March 2024

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ENERGY STATEMENT

Proposed Offices and Storage Units
Lidget Lane, Thurnscoe, Rotherham, S63 0BA

Foster Design Associates are Certified Energy Assessors providing energy advisory to the construction industry, under the Elmhurst Energy Accreditation Scheme

We have been tasked to provide an energy assessment / statement for the proposal as above

In the absence of any confirmed policy documentation relative to a staged assessment of energy efficiency or any low / zero carbon energy generation, we have assessed the new build proposal in accordance with Building Regulation Part L and offer our commentary below on the assessment we have carried out.

We have considered the building's energy profile and how it can be affected during its life expectancy, to satisfy ongoing Government Policy as a whole in terms of energy performance and ease of achieving Energy performance ratings.

The storage element of the proposal may not require compliance with Regulation Part L, although our assessment considers the units as if in future they do become subject to Part L compliance.

We have used the Governments standard assessment procedure, SBEM (Simplified Building Energy Model) to carry out this assessment (Version 6.1.e covering buildings constructed post 15th June 2022

This energy assessment should be further evaluated during the construction phase to ensure that the aim of this report is still satisfied and proven.

Prepared By

Dated 12th March 2024

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Certified By Elmhurst Energy / Energy Performance Certificates for Commercial Buildings Cert No EES/015329

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We have considered in our energy assessment the building as a whole over a long term life expectancy of multiple options for future tenants.

Utilising SBEM, the standard Government tool for assessing energy performance compliance, initial indication is that should the storage units be heated via air source heat pump technology, there is no phot voltaic (PV) requirement even when considering basic lighting with no controls.

The building and structure shall be designed and constructed to accommodate future PV to assist future tenant fitouts and future compliance with Government policy as part of long term de-carbonisation targets.

Any alternative fuel, as Part of future tenant's requirements would require the introduction of photo voltaic panels, however the structure should be designed to accommodate this future consideration.

Future fitouts would be required to comply with Part L, however, since storage are generally considered unheated and thus low energy, there is always a possibility that they are Building Regulation Part L exempt.

All measures however should be considered in the future tenant's favour as part of the long term energy profile of the building.

With this in mind plenty of scope for longer term energy performance improvement even when constructed to the minimum fabric U-Values for heat loss as stipulated in Part L (2021)

Due to the nature of the majority of the building form (storage), it wouldn't be necessary to enhance the fabric from standard minimum values, as enhancing such , based on a simple life cycle analysis would represent unnecessary expenditure with excessive payback periods beyond perhaps the life of the building itself..

All measures to reduce any future heat loss would be addressed, for future tenant ease of compliance by constructing to Part L elemental figures, including ultimately carrying out an air test to ensure good practice building construction has been achieved for air permeability.

Dividing walls should be insulated to mitigate heat loss should adjacent units remain unheated.

Generally only the office would be of more critical concern in terms of energy and that by the simple introduction of air heat pump technology as a current norm would be required for this unit's compliance, as long as well controlled high efficacy lighting is also included.

We dont see any concern in achieving future energy performance compliance once the shells are constructed and ready for future heating and / or lighting fitouts.

The following pages are the BRUKL documents, carried out as part of this assessment, for the building as a whole, and for the office component separately.

Neither are out of the ordinary in terms of any longer term assessment that would require carrying out pending building usage or fitout.

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

Lidget Lane S63 0BA

As designed

Date: Wed Mar 13 10:30:42 2024

Administrative information

Building Details

Address: Office and Storage, Lidget Lane, Rotherham, S63 0BA

Certifier details

Name: Adrian Stuart Foster

Telephone number: 01543440330

Address: Foster Design Associates Ltd, Lichfield, WS14 9DU

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

BRUKL compliance module version: v6.1.e.0

Foundation area [m²]: 1514

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$annum	7.32	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	6.92	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	76.73	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	73.5	
Do the building's emission and primary energy rates exceed the targets?	BER =< TER	BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.26	0.26	Z0/02 STORAGE/se
Floors	0.18	0.18	0.18	Z0/02 STORAGE/f
Pitched roofs	0.16	0.16	0.16	Z0/01 OFFICE/c.1
Flat roofs	0.18	-	-	No heat loss flat roofs
Windows** and roof windows	1.6	1.6	1.6	Z0/01 OFFICE/se/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	2.2	2.2	Z0/02 STORAGE SE/D
Vehicle access & similar large doors	1.3	1.5	1.5	Z0/02 STORAGE SE/VD
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)]

$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m²K)]

$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

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

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

Air permeability	Limiting standard	This building
$m^3/(h.m^2)$ at 50 Pa	8	5

Building services

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

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

1- Assumed Storage Heating

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.5	-	-	-	-
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.

2- Office ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	5	-	-	-
Standard value	2.5*	5	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.

