

**PRELIMINARY ENERGY ASSESSMENT REPORT
FOR THE
EXTENSION
AT
LUCAN SHOPPING CENTRE,
NEWCASTLE ROAD, LUCAN, CO DUBLIN**

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1.0 INTRODUCTION

The purpose of the report is to provide a preliminary building energy statement outlining the energy performance of the proposed retail units and identifying the proposed services and renewable design strategy to demonstrate compliance with the building regulations for the commercial development.

In addition, it demonstrates compliance with the sustainable energy policies outlined in Sections 1.15, 10.2.2 and 11.7 of the South Dublin County Council Development Plan 2016 – 2022.

2.0 ENERGY STRATEGY

The Non-Domestic Energy Assessment Procedure (NEAP) has been used for the purpose of this compliance check for the landlord common area and 2 Nr retail units. The following is a summary of the information used to assess the Preliminary Building Energy Rating and TGD Part L Compliance.

This report outlines the energy performance of the proposed and compares with the standards prescribed in the building regulations non-domestic TGD Part L 2017. Based on the results of the provisional BER assessments it has been determined that the various areas shall achieve a minimum BER rating of A3.

This is achieved through high levels of insulation and low fabric U values in the building design coupled with energy efficient lighting, good air tightness, energy efficient heating system and renewables in each area of the proposed landlord and retail units.

3.0 BUILDING REGULATIONS – PART L LEGISLATION BACKGROUND

Technical Guidance Document Part L – Conservation of Fuel and Energy – Other than Dwellings sets out the requirements for the minimum fabric and air permeability requirements, maximum primary energy use and carbon dioxide (CO₂) emissions as well as the minimum amount of energy derived from renewable sources, as calculated using the Non-Domestic Energy Assessment Procedure (NEAP) methodology. The compliance with the requirements of this document is compulsory for all new dwellings and material alterations to existing dwellings.

Three design aspects demonstrate compliance:

1. The quality of building fabric
2. The limitation of primary energy use and CO₂ emissions
3. The use of energy from renewable sources

In accordance with the requirements of The European Energy Performance of Buildings Directive Recast (EPBD) all new buildings must achieve the Nearly Zero Energy Building (NZEB) standard after 1st January 2020.

The tables below compare the minimum requirements of TGD-L 2017:

Maximum Building Fabric U-values

Building Fabric Element	TGD-L 2017 / NZEB
	U-value (W/m ² K)
- Pitched Roof	0.16
- Flat Roof	0.20
- External Walls	0.21
- Ground Floor / Exposed Floor	0.21
- External doors, Windows, Rooflights	1.60
Air Permeability (Air Tightness)	5.0 m ³ /h m ²

Energy / Carbon Performance Targets

Element	TGD-L 2019 / NZEB
Maximum Permitted Energy Performance Coefficient (MPEPC)	1.0
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15

Renewables	TGD-L 2019 / NZEB
Minimum Amount of Energy from Renewable Sources	20%

Final BER Assessment & Certificate

The developer / owner of the property is required to obtain the final BER (Building Energy Rating) certificate once the building is completed.

They are also obliged to demonstrate the compliance with the requirements of the Building Regulations. Building regulation Part L compliance is verified using NEAP software, the same software that is used to generate BER certificates.

For the insulation throughout the core area SEAI will require correspondence from the architect or assigned certifier confirming the final specification of all the type and extent of insulation applied in the floor, walls & roof etc.

For the external doors, windows and rooflights SEAI require a document from the manufacturer confirming the address of the property and certain technical details on the products. We can advise further as you are selecting various products and systems.

The following represents alternative approaches to ensuring provision with regard to limitation of thermal bridging: -

- (i) adopt Acceptable Construction Details for wall constructions similar to those for dwellings where appropriate (see TDG Part L Appendix D, Table D1) and/or other certified details (as defined in (ii) below) for all key junctions or
- (ii) use certified details which have been assessed in accordance, and comply with TGD Part L Appendix D, e.g., certified by a third party certification body such as Agrément or equivalent; or certified by a member of the NSAI approved thermal modellers scheme or equivalent; or certified thermal bridging details from an accredited database such as the BRE Certified Thermal Details and Products Scheme for all key junctions.

4.0 DETAILED DESIGN (TGD-L 2017 COMPLIANCE)

The construction of the landlord common area and retail units will be designed and constructed in accordance with the building regulations and best practices and the key target U-values and air permeability level can be summarised as follows:

Fabric Insulation

From review of the architect's drawings the following target U-values have been adopted in DEAP software for the project. This is subject to further review based on further discussions with client and architect as to the suitability and costs for the proposed design solution.

