

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 does not**

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 amend or amendment to the spreadsheet will invalidate the CO₂ 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 (m²)
- Number of units modelled
- Total area represented by model (m²)
- TER, DER and BER figures (kgCO₂/m² p.a.)
- Notional building Energy saving/generation technologies (-) for residential (kgCO₂ p.a.)
- Notional building Displaced electricity (-) for non-residential (kWh//m² p.a.)
- TFEE and DFEE figures for residential (kWh//m² p.a.)

'GLA Summary tables' tab

- Unregulated figures (tCO₂ p.a.)
- Actual and notional building cooling demand (MJ/m²)

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 m²
- 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 CO₂ 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 (m²)'. 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

needs. 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 CO₂
'.

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?	yes
Part L outputs tab completed	yes
EUI & space heating demand completed	yes
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).	yes

TABLE 2. DEVELOPMENT DETAILS

		Further notes
Application details	Date of Application	Please provide the date the application was submitted to the Local Planning Authority.
	Local Planning Authority	Please indicate the Local Planning Authority determining the application.
	Confirmed carbon offset price (£/tonne of carbon dioxide)	Please confirm the agreed carbon offset price for the Local Planning Authority. If no value is entered then the GLA's recommend price of £95 per tonne of carbon dioxide will be used.
	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 ² (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 ₂ / kWh)	
	Borough energy officer and Heat Network Operator contacted and evidence of correspondence included in the energy strategy (Y/N)	Applicable to all applications.
Site heating distribution configuration	Development future proofed for DHN connection (Y/N)	Note that individual heating systems would not be appropriate for developments in HNPAs.
	Drawings of communal system provided (Y/N)	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.
	Distribution type	
	Flow temperature (°C)	
	Return temperature (°C)	
	Distribution losses modelled (%)	See table 4 below for details.
Heating system performance	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)	See table 5 below for details.
	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)	<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.
	CHP (kWe)	
	Estimated end user cost (pence/kWh)	

	Energy assessment includes consideration of occupant running costs (Y/N)	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.
Solar technologies	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 ²) installed	
	Solar Thermal included (Y/N)	
Flexibility and peak energy demand	Solar Thermal panel area (m ²) installed	
	Site-wide peak demand, capacity and flexibility potential included in energy assessment (Y/N)	Table 9 in the energy assessment guidance to be completed.
	Interventions for achieving flexibility included in energy assessment (Y/N)	Table 10 in the energy assessment guidance to be completed.
	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)	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'.
	Cooling proposed - Non-residential (Y/N)	
	Residential Cooling consumption (kWh p.a.)	See note in cell C60.
	Commercial Cooling consumption (MJ p.a.)	

TABLE 3. BESPOKE DH CARBON FACTOR CALCULATION METHODOLOGY

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N.A

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)		

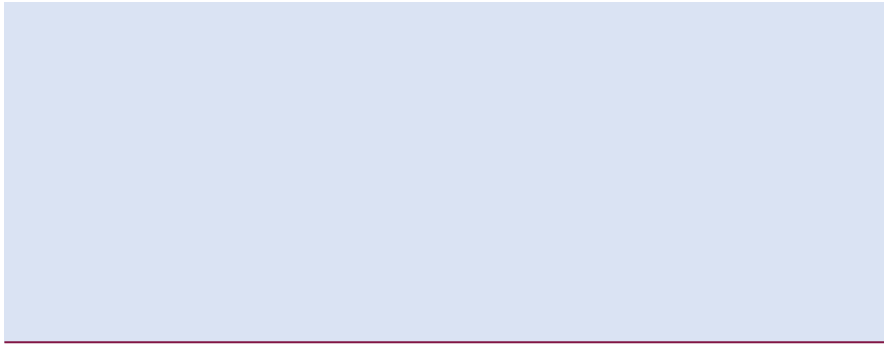
TABLE 5. SEASONAL COEFFICIENT OF PERFORMANCE (SCOP) CALCULATION METHODOLOGY

Please see appendix of Energy and Sustainability Statement for EN14825 compliant SCOP Calculation

