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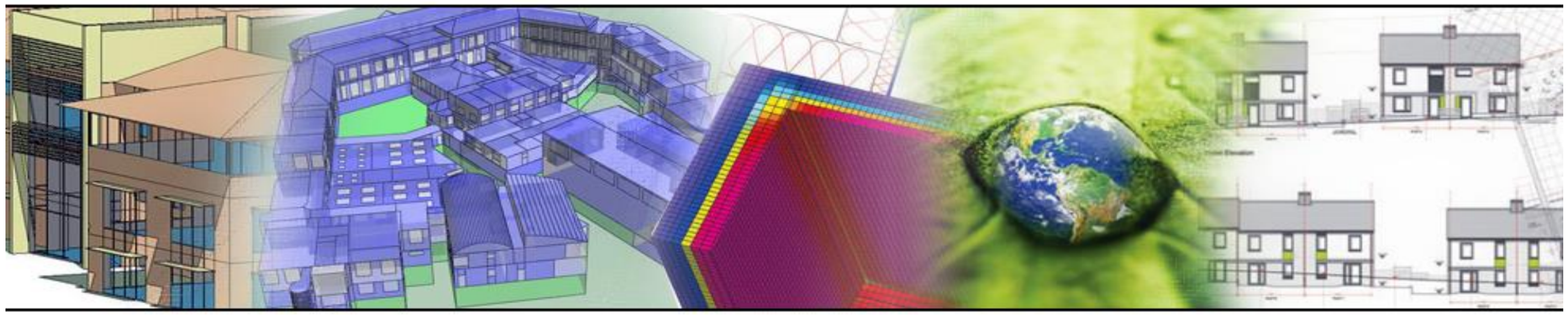


Part L compliance Report, 'as-desgin'

Leybourne Village Hall, West Malling

Client:	Fulkers
Project reference:	127119
Report date:	08/10/2018
Author:	Miquel Garcia

Document prepared by

Name	*Signature*	*Date*
Miquel Garcia		08/10/2018

Revisions

Revision ref.	*Consultant*	*Date*	*Notes*
v01	MG	02/10/2018	inItial 'as-desig' stage simulation
v02	MG	08/10/2018	as-design' stage simulation

1. Introduction & Method

We have produced the Part L calculations to assess and demonstrate compliance of the proposed project with Part L of the Building Regulations. We have calculated the annual energy demand of the proposed building named the BER (Building Emission Rate) and compared it against a comparable target the notional building which is the TER (notional government Target Emission Rate). In order for the actual building to comply with Part L2A the (BER) should be lower than or at least equal the notional (TER) (Criterion 1). The calculation process is based on the National Calculation Methodology modelling guide (NCM) 2013. Part L2A (2010) compliance is achieved through five separate criteria, of which Criterion 1 in particular is compulsory. The five compliance criteria are:

Criterion 1 – Achieving an Acceptable Building CO2 Emission Rate
Criterion 2 – Limits on Design Flexibility
Criterion 3 – Limiting the Effects of Solar Gains
Criterion 4 – Quality of Construction and Commissioning (by contractor)
Criterion 5 – Providing Information or Building Log book provision (by contractor)

Part L calculation assessment requires a wide variety of different influencing factors including:-

a) The building's geometry,
b) its orientation,
c) thermal insulations,
d) fabric performance,
e) heating systems types and their efficiencies with types of controls,
f) artificial lighting type and their efficacy, level of fabric's air leakage rate,
g) ventilation strategy, natural ventilation or mechanical ventilation
h) Renewable technologies if applicable.

Some of the energy model' inputs are already set by the NCM controlled by DCLG and cannot be amended such as the occupancy, systems operation times, hot water consumption, casual internal gains heat gains. However, the other building's energy inputs (a to h above) are also available to help achieve the Part L2A compliance PASS. The BRUKL certificate with the final EPC, which a copy of should be sent to the appointed Building's Controls Officer to be able to sign off the building near hand over.