Fabric	Target U Value
Floor	0.21W/m ² K
External walls	0.18W/m ² K
Flat roof	0.20W/m ² K
External windows Doors	1.50W/m ² K
Air permeability	5.0 m ³ /h m ²

Detail of Building elements

1. Ground floor Floors

The proposed ground floor build-up (non-heated) is required to achieve a U-value not exceeding of 0.21 W/m²K.

2. External walls

The proposed external wall build-up is required to achieve a U-value not exceeding of 0.18 W/m²K.

3. Flat roof

The proposed flat roof insulation build-up is required to achieve a U-value not exceeding 0.20 W/m²K.

4. External Doors and Windows

The proposed target U value on the windows is 1.5 W/m²K and the total solar energy transmittance (T-Solar) of 0.64 and light transmittance (L-Solar) of 0.70.

All windows must be certified to EN10077 or EN12567; or have an NSAI WEP, BFRC or British Kitemark window performance certificate.

Other efficient window's and door's need to be re-assessed in DEAP to confirm compliance with Building regulations. The window specialist and builder should provide evidence of the above to the BER assessor that the documentation for the windows is adequate and to SEAI standards prior to purchasing the window systems.

5. Thermal Bridge Free Construction

It is the responsibility of the architect or assigned certifier to produce the thermal bridge details and PSI values as required for each junction.

For an improved Thermal Bridging Factor it is critical that all construction details are provided as per the Acceptable Construction Details (ACDs) for limiting thermal bridges and the Architect can certify the use of ACDs exactly as per each detail upon house completion. Each junction must be detailed on the drawings and numbered in accordance with the ACD it corresponds to. SEAI will review this as part of completion of the BER cert for the dwelling.

6. Air permeability

The target air permeability is 5.0m³/h/m² for a non-domestic building required under TGD-L 2017.

7. Renewable Technologies

In order to demonstrate compliance with the Building Regulations Part L 2017, each common core area is required to have a portion of the energy it uses provided from a source of renewable energy. In this case the required renewable is provided by a number of solar PV panels on the roof to comply with TGD-L 2017. Please see table below for details.

Apartment Block	Solar PV Panels (Nr)	PV Panel Output	Panel Orientation
Landlord Common Area	22	380w	South 15°
Retail Unit 1	20	380w	South 15°
Retail Unit 2	18	380w	South 15°

8. Heating system

Common area heating in Common areas

We have assumed in the NEAP software that Direct acting convection heaters with time controller in the landlord common areas.

Unit Heating in Retail units

We have assumed for the purpose of the NEAP software that heating is provided by an air conditioning system, a HVAC MITSUBISHI PUHY-P200YNW-A or similar AC system is included in the calculations for each retail unit. NZEB compliance shall be confirmed by the retail provider, details to be agreed with Landlord.

Other HVAC units will be included by the retail operator and the NEAP calculation shall be re-calculated by the retail unit operator to the landlord for agreement.

9. Ventilation

Natural ventilation is assumed in the NEAP software for the Common area with openable windows.

For each of the retail units we have assumed in the NEAP software that mechanical supply/extract system with the specific fan power of 0.96 w/l/s is provided in each unit

10. Lighting

A energy efficient lighting design is assumed in the NEAP software for each retail unit to assist energy efficiency and reduce PV panel count as above.

APPENDIX A
BER NEAP PART L COMPLIANCE REPORTS

BRIRL Output Document

Compliance Assessment with the Building Regulations (Ireland) TGD-Part L 2017

This report demonstrates compliance with specific aspects of Part L of the Building Regulations. Compliance with all aspects of Part L is a legal requirement. Demonstration of how compliance with every aspect is achieved may be sought from the Building Control Authority.

LUCAN SC UNIT 1

Date: Tue Apr 27 16:37:36 2021

Administrative information

Building Details

Address: UNIT 1, LUCAN SC EXTENSION, Co. Dublin,
A65 F4E2

NEAP

Calculation engine: SBEMIE
Calculation engine version: v5.5.h.2
Interface to calculation engine: G-ISBEM
Interface to calculation engine version: v23.0
BRIRL compliance check version: v5.5.h.2

Client Details

Name:
Telephone number:
Address:

Energy Assessor Details

Name: Eamonn Brown
Telephone number: 0877101120
Email: eamonn@mande.ie
Address: unit 4 Oak Close, dublin 12, XX XXX

Primary Energy Consumption, CO2 Emissions, and Renewable Energy Ratio

The compliance criteria in the TGD-L have been met.

