

# GLA Carbon Emissions Reporting Spread

## BACKGROUND AND PURPOSE

From **January 2023** planning applicants for new and refurbishments schemes are required to use this spreadsheet for both domestic and non-domestic uses. This spreadsheet ensures a consistent and transparent process alternative methodologies or tools. This is to ensure consistency and to minimise the need for clarifications.

Planning applicants should use Part L 2021 BRUKL and SAP outputs to fill in this spreadsheet which serves strategy. **It is solely for the purpose of reporting compliance with the London Plan to the GLA and dc**

The spreadsheet has been developed to fit as wide a range of policy compliant approaches for schemes as does not serve should contact the GLA at: **ZeroCarbonPlanning@london.gov.uk**. Applicants must not an amendment to the spreadsheet will invalidate the CO<sub>2</sub> emission calculations.

Applicants should note that we will update the spreadsheet from time to time to ensure it remains fit for purpose submission.

**Any feedback on this spreadsheet should be sent to: ZeroCarbonPlanning@london.gov.uk.**

## METHODOLOGY

Applicants are required to complete **all** light blue input cells in the applicable tabs prior to submission ('Development Outputs', 'EUI & space heating demand' and 'GLA Summary Tables').

### Input Data

For all applications, the input data required includes:

#### 'Development information' tab

- Table 1. Application Completeness Check
- Table 2. Development Details
- Table 3. Bespoke District Heating Carbon Factors (if applicable)
- Table 4. Distribution loss factor (if applicable)
- Table 5. SCoP Calculation Methodology (if applicable)

#### 'Part L Output' tab

- Type of units modelled
- Area of units modelled (m<sup>2</sup>)
- Number of units modelled
- Total area represented by model (m<sup>2</sup>)
- TER, DER and BER figures (kgCO<sub>2</sub>/m<sup>2</sup> p.a.)
- Notional building Energy saving/generation technologies (-) for residential (kgCO<sub>2</sub> p.a.)
- Notional building Displaced electricity (-) for non-residential (kWh//m<sup>2</sup> p.a.)
- TFEE and DFEE figures for residential (kWh//m<sup>2</sup> p.a.)

#### **'GLA Summary tables' tab**

- Unregulated figures (tCO<sub>2</sub> p.a.)
- Actual and notional building cooling demand (MJ/m<sup>2</sup>)

Note: The total carbon emissions figures in the 'GLA Summary tables' tab are now calculated based on the added to ensure that the carbon emission figures align with the development area schedule (included withir

#### **'EUI & Space Heating Demand' tab**

- Confirmation of building type
- Gross Internal Area (GIA) in m<sup>2</sup>
- Energy Use Intensity (EUI) per fuel type (kWh p.a.)
- Space heating demand (kWh p.a.)
- Confirmation that both regulated and unregulated energy use has been included
- Confirmation of predicted energy use methodology, including modelling software
- Notes on the assessment, including justification if expected performance differs from Table 4

Note: Applicants can use the 'be seen' methodology or an alternative predictive energy modelling methodol. Where 'be seen' reporting is used the reported EUI and space heating demand should align with energy coi via the online webform.

#### **Required Part L Outputs for the GLA spreadsheet**

##### Domestic Part L Outputs:

For the domestic conversion applicants are required to use the outputs from the SAP TER and DER worksf each input cell. Note: The SAP worksheet rows are based on a communal heating system in line with GLA | from the GLA as to whether the approach will be acceptable.

##### Non-domestic Part L Outputs:

The required Part L outputs from non-domestic modelling will be energy consumption by **fuel type** (e.g. gas

Regarding the non-domestic uses, the applicant can determine whether each individual unit will be modelled generated for the entire development. The applicant should, however, include the results from all BRUKL or ANALYSIS" sections. Applicants are generally encouraged to model each individual typology independently

#### **Validation Check**

Applicants must ensure that the calculated TER/DER/BER in this spreadsheet matches the actual values fr must accompany the energy assessment so that results can be validated.