1- Instant (not installed)

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	0.5	-
Standard value	1	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

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

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

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z0/01 OFFICE	-	-	-	-	1.5	-	-	-	-	0.65	N/A

General lighting and display lighting	General luminaire	Display light source	
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3
Z0/02 STORAGE	95	-	-

General lighting and display lighting	General luminaire	Display light source	
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3
Z0/03 STORAGE	95	-	-
Z0/01 OFFICE	120	-	-

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

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z0/02 STORAGE	N/A	N/A
Z0/03 STORAGE	N/A	N/A
Z0/01 OFFICE	NO (-65.9%)	NO

Regulation 25A: Consideration of high efficiency 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
Floor area [m^2]	1514	1514
External area [m^2]	4342.4	4342.4
Weather	LEE	LEE
Infiltration [m^3/hm^2@ 50Pa]	5	5
Average conductance [W/K]	977.9	1423.71
Average U-value [W/m^2K]	0.23	0.33
Alpha value* [%]	22.51	34.18

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

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
100	**Storage or Distribution**
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m^2]

	Actual	Notional
Heating	18.89	36.8
Cooling	1.34	0.97
Auxiliary	8.74	2.68
Lighting	10.35	6.18
Hot water	8.59	4.3
Equipment*	32.42	32.42
TOTAL**	**47.9**	**50.93**

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m^2]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*0*	*0*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	208.81	413.03
Primary energy [kWh_{PE}/m^2]	73.5	76.73
Total emissions [kg/m^2]	6.92	7.32

HVAC Systems Performance

System Type		Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Central heating using water: convectors, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	166.7	39.3	20.8	0	8.6	2.23	0	2.5	0
	Notional	378.1	56.3	39.8	0	2.5	2.64	0	---	---
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	110.3	114.8	8.2	9	9.6	3.73	3.55	4	5
	Notional	187.6	103	19.7	6.5	3.8	2.64	4.4	---	---

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

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

Lidget Lane S63 0BA

As designed

Date: Wed Mar 13 10:31:06 2024

Administrative information

Building Details

Address: Office Only, Lidget Lane, Rotherham, S63 0BA

Certifier details

Name: Adrian Stuart Foster

Telephone number: 01543440330

Address: Foster Design Associates Ltd, Lichfield, WS14 9DU

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

BRUKL compliance module version: v6.1.e.0

Foundation area [m^2]: 225

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$annum	6.29	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	5.98	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	67.42	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	64.27	
Do the building's emission and primary energy rates exceed the targets?	BER =< TER	BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.26	0.26	Z0/01 OFFICE/se
Floors	0.18	0.18	0.18	Z0/01 OFFICE/f
Pitched roofs	0.16	0.16	0.16	Z0/01 OFFICE/c.1
Flat roofs	0.18	-	-	No heat loss flat roofs
Windows** and roof windows	1.6	1.6	1.6	Z0/01 OFFICE/se/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	2.2	2.2	Z0/01 OFFICE SE/D
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

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

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

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

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

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

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

Air permeability	Limiting standard	This building
$m^3/(h.m^2)$ at 50 Pa	8	5

Building services

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

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

1- Office ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	5	-	-	-
Standard value	2.5*	5	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.

1- Instant (not installed)

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	0.5	-
Standard value	1	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

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

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

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z0/01 OFFICE	-	-	-	-	1.5	-	-	-	-	0.65	N/A

General lighting and display lighting	General luminaire	Display light source	
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3
Z0/01 OFFICE	120	-	-

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

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z0/01 OFFICE	NO (-65.9%)	NO

Regulation 25A: Consideration of high efficiency 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
Floor area [m^2]	225	225
External area [m^2]	720.2	720.2
Weather	LEE	LEE
Infiltration [m^3/hm^2@ 50Pa]	5	5
Average conductance [W/K]	167.99	196.47
Average U-value [W/m^2K]	0.23	0.27
Alpha value* [%]	33.29	77.41

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

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
100	**Storage or Distribution**
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m^2]

	Actual	Notional
Heating	8.43	20.06
Cooling	8.9	6.46
Auxiliary	9.58	3.75
Lighting	16.1	10.41
Hot water	9.25	4.63
Equipment*	47.08	47.08
TOTAL**	**52.27**	**45.3**

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m^2]

	Actual	Notional
Photovoltaic systems	10.15	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*10.15*	*0*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	226.87	292.98
Primary energy [kWh_{PE}/m^2]	64.27	67.42
Total emissions [kg/m^2]	5.98	6.29

HVAC Systems Performance

System Type		Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	113.1	113.7	8.4	8.9	9.6	3.73	3.55	4	5
	Notional	190.6	102.4	20.1	6.5	3.8	2.64	4.4	---	---

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