Calculated CO2 emission rate from Reference building	24.2 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	22 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.91
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	124.5 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	111.9 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.9
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.18
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.21	0.6	0.21	z1/1stFlr1/nw
Floors (ground and exposed)	0.21	0.21	0.6	0.21	z0/GrndFlr1_C/f
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.2	0.3	0.2	z1/1stFlr1/c
Windows, roof windows, and rooflights	1.6	1.6	3	1.6	z0/GrndFlr1_C/se/g
Personnel doors	1.6	-	3	-	"No ext. personnel doors"
Vehicle access & similar large doors	1.5	-	3	-	"No ext. vehicle access doors"
High usage entrance doors	3	-	3	-	"No ext. high usage entrance doors"

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

* There might be more than one surface with the maximum U-value. ** Automatic U-value check by the tool does not apply to curtain walls whose area-weighted average and individual limiting standards are 1.8 and 3 W/m2K, respectively.

Air Permeability	Upper Limit	This Building's Value
m3/(h.m2) at 50 Pa	5	5

Building Services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Building Regulations documents 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	>0.95

1- MAIN A.C.

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.7	8.45	-	-	-
Standard value	2.75	4.14**	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 split and multi-split air conditioners <6 kW. For systems 6-12 kW, limiting efficiency is 3.87.					

1- Default HWS

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	0.008
Standard value	1	N/A

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Building Regulations documents
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	SFP [W/(l/s)]										HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
	Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1		
z0/GmdFlr1_A		-	1	-	-	-	-	-	-	-	-	N/A
z0/GmdFlr1_B		-	1	-	-	-	-	-	-	-	-	N/A
z1/1stFlr1		-	1	-	-	-	-	-	-	-	-	N/A
z0/GmdFlr1_C		-	1	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
	Standard value	60	60	22
z0/GmdFlr1_A	-	100	-	114
z0/GmdFlr1_B	-	100	-	52
z1/1stFlr1	109	-	-	672
z0/GmdFlr1_C	-	282	15	4326

Solar Gain in Summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
z0/GrndFlr1_A	N/A	N/A
z0/GrndFlr1_B	N/A	N/A
z1/1stFlr1	N/A	N/A
z0/GrndFlr1_C	NO (-50.2%)	NO

Overheating

Zone	Risk of overheating
z0/GrndFlr1_A	Significant risk
z0/GrndFlr1_B	Low risk
z1/1stFlr1	N/A
z0/GrndFlr1_C	N/A

Primary Energy Contributions to RER

Technology	kWh/annum
Photovoltaic systems	6691.4
Wind turbines	0
Solar thermal for water heating	0
Biomass for space and/or water heating	0
Biogas for space and/or water heating	0
Heat pumps for space and/or water heating	14463.4
CHP generators for space and/or water heating	0
District heating for space and/or water heating	0
Process energy	0
Total for renewables	21154.8
Total for renewables & non-renewables	118122.0

Technical Data Sheet (Actual vs. Reference Building)

Building Global Parameters

	Actual	Reference
Area (m2)	957	957
External area (m2)	1694	1694
Weather	DUB	DUB
Infiltration (m3/hm2 @ 50Pa)	5	3
Average conductance (W/K)	427.25	488.9
Average U-value (W/m2K)	0.25	0.29
Alpha value* (%)	7.5	13.52

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

Building Use

% area	Building Type
100	Retail/Financial and Professional services Restaurants and Cafes/Drinking Est /Takeaways Offices and Workshop businesses General Industrial and Special Industrial Groups Storage or Distribution Hotels Residential Inst Hospitals and Care Homes Residential Inst Residential Primary schools Residential Inst Universities and colleges Secure Residential Inst Residential spaces Non-residential Inst Community/Day Centre Non-residential Inst Libraries, Museums, and Galleries Non-residential Inst Primary Education Non-residential Inst Primary Health Care Building Non-residential Inst Law 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 Non-residential Inst Post-primary Education Residential Inst Residential Post-primary schools

HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] No Heating or Cooling									
Actual	198.9	14.4	0	0	4.4	0	0	0	0
Reference	182.9	51.5	0	0	4.1	0	0	—	—
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	66.9	152.1	4.2	7	4.5	4.38	6	4.7	8.45
Reference	60.4	160.2	20.5	12.4	7.6	0.82	3.6	—	—

Key to terms

Alpha value (%)	= percentage of the building's average heat transfer coefficient which is due to thermal bridging
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
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

BRIRL Output Document

Compliance Assessment with the Building Regulations (Ireland) TGD-Part L 2017

This report demonstrates compliance with specific aspects of Part L of the Building Regulations. Compliance with all aspects of Part L is a legal requirement. Demonstration of how compliance with every aspect is achieved may be sought from the Building Control Authority.