# Spreadsheet

spreadsheet to report the anticipated carbon performance of a development. It should be used for presenting Part L 2021 CO<sub>2</sub> emission performance. The GLA will not accept the use of during the planning application determination period.

as a the final step in reporting the carbon emission performance of the proposed energy **does not replace Part L calculations submitted for Building Regulations approval.**

possible. Any planning applicants with a policy compliant approach that the spreadsheet tend or alter the spreadsheet to suit non-policy compliant strategies. Any unauthorised

use. Applicants are expected to use the latest version at the time of the planning

Development Information', 'Part L

area input for 'Total area represented by model (m<sup>2</sup>)'. This input requirement has been  
in the DAS) rather than the number of representative models.

ogy to fill in the required EUI & space heating demand information.  
consumption data reported in the planning stage submission for the 'be seen' policy, submitted

sheets. To assist in the process the required SAP worksheet rows have been referenced in  
policy and guidance. Applicants proposing individual systems must first seek confirmation

(electricity, natural gas). The energy consumption by end use (e.g. heating, hot water  
d independently and apportioned to the entire scheme or whether a single model will be  
Outputs generated for the proposed development under the "NON-RESIDENTIAL CO<sub>2</sub>  
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om the Part L 2021 BRUKL and SAP worksheets. The Part L 2021 BRUKL and SAP sheet

**TABLE 1. APPLICATION COMPLETENESS CHECK**

Development information tab (Tables 1-4) completed and included in appendix of energy strategy?
Part L outputs tab completed
EUI & space heating demand completed
Confirmation that the planning stage webform will be completed at planning application submission and that the Be Seen process and reporting responsibilities are fully understood, including the requirement for as-built and in-use stage reporting to be undertaken (or where the legal owner changes from one reporting stage to another that the responsible party will be notified).

**TABLE 2. DEVELOPMENT DETAILS**

Application details	Date of Application
	Local Planning Authority
	Confirmed carbon offset price (£/tonne of carbon dioxide)
	Evidence of communication on the carbon offset price included in the energy assessment (Y/N).
	Residential units number (Part L1)
	Non-residential floor area in m <sup>2</sup> (Part L2)
Heat risk	CIBSE TM59 undertaken for residential development (Y/N)
	CIBSE TM52 undertaken for non-residential development (Y/N)
	All sample units meet CIBSE criteria with DSY1 weather file (Y/N)
	DSY2 and DSY3 included in overheating assessments (Y/N)
	Residential g-value
	% Glazing Ratio over façade
	External shading proposed (Y/N)
Energy efficiency measures	Target Fabric Energy Efficiency met (Y/N)
	Mechanical Ventilation with Heat Recovery included (Y/N)
	Waste Water Heat Recovery (Y/N)
	Low energy lighting (Y/N)
District heating connection	Development in a Heat Network Priority Area (HNPA) (Y/N)
	District Heating Network connection (Y/N)
	Name of District Heating Network
	Carbon factor (kgCO <sub>2</sub> / kWh)

	Borough energy officer and Heat Network Operator contacted and evidence of correspondence included in the energy strategy (Y/N)
Site heating distribution configuration	Development future proofed for DHN connection (Y/N)
	Drawings of communal system provided (Y/N)
	Distribution type
	Flow temperature (°C)
	Return temperature (°C)
Heating system performance	Distribution losses modelled (%)
	Heat Pump (Y/N)
	Heat Pump source
	Centralised Heat Pump capacity (kWth)
	Heat Pump Seasonal Heating Efficiency (SCoP)
	Heat Pump SCoP calculation includes heat source and heat distribution temperature and seasonal performance factor (Y/N)
	Fraction of heat supplied by heat pump (only for hybrid systems with boilers) (%)
	Low-emission on-site CHP enabling an area-wide heat network (Y/N)
	CHP (kWe)
	Estimated end user cost (pence/kWh)
Solar technologies	Energy assessment includes consideration of occupant running costs (Y/N)
	Solar PV included (Y/N)
	Roof layout demonstrating solar PV technologies have been maximised included in energy strategy (Y/N)
	kWh generated
	kWp
	Total PV panel area (m <sup>2</sup> ) installed
	Solar Thermal included (Y/N)
Flexibility and peak energy demand	Solar Thermal panel area (m <sup>2</sup> ) installed
	Site-wide peak demand, capacity and flexibility potential included in energy assessment (Y/N)
	Interventions for achieving flexibility included in energy assessment (Y/N)
	Estimated peak demand (MW)
	Electrical energy storage (kWh) capacity
Other technologies	Heat energy storage (kWh) capacity
	System type (e.g. wind turbine)
Cooling	Capacity (kW)
	Cooling proposed - Residential (Y/N)

	Cooling proposed - Non-residential (Y/N)
	Residential Cooling consumption (kWh p.a.)
	Commercial Cooling consumption (MJ p.a.)

