,304	4	34					11,433	8.7
									NIA	NIA	NIA	MA	NIA	MA																					
Sum	1,315 1	1,315	18.5		9,284	N/A	4,616	N/A							0	0	24,025	8,863	2,735	4 24		0	0	0	0	0	14,304	4	34 ^		0	0	0 0	11,433	8.7
SUTE-WIDE ENER				-	,,∠o 4	NA	4,010	N/A							v	U	L7,VLJ	0,000	_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	34	U	v	U	v	v			-		U	U	v	τ, υ	11,433	0.7
			Calculated						-			TED CO2 EMISSION			Flactricity	Electricity			REG	JLATED CO2 EMISSIONS	Space Heating	Electricity	Electricity					Dem	Space He	Electricit	REGULATED CO2 y Electricity	EMISSIONS PER UNIT			
Use	Total Area (m	m²)	BER 2012 (kgCO2 / m2)	-	Space Heating		Domestic Hot Wate	er	Space Heating		Domestic Hot Water		Space and Domestic Hot	ge	Electricity enerated by CHP	generated by renewable	Lighting	Auxiliary	Cooling Sp	Domestic l ace Heating Water	CHP	generated by CHP	renewable	Lighting	Auxiliary	Cooling 202	12 CO2 hissions	Dome e Heating W	and DHW	from generated CHP	renewable	Lighting	Auxiliary Cooling	SAP10 CO2 ons emissions	Calculated BER SAP10
					(kWh p.a.)	MA	(kWh p.a.)	NIA	(kWh p.a.)	NIA	(kWh p.a.)	MA	Water from CHP (kWh p.a.)	NIA	(kWh p.a.) <i>if applicable</i>	(kWh p.a.) if applicable	(kWh p.a.)	(kWh p.a.)	(kWh p.a.) CO	2 emissions CO2 emissi	ons CO2 emissions if applicable	CO2 savings if applicable	CO2 savings				CO2	emissions CO2 e	missions CO2 emiss if applica		gs CO2 savings le if applicable				(kgCO2 / m2)

	Table 1: Regulated CO ₂ Emissions using SAP 10 Carbon Factors from GLA Carbon Emission Reporting Spreadsheet											
	TFA (m²)	BER (kg/CO ₂ /m ²)	BER*TFA (kg/CO₂)	TER (kg/CO ₂ /m ²)	TER*TFA (kg/CO ₂)	CO ₂ Reduction (%)						
Baseline		N/A	N/A			0						
Be Lean	1315	11.4	14991	16.2	21303	30%						
Be Green		8.7	11441			24%						
Overall CO ₂ Re	Dverall CO ₂ Reduction											

	Table 2: Regulated CO ₂ Emissions in tonnes											
	TCO ₂	TCO ₂ Reduction	CO ₂ Reduction (%)									
Baseline	21.3	N/A	N/A									
Be Lean	15.0	6.3	29.6%									
Be Green	11.4	3.6	23.7%									
Total		9.9	46.3%									



APPENDIX C: AS BUILT STAGE BRUKLS AND GLA CARBON EMISSION REPORTING SPREADSHEET – FIT-OUT SBEM ASSESSMENT