LUCAN UNIT 2

Date: Tue Apr 27 16:51:36 2021

Administrative information

Building Details

Address: UNIT 2, LUCAN, SHOPPING CENTER
EXTENSION, Co. Dublin, A65 F4E2

NEAP

Calculation engine: SBEMIE
Calculation engine version: v5.5.h.2
Interface to calculation engine: G-ISBEM
Interface to calculation engine version: v23.0
BRIRL compliance check version: v5.5.h.2

Client Details

Name:
Telephone number:
Address:

Energy Assessor Details

Name: Eamonn Brown
Telephone number: 0877101120
Email: eamonn@mande.ie
Address: unit 4 Oak Close, dublin 12, XX XXX

Primary Energy Consumption, CO2 Emissions, and Renewable Energy Ratio

The compliance criteria in the TGD-L have been met.

Calculated CO2 emission rate from Reference building	28 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	25.4 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.91
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	143.4 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	129.1 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.9
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.17
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.21	0.6	0.21	z0/1stFlr1/nw
Floors (ground and exposed)	0.21	-	0.6	-	"No heat loss floors"
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.2	0.3	0.2	z0/1stFlr1/c
Windows, roof windows, and rooflights	1.6	1.6	3	1.6	z0/1stFlr1/se/g
Personnel doors	1.6	-	3	-	"No ext. personnel doors"
Vehicle access & similar large doors	1.5	-	3	-	"No ext. vehicle access doors"
High usage entrance doors	3	-	3	-	"No ext. high usage entrance doors"

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

* There might be more than one surface with the maximum U-value. ** Automatic U-value check by the tool does not apply to curtain walls whose area-weighted average and individual limiting standards are 1.8 and 3 W/m2K, respectively.

Air Permeability	Upper Limit	This Building's Value
m3/(h.m2) at 50 Pa	5	5

Building Services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Building Regulations documents 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	>0.95

1- MAIN

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.8	8.45	-	-	-
Standard value	2.75	4.14**	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 split and multi-split air conditioners <6 kW. For systems 6-12 kW, limiting efficiency is 3.87.					

1- Default HWS

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	0.011
Standard value	1	N/A

No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable.

General lighting and display lighting	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Zone name				
Standard value	60	60	22	
z0/1stFlr1	-	275	15	2847

Solar Gain in Summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
z0/1stFlr1	NO (-45%)	NO

Overheating

No zones in project where overheating risk check is applicable.

Primary Energy Contributions to RER

Technology	kWh/annum
Photovoltaic systems	6022.3
Wind turbines	0
Solar thermal for water heating	0
Biomass for space and/or water heating	0
Biogas for space and/or water heating	0
Heat pumps for space and/or water heating	4657.9
CHP generators for space and/or water heating	0
District heating for space and/or water heating	0
Process energy	0
Total for renewables	10680.2
Total for renewables & non-renewables	61089.6

Technical Data Sheet (Actual vs. Reference Building)

Building Global Parameters

	Actual	Reference
Area (m2)	443	443
External area (m2)	644	644
Weather	DUB	DUB
Infiltration (m3/hm2 @ 50Pa)	5	3
Average conductance (W/K)	178.93	201.01
Average U-value (W/m2K)	0.28	0.31
Alpha value* (%)	7.04	15.61

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

Building Use

% area Building Type

% area	Building Type
100	Retail/Financial and Professional services Restaurants and Cafes/Drinking EsL/Takeaways Offices and Workshop businesses General Industrial and Special Industrial Groups Storage or Distribution Hotels Residential Inst. Hospitals and Care Homes Residential Inst. Residential Primary schools Residential Inst. Universities and colleges Secure Residential Inst Residential spaces Non-residential Inst. Community/Day Centre Non-residential Inst. Libraries, Museums, and Galleries Non-residential Inst. Primary Education Non-residential Inst. Primary Health Care Building Non-residential Inst. Law 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 Non-residential Inst. Post-primary Education Residential Inst. Residential Post-primary schools

HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	44.6	233.6	2.8	10.8	0	4.47	6	4.8	8.45
Reference	37.5	203.9	12.7	15.7	3.6	0.82	3.6	—	—

Key to terms

Alpha value (%)	= percentage of the building's average heat transfer coefficient which is due to thermal bridging
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
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

BRIRL Output Document

Compliance Assessment with the Building Regulations (Ireland) TGD-Part L 2017

This report demonstrates compliance with specific aspects of Part L of the Building Regulations. Compliance with all aspects of Part L is a legal requirement. Demonstration of how compliance with every aspect is achieved may be sought from the Building Control Authority.