**TABLE 3. BESPOKE DH CARBON FACTOR CALCULATION METHODOLOGY**

Please provide below details of the calculation method

**TABLE 4. DISTRIBUTION LOSSES**

Primary network (buried pipe)	Total pipe length (m)
	Average heat loss rate (W/m)
Secondary network (buried pipe)	Total pipe length (m)
	Average heat loss rate (W/m)
Total losses (MWh/year)	
Total heat supplied (MWh/year)	
Distribution Loss Factor (DLF)	
Calculation included in energy statement (yes/no)	

**TABLE 5. SEASONAL COEFFICIENT OF PERFORMANCE (SCOP) CALCULATION METHODOLOGY**

Details of the Seasonal Coefficient of Performance (SCOP), the Seasonal Performance Factor (SPF) and Seasonal system boundaries over the course of a year i.e. incorporating variations in source temperatures and the design manufacturer datasheets showing performance under test conditions for the specific source and





Applicable to all applications.	
Note that individual heating systems would not be appropriate for developments in HNPAs.	
Applicants should provide a drawings of the energy centre, on-site communal network with all building uses connected and future proofing arrangements detailed, including single point of connection.	
See table 4 below for details.	
See table 5 below for details.	
<u>Only</u> low-emission CHP is suitable and <u>only</u> where it is facilitating an area-wide heat network. Therefore, new gas engine CHP is not suitable for any other purpose for new developments.	
Applicants should consider the estimated costs to occupants of the energy assessment and outline how they are committed to protecting the consumer from high prices.	
Table 9 in the energy assessment guidance to be completed.	
Table 10 in the energy assessment guidance to be completed.	
It is not expected that 'active cooling' will be proposed for any residential developments. It will be expected that applicants can fully demonstrate that all passive design measures have been thoroughly investigated before considering 'active cooling'.	

See note in cell C60.	

methodology followed to establish the bespoke carbon factor, if applicable.


onal Energy Efficiency ratio (SEER), which should be used in the energy modelling. T  
in sink temperatures (for space heat and hot water). Details of the assumptions shou  
l sink temperatures of the proposed development and assumptions for hours spent u






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COMMENTS

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This should be based on a dynamic calculation of the  
It should be included in the energy assessment, including  
under changing source temperatures.









				Baseline
Unit identifier (e.g. plot number, dwelling type etc.)	Model total floor area  (m <sup>2</sup> ) <b>(Row 4)</b>	Number of units	Total area represented by model  (m <sup>2</sup> )	TER  (kgCO <sub>2</sub> / m <sup>2</sup> ) <b>(Row 273)</b>
1	182.83	1	182.83	9.42

<b>Sum</b>		<b>1</b>	<b>183</b>	<b>9.4</b>
				<b>Baseline</b>
<b>Building Use</b>	<b>Model Area</b>	<b>Number of units</b>	<b>Total area represented by model</b>	<b>BRUKL TER</b>
	<b>(m<sup>2</sup>)</b>		<b>(m<sup>2</sup>)</b>	<b>(kgCO<sub>2</sub> / m<sup>2</sup>)</b>

<b>Sum</b>	<b>0</b>	<b>0</b>	<b>0.0</b>
<b>SITE-WIDE ENERGY CONSUMPTION AND CO<sub>2</sub> ANALYSIS</b>			
<b>Total Sum</b>		<b>183</b>	<b>-</b>

licant should complete all the light blue cells including information on

**RESIDENTIAL**

	'Be Lean'	'Be Clean'	'Be Green'	Fabric Energy Efficiency
Energy saving/generation technologies (-)	DER	DER	DER	Target Fabric Energy Efficiency
(kgCO <sub>2</sub> p.a.) (Row 269)	(kgCO <sub>2</sub> / m <sup>2</sup> ) (Row 273 or 384)	(kgCO <sub>2</sub> / m <sup>2</sup> ) (Row 273 or 384)	(kgCO <sub>2</sub> / m <sup>2</sup> ) (Row 273 or 384)	(kWh/m <sup>2</sup> )
0.00	8.34	8.34	4.84	83.28