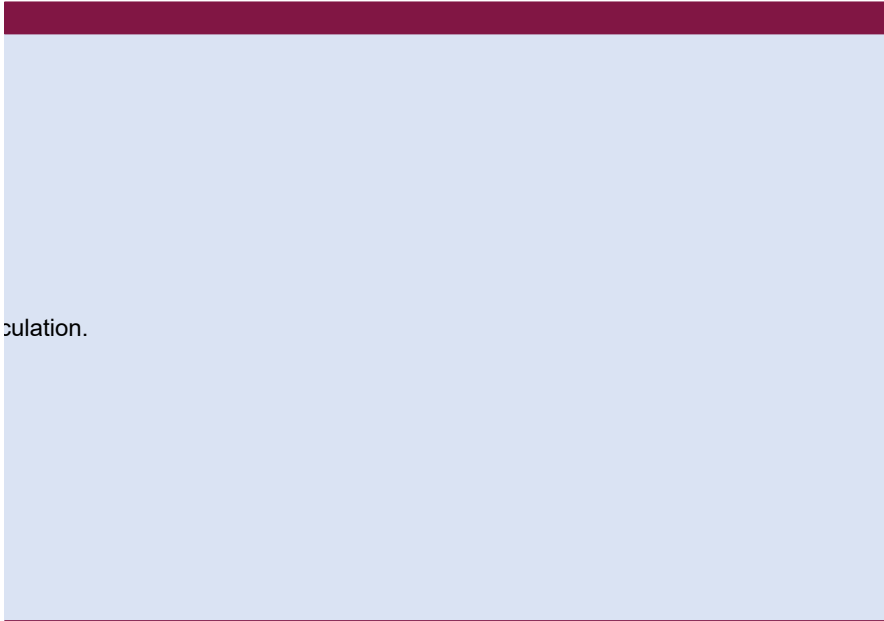
Response	Supporting comments (or signpost sections in the energy assessment)
<i>Sutton Council</i>	
95.00	
Y	
70	
254.60	
Y	
Y	
Y	
Y	
0.40	

40.00	
Y	Balconies provide shading
Y	
Y	
N	
Y	
Y	
N	No completion date for proposed network
<i>Sutton Town Centre Energy Centre</i>	
N/A	
Y	See appendix of Energy and Sustainability Statement
Y	
Y	
<i>communal system (building level)</i>	
50.00	
35.00	
Y	
Y	
<i>Air Source</i>	
159.80	
3.24	
Y	
100.00	
N	
N/A	
9.40	

Y	
Y	
Y	
	5533.00
	7.50
	32.00
N	
	0.00
Y	
Y	
	0.64
	0.00
	139.00
N/A	
N/A	
Y	<i>Bedrooms are designed to remain cool without the bed</i>
N	
	8278.00
	16151.00



COMMENTS	
0	
N/A	
0	
N/A	
N/A	
N/A	
2	Default Value used in SAP calculation
No	Default value used for Stage 2.



ulation.

'room windows being opened, in order to minimise noise, through the use of mechanical ventilation with heat recovery with supplementary co

cling.

				Baseline
Unit identifier (e.g. plot number, dwelling type etc.)	Model total floor area	Number of units	Total area represented by model	TER
	(m ²) (Row 4)		(m ²)	(kgCO ₂ / m ²) (Row 273)
Unit 1	70.3	4	281.2	13.92
Unit 2	91.2	4	364.8	11.23
Unit 3	77.2	4	308.8	12.53
Unit 4	61.2	4	244.8	14.01
Unit 5	61.4	4	245.6	14.68
Unit 6	61	4	244	13.48
Unit 7	70.4	4	281.6	14.41
Unit 8	70.4	4	281.6	13.74
Unit 9	61.1	8	488.8	15.48
Unit 10	50.1	8	400.8	14.73
Unit 11	61.1	8	488.8	14.79
Unit 12	61.1	8	488.8	15.48
Unit 13	61.1	8	488.8	14.79

Sum				0.8
				Baseline
Building Use	Model Area	Number of units	Total area represented by model	BRUKL TER
	(m²)		(m²)	(kgCO₂ / m²)
Offices and Works	260.5	1	260.5	3.78

Sum	1	261	3.8
SITE-WIDE ENERGY CONSUMPTION AND CO₂ ANALYSIS			
Total Sum		4,869	-

licant should complete all the light blue cells including information