LUCAN COMMON AREA

Date: Tue Apr 27 17:23:25 2021

Administrative information

Building Details

Address: COMMON AREA, LUCAN SC, Co. Dublin, A65 F4E2

NEAP

Calculation engine: SBEMIE
Calculation engine version: v5.5.h.2
Interface to calculation engine: G-ISBEM
Interface to calculation engine version: v23.0
BRIRL compliance check version: v5.5.h.2

Client Details

Name:
Telephone number:
Address:

Energy Assessor Details

Name: Eamonn Brown
Telephone number: 0877101120
Email: eamonn@mande.ie
Address: unit 4 Oak Close, dublin 12, XX XXX

Primary Energy Consumption, CO2 Emissions, and Renewable Energy Ratio

The compliance criteria in the TGD-L have been met.

Calculated CO2 emission rate from Reference building	16.8 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	18 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	1.07
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	91.1 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	91.3 kWh/m2.annum
Energy Performance Coefficient (EPC)	1
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.46
Minimum Renewable Energy Ratio	0.2

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.21	0.6	0.21	z1/1stFlr1/nw
Floors (ground and exposed)	0.21	0.21	0.6	0.21	z0/GrndFlr1/f
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.2	0.3	0.2	z1/1stFlr1/c
Windows, roof windows, and rooflights	1.6	1.6	3	1.6	z1/1stFlr1/se/g
Personnel doors	1.6	-	3	-	"No ext. personnel doors"
Vehicle access & similar large doors	1.5	-	3	-	"No ext. vehicle access doors"
High usage entrance doors	3	-	3	-	"No ext. high usage entrance doors"

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

* There might be more than one surface with the maximum U-value. ** Automatic U-value check by the tool does not apply to curtain walls whose area-weighted average and individual limiting standards are 1.8 and 3 W/m2K, respectively.

Air Permeability	Upper Limit	This Building's Value
m3/(h.m2) at 50 Pa	5	5

Building Services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Building Regulations documents 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	>0.95

1- MAIN

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
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					NO
** No automatic check on chiller efficiency has been performed by the tool in this case. Refer to Building Regulations documents for limiting efficiency.					

1- Default HWS

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	0
Standard value	1	N/A

No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable.

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
z1/1stFlr1	-	87	-	169
z1/1stFlr2	-	166	-	140
z0/GndFlr1	-	76	-	169

Solar Gain in Summer

No zones in project where solar gain check is applicable.

Overheating

Zone	Risk of overheating
z1/1stFlr1	High risk
z1/1stFlr2	Low risk
z0/GndFlr1	High risk

Primary Energy Contributions to RER

Technology	kWh/annum
Photovoltaic systems	7360.5
Wind turbines	0
Solar thermal for water heating	0
Biomass for space and/or water heating	0
Biogas for space and/or water heating	0
Heat pumps for space and/or water heating	0
CHP generators for space and/or water heating	0
District heating for space and/or water heating	0
Process energy	0
Total for renewables	7360.5
Total for renewables & non-renewables	15882.7

Technical Data Sheet (Actual vs. Reference Building)

Building Global Parameters

	Actual	Reference
Area (m2)	93	93
External area (m2)	285	285
Weather	DUB	DUB
Infiltration (m3/hm2 @ 50Pa)	5	5
Average conductance (W/K)	125.38	126.52
Average U-value (W/m2K)	0.44	0.44
Alpha value* (%)	10.41	18.99

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

Building Use

% area Building Type

% area	Building Type
100	Retail/Financial and Professional services Restaurants and Cafes/Drinking Est./Takeaways Offices and Workshop businesses General Industrial and Special Industrial Groups Storage or Distribution Hotels Residential Inst. Hospitals and Care Homes Residential Inst. Residential Primary schools Residential Inst. Universities and colleges Secure Residential Inst. Residential spaces Non-residential Inst. Community/Day Centre Non-residential Inst. Libraries, Museums, and Galleries Non-residential Inst. Primary Education Non-residential Inst. Primary Health Care Building Non-residential Inst. Law 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 Non-residential Inst. Post-primary Education Residential Inst. Residential Post-primary schools

HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity									
Actual	187.9	288.7	65.2	0	0	0.8	0	1	0
Reference	247.5	146	84	0	0	0.82	0	—	—

Key to terms

Alpha value (%)	= percentage of the building's average heat transfer coefficient which is due to thermal bridging
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
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