<b>0.0</b>	<b>8.3</b>	<b>8.3</b>	<b>4.8</b>	<b>83.3</b>

**NON-RESID**

	'Be Lean'	'Be Clean'	'Be Green'	
<b>BRUKL Displaced electricity (-)</b>	<b>BRUKL BER</b>	<b>BRUKL BER</b>	<b>BRUKL BER</b>	
<b>(kWh / m<sup>2</sup>)</b>	<b>(kgCO<sub>2</sub> / m<sup>2</sup>)</b>	<b>(kgCO<sub>2</sub> / m<sup>2</sup>)</b>	<b>(kgCO<sub>2</sub> / m<sup>2</sup>)</b>	

0.0	0.0	0.0	0.0	
-	-	-	-	

in the modelled units, the area per unit, the number of units, the TER/DI

## TOTAL CO<sub>2</sub> ANALYSIS (PART L1)

Energy Efficiency (FEE)	Baseline		'Be Lean'	
	Part L 2021 CO <sub>2</sub> emissions (kgCO <sub>2</sub> p.a.)	Energy saving/generation technologies (kgCO <sub>2</sub> p.a.)	Part L 2021 CO <sub>2</sub> emissions (kgCO <sub>2</sub> p.a.)	Part L 2021 CO <sub>2</sub> emissions with Notional PV savings included (kgCO <sub>2</sub> p.a.)
Dwelling Fabric Energy Efficiency  (kWh/m <sup>2</sup> )	77.56	1,722	0	1,525

77.6	1,722	0	1,525	1,525

**ENTIAL CO<sub>2</sub> ANALYSIS (PART L2)**

	Baseline		'Be Lean'	
	Part L 2021 CO <sub>2</sub> emissions (kgCO <sub>2</sub> p.a.)	Energy saving/generation technologies (kgCO <sub>2</sub> p.a.)	Part L 2021 CO <sub>2</sub> emissions (kgCO <sub>2</sub> p.a.)	Part L 2021 CO <sub>2</sub> emissions with Notional PV savings included (kgCO <sub>2</sub> p.a.)



	0	0	0	0
	1,722	0	1,525	1,525

**ER/BER and the TFEE/DFEE.**

		<b>'Be Clean'</b>		<b>'Be G</b>
<b>'Be Lean' savings</b>	<b>Part L 2021 CO<sub>2</sub> emissions</b>	<b>Part L 2021 CO<sub>2</sub> emissions with Notional PV savings included</b>	<b>'Be Clean' savings</b>	<b>Part L 2021 CO<sub>2</sub> emissions</b>
<b>(kgCO<sub>2</sub> p.a.)</b>	<b>(kgCO<sub>2</sub> p.a.)</b>	<b>(kgCO<sub>2</sub> p.a.)</b>	<b>(kgCO<sub>2</sub> p.a.)</b>	<b>(kgCO<sub>2</sub> p.a.)</b>
<b>197</b>	<b>1,525</b>	<b>1,525</b>	<b>0</b>	<b>885</b>

<b>197</b>	<b>1,525</b>	<b>1,525</b>	<b>0</b>	<b>885</b>



	<b>'Be Clean'</b>			<b>'Be G</b>
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<b>'Be Lean' savings (kgCO<sub>2</sub> p.a.)</b>	<b>Part L 2021 CO<sub>2</sub> emissions (kgCO<sub>2</sub> p.a.)</b>	<b>Part L 2021 CO<sub>2</sub> emissions with Notional PV savings included (kgCO<sub>2</sub> p.a.)</b>	<b>'Be Clean' savings (kgCO<sub>2</sub> p.a.)</b>	<b>Part L 2021 CO<sub>2</sub> emissions (kgCO<sub>2</sub> p.a.)</b>

<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>197</i>	<i>1,525</i>	<i>1,525</i>	<i>0</i>	<i>885</i>



Green'

'Be Green' savings  
  
(kgCO<sub>2</sub> p.a.)

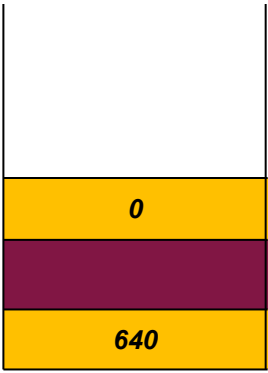
640

**640**

'Be Green'

'Be Green' savings

(kgCO<sub>2</sub> p.a.)