2. Project Details

2.1 Address

Line 1	
Line 2	
Line 3	
Line 4	
Post Town	
Postcode	ME19 5QL

2.2 EPC lodgement info

EPC data confirmation	
EPC draft approved	

NCM Weather Postcode Area

ME	London

2.3 Part L calculations settings

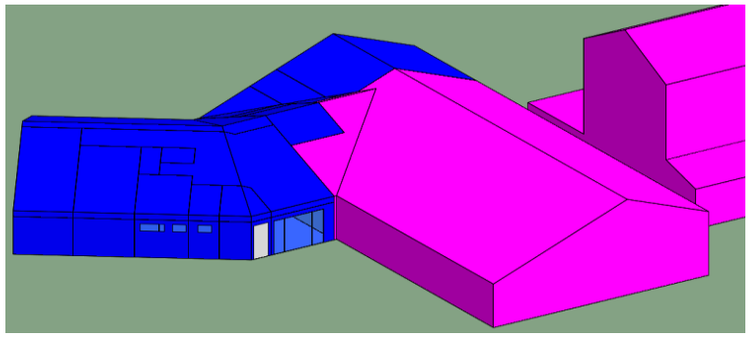
Building Type	Full fit out
Project stage	As designed
NCM Building Type	D2: General assembly & Leisure (Social Clu
Calculation Method	DSM - L5
Analysis Type	Part L2A England (EPC)

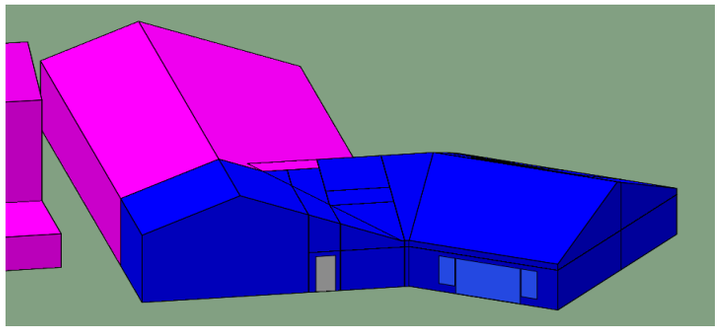
Project notes

New Extension only

Site rotation (angle of North)	30.0 °

2.4 IES 3D Themal model





3. Calculations History

Issue No.	Stage	$KgCO_2/m^2/y$ TER	$KgCO_2/m^2/y$ BER	% BER vs TER	Part L	EPC rating	Notes	Date
1	As designed	22.6	23	-1.77%	FAIL		v01 initial simulation (all M&E specs assumed)	02/10/2018
2	As designed	22.6	22.6	0.00%	PASS		v02 amedments to achieve minimum 'as-design' pass	08/10/2018
3								

All assumptions (in red) must be reviewed by the design team and confirmed to HRS Services.
Variations made to the input parameters are likely to change the overall Building Emissions Rate and therefore may lead to non-compliance.

4. List of drawings

Name	*Revision Issue date*	*Notes*
17-1607-02A - Existing Floor Plans.pdf		received 04.07.2018
17-1607-03A - Fire Strategy Plan.pdf		received 04.07.2018
17-1607-04A - Proposed Floor Plan - 1 of 2.pdf		received 04.07.2018
17-1607-05A - Proposed Floor Plan - 2 of 2.pdf		received 04.07.2018
17-1607-06A - Proposed Roof Plan.pdf		received 04.07.2018
17-1607-07A - Proposed Sections.pdf		received 04.07.2018
17-1607-08A - Proposed Sections.pdf		received 04.07.2018
17-1607-09A - Proposed Elevations.pdf		received 04.07.2018
17-1607-10A - Proposed Elevations.pdf		received 04.07.2018

5. Opeque Elements

5.1 Ground Floors

ref.	*Construction build up summary*	*U-value W/m²K*	*Kappa*	Source
	Floor Kinspan KS1000 RW Trapezoidal - U-value report	0.16	117.55	E-mail

5.2 Walls

ref.	*Construction build up summary*	*U-value W/m²K*	*Kappa*	Source
	~~Wall Rockwool 100mm~~	~~0.29~~	~~105.07~~	
	Wall Kingspan Kooltherm k106 90mm- U-value report	0.17	105.07	TBC

5.3 Roofs & Ceilings

ref.	*Construction build up summary*	*U-value W/m²K*	*Kappa*	Source
	Roof (Kinspan KS1000 RW Trapezoidal) - U-value report	0.18	1.49	E-mail