Total	0	0	0	0	0



0	0	0	0	0		






m.



**Methodology used**

<b>Software</b>	<b>Operational energy use assessment</b>	<b>notes</b> (if expected performance differs from the Table 4 values in the guidance or other software used)
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**Methodology used**

<b>Software</b>	<b>Operational energy use assessment</b>	<b>notes</b> (if expected performance differs from the Table 4 values in the guidance or other software used)
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# Residential

**Table 1:** Carbon Dioxide Emissions after each stage of the Energy Hierarchy for residential buildings

	Carbon Dioxide Emissions for residential buildings (Tonnes CO <sub>2</sub> per annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	1.7	
After energy demand reduction (be lean)	1.5	
After heat network connection (be clean)	1.5	
After renewable energy (be green)	0.9	

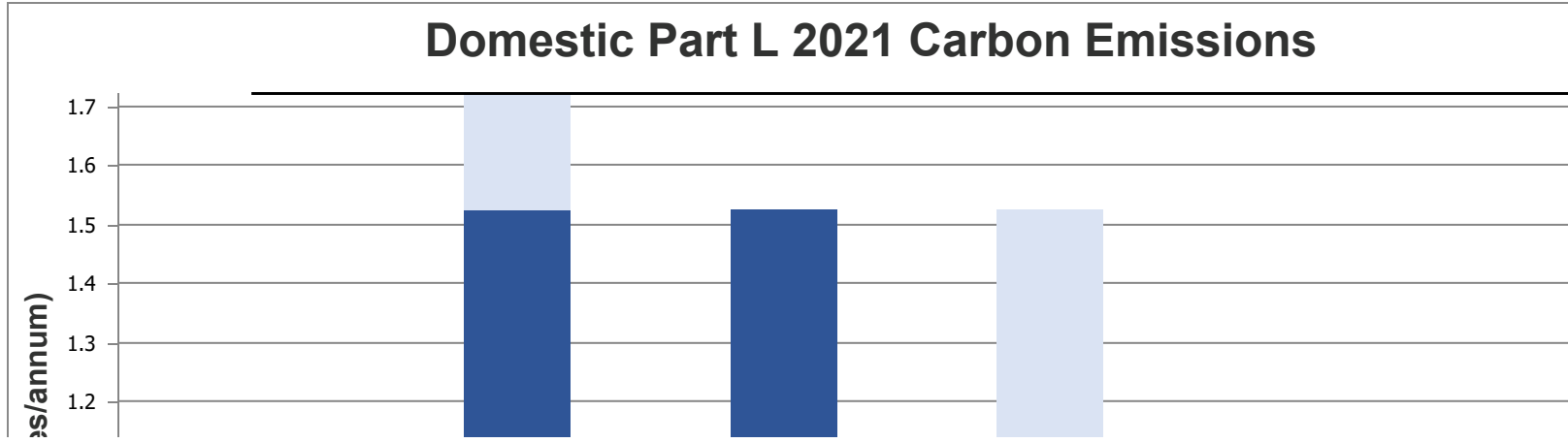
**Table 2:** Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for residential buildings

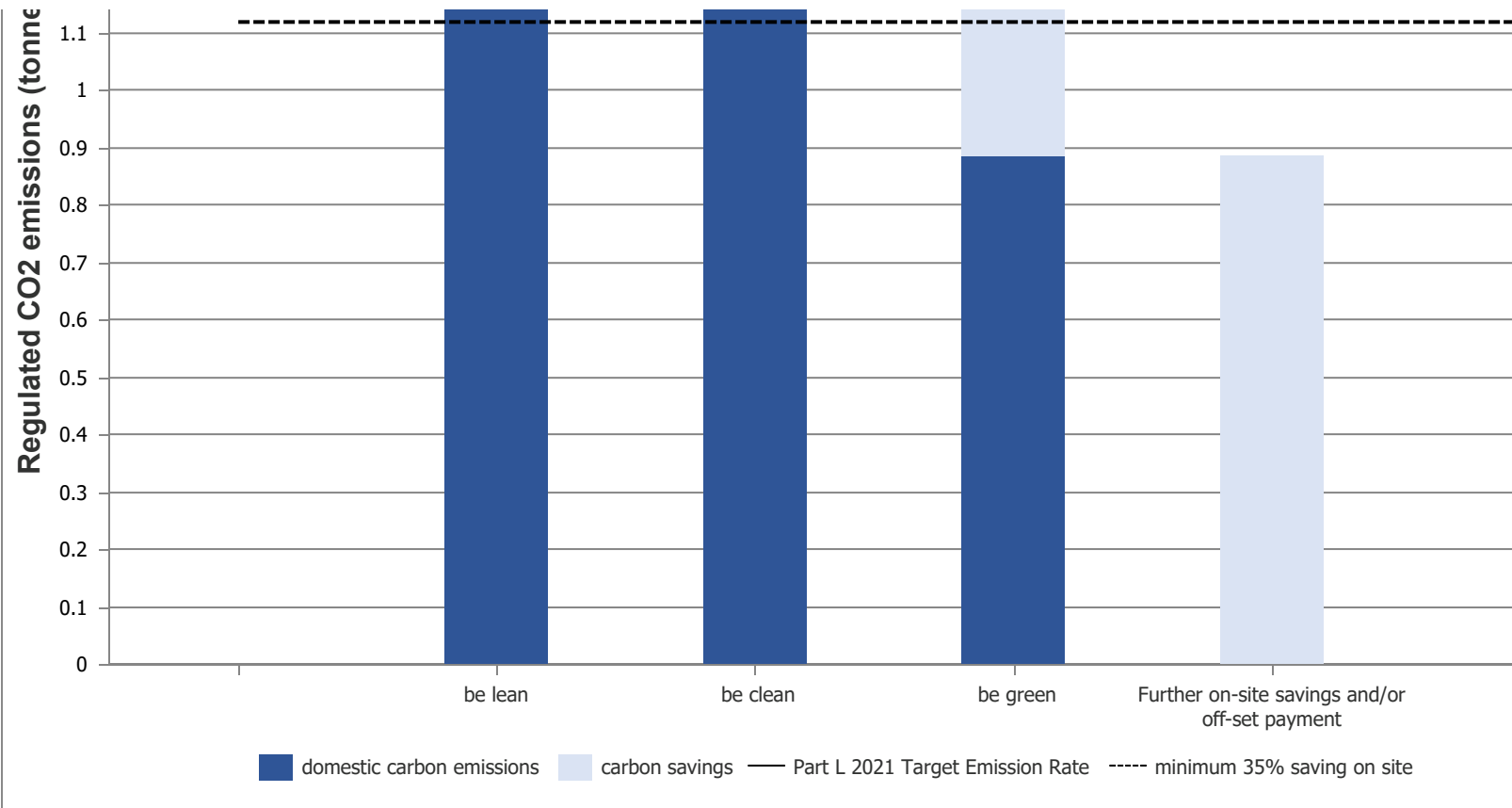
	Regulated residential carbon dioxide savings	
	(Tonnes CO <sub>2</sub> per annum)	(%)
Be lean: savings from energy demand reduction	0.2	11%



Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	0.6	37%
<b>Cumulative on site savings</b>	<b>0.8</b>	<b>49%</b>
Annual savings from off-set payment	0.9	-
<b>(Tonnes CO<sub>2</sub>)</b>		
<b>Cumulative savings for off-set payment</b>	<b>27</b>	-
<b>Cash in-lieu contribution (£)</b>	<b>2,522</b>	

\*carbon price is based on GLA recommended price of £95 per tonne of carbon dioxide unless Local Planning Authority price is inputted in the 'Development Information' tab





## SITE-WIDE

	Total regulated emissions (Tonnes CO <sub>2</sub> / year)	CO <sub>2</sub> savings (Tonnes CO <sub>2</sub> / year)	Percentage savings (%)
Part L 2021 baseline	1.7		

Be lean	1.5	0.2	11%
Be clean	1.5	0.0	0%
Be green	0.9	0.6	37%
Total Savings	-	0.8	49%
	-	<b>CO<sub>2</sub> savings off-set (Tonnes CO<sub>2</sub>)</b>	-
Off-set	-	<b>26.5</b>	-

## EUI & space heating demand (predicted energy use)

### Residential

Building type	EUI (kWh/m <sup>2</sup> /year) (excluding renewable energy)	Space heating demand (kWh/m <sup>2</sup> /year) (excluding renewable energy)	EUI value from Table 4 of the guidance (kWh/m <sup>2</sup> /year) (excluding renewable energy)
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## Non-residential