6. Openings

6.1 Solid opaque Doors

ref.	*Build up*	*U-value W/m²K*	*Source*
	Door	1.6	TBC

6.2 Glazed Doors

ref.	*Build up*	*U-value W/m²K*	*G-value*	*LT value*	*Source*
	(inputted as part of the glazing window system)				

6.3 Glazing windows & curtain walls

ref.	*Build up*	*U-value W/m²K*	*G-value*	*LT value*	*Source*
	External glazing (including glazed doors)	2.0	0.65	0.82	TBC

6.4 Roof Windows & skylights

ref.	*Build up*	*U-value W/m²K*	*G-value*	*LT value*	*Source*
	none				Drawings

6.5 Blinds

ref.	*info*	*Source*

7. Mechanical Ventilation

7.1

Supply and Extract AHU ref.	*SFP (W/l/s)*	*thermal Heat recovery %*	*Notes*	*Source*
none AHU				TBC

7.2

Zonal Extract or Supply Fan ref.	*SFP (W/l/s)*	*Rates [ach]*	*Notes*	*Source*
WCs	0.3	10.00		TBC
~~Bar~~	~~0.3~~	~~10.00~~	omitted	TBC
Kitchen	0.4	30.00		TBC

8. Space heating & cooling

8.1

System ref.	*System description*	*Seas. eff*	*SCOP*	*SEER*	*EER*	*Source*
Sys 1	heating combi gas boiler Central heating using water: radiators	91.00%	-	-	-	TBC
Sys 2						
Sys 3						
Sys 4						
Sys 5						
Sys 6						

9. DHWS (Domestic Hot Water System)

9.1

DHWS generator ref.	*DHW heater type*	*Seasonal efficiency/COP*	*delivery efficiency*	*System efficiency /COP*	*Notes*	*Source*
DHW 1	combi gas boiler	0.91			throughout the new extension	TBC
DHW 2	~~electric heater~~	~~1.00~~			~~WCs~~	~~TBC~~
DHW 3						
DHW 4						
DHW 5						

9.2

DHW Storage		*Volume [L]*	*Standing heat losses kWh/day*	*kWh/day/l*	*Notes*	*Source*
DHW 1	~~electric heater~~	~~15.00~~	~~0.62~~	~~0.04133~~	~~WCs (assumed Aquapoint AP3/15)~~	~~TBC~~
DHW 2						
DHW 3						
DHW 4						
DHW 5						

		y/n	*Notes*	*Source*
9.3	**DHW Secondary Circulation data**	No		TBC

9.3.1 *pump power* ____ W — *Notes* ____ *Source* ____

9.3.2 *loop (flow & return) length* ____ m — ____ ____

9.3.4 *Circulation losses* ____ [w/m] — ____ ____

9.3.5 *Timer switch* ____ — ____ ____

10. Lighting system

10.1 ***NOTES: Extract from section 12.4 of the non-domestic building services compliance guide***

"Lighting in new and existing buidlings should meet the recommended minimum standards for:
i. efficacy (averaged over the whole area of the applicable type of space in the building) and controls in Table 42"

For general lighting in office, industrial and storage spaces:

The recommended minimum lighting efficacy with controls in new and existing buildings stipulates an initial luminaire lumens/circuit-watt of 55LL/cW under 2010 BR and 60LL/cW for 2013 BR

For general lighting in other types of space:

The average initial efficacy should be not less than 60 lamp lumens per circuit-watt under 2013 BR and 55 lamp lumens per circuit-watt under 2010 BR

10.2 Lighting efficacy

Input data method	*Notes*	*Source*
Total Average Lighting Efficacy (Lm/cW)	assumed 85Lm/W (instead of minimum 60Lm/W of Part L)	TBC

Notes

10.3 Lighting controls

	Yes/No	*Notes*	*Source*
Photo-electric Daylight dimming and PIR occ sens type + Man ON-Auto Dimm			
PIR absence/occupancy sensors (type Auto-ON-OFF)		assumed PIR in WCs	TBC
Manual controls only		assumed throughout the building (except above rooms with PIR)	TBC
Display Manual Switching			
Constant Illuminance controls			

11. Building Tests and Controls features

11.1 Fabric Air permeability

As designed 15.00 *m³/hr/m²@50Pa* Measured (as-built) required? *m³/hr/m²@50Pa* Source TBC

Default Part L (area <500m2)