Building type	EUI (kWh/m <sup>2</sup> /year) (excluding renewable energy)	Space heating demand (kWh/m <sup>2</sup> /year) (excluding renewable energy)	EUI value from Table 4 of the guidance (kWh/m <sup>2</sup> /year) (excluding renewable energy)






# Part L 2021 Performance

## Non-residential

**Table 3:** Carbon Dioxide Emissions after each stage of the Energy Hierarchy for non-residential buildings

	Carbon Dioxide Emissions for non-residential buildings (Tonnes CO <sub>2</sub> per annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	0.0	
After energy demand reduction (be lean)	0.0	
After heat network connection (be clean)	0.0	
After renewable energy (be green)	0.0	

**Table 4:** Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for non-residential buildings

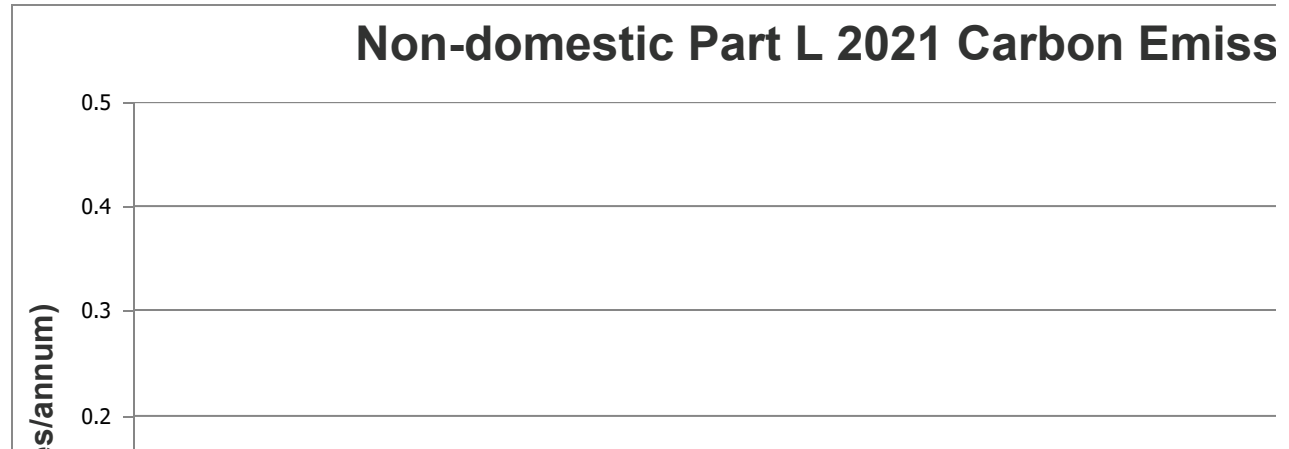
	Regulated non-residential carbon dioxide savings	
	(Tonnes CO <sub>2</sub> per annum)	(%)
Be lean: savings from energy demand reduction	0.0	0%



Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	0.0	0%
<b>Total Cumulative Savings</b>	<b>0.0</b>	<b>0%</b>
Annual savings from off-set payment	0.0	-
<b>(Tonnes CO<sub>2</sub>)</b>		
<b>Cumulative savings for off-set payment</b>	<b>0</b>	<b>-</b>
<b>Cash in-lieu contribution (£)</b>	<b>0</b>	

\*carbon price is based on GLA recommended price of £95 per tonne of carbon dioxide unless Local Planning Authority price is inputted in the 'Development Information' tab

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-
-
-
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	Area weighted non-residential cooling demand (MJ/m <sup>2</sup> )	Total non-residential cooling demand (MJ/year)
Actual		
Notional		



Space heating demand from Table 4 of the guidance(kWh/m <sup>2</sup> /year) (excluding renewable energy)	Methodology used (e.g. 'be seen' methodology or an alternative predictive energy modelling methodology)	Explanatory notes (if expected performance differs from the Table 4 values)










dential buildings

non-residential buildings



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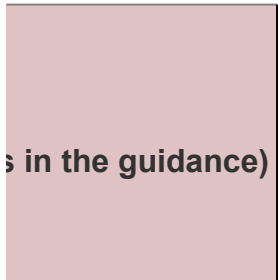
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