11.2 Building Management System (BMS) & Controls features

	Controls & metering	*Yes/No*	*Notes*	*Source*
11.2.1	HVAC system metered (BMS)	No		Drawings
11.2.2	HVAC metered with 'out of range' values warn	No		Drawings
11.2.3	Lighting metered with 'out of range' values warn	No		Drawings
11.2.4	Power Factor Correction equipment	<0.9	none	Drawings
11.2.5	Demand Control Ventilation (DCV)	No		Drawings

11.3 Ductwork leakage pressure class

	Yes/No	*Notes*	*Source*
Low pressure A		n/a	
Low pressure B			
Low pressure C			

11.4 AHU casing leakage standards (Eurovent/CEN class)

	Yes/No	*Notes*	*Source*
class L1		n/a	
class L2			
class L3			

12. LZC's (Low or Zero Carbon Technologies)/Renewables

12.1

System ref.	*LZC type*	*Yes/No*	*Notes*	*Source*
LZC 1	PV solar	No		
LZC 2	CHP	No		
LZC 3	Solar thermal	No		
LZC 4	District heating scheme	No		
LZC 5	Air source Heat pumps	No		

Notes - Brief description of the LZC system

Appendix A. Model Input Parameters

Room Name	Lighting and Controls												Systems		Mechanical Ventilation						
	Luminaire Efficacy (lm/W)	Light Power Density (W/m²/100lux)	Achieved Illuminance (lux)	Display Lighting Uses Efficient Lamps?	Display Lamp Efficacy (lm)	Display Lighting Time Switching?	Photoelectric Control?	Photoelectric Control Type	Photoelectric Sensor Time-swith?	Occupancy Sensing	Occupancy Time-swith?	Parasitic Power Lighting Controls (W/m²)	Heating / Cooling / Vent System	DHW System	Supply?	Supply SFP (W/l/s)	Extract?	Extract rate (l/s)	Extract SFP (W/l/s)	Extract Fan remote from zone?	DCV?
z0-A05 Bar	85.00	1.64		No		No	No			NONE			Heating gas boiler - Nat.Vent	DHW combi gas boiler	-	-	No				No
z0-A03 Corridor	85.00	2.01		No		No	No			NONE			None	DHW combi gas boiler	No		No				-
z0-A03b Corridor	85.00	2.89		No		No	No			NONE			None	DHW combi gas boiler	No		No				-
z0-A17 Corridors/Small Hall	85.00	1.63		No		No	No			NONE			None	DHW combi gas boiler	No		No				-
z0-A01 Small Hall/Meeting Room	85.00	1.43		No		No	No			NONE			Heating gas boiler - Nat.Vent	DHW combi gas boiler	-	-	No				No
z0-A04 Stage/Main Hall	85.00	1.73		No		No	No			NONE			Heating gas boiler - Nat.Vent	DHW combi gas boiler	-	-	No				No
z0-A02 Kitchen	85.00	1.80		No		No	No			NONE			Heating gas boiler - local extract fan	DHW combi gas boiler	No		Yes	253.76	0.40		No
z0-A18 Store bar	85.00	2.22		No		No	No			NONE			None	DHW combi gas boiler	No		No				-
z0-A23 Store	85.00	1.65		No		No	No			NONE			None	DHW combi gas boiler	No		No				-
z0-A24 Store	85.00	1.61		No		No	No			NONE			None	DHW combi gas boiler	No		No				-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
Roof Void	-	-		No		No	No			NONE			-	-	-	-	-	-	-		-
z0-A19 WC/Dis	85.00	2.56		No		No	No			AUTO-ON-OFF	No	0.10	Heating gas boiler - zonal extract fan	DHW combi gas boiler	No		Yes	23.34	0.40		No
z0-A20 WC/Male	85.00	1.88		No		No	No			AUTO-ON-OFF	No	0.10	Heating gas boiler - zonal extract fan	DHW combi gas boiler	No		Yes	52.89	0.40		No
z0-A21 WC/Female	85.00	3.48		No		No	No			AUTO-ON-OFF	No	0.10	Heating gas boiler - zonal extract fan	DHW combi gas boiler	No		Yes	14.09	0.40		No
z0-A22 WC/Female	85.00	3.58		No		No	No			AUTO-ON-OFF	No	0.10	Heating gas boiler - zonal extract fan	DHW combi gas boiler	No		Yes	12.67	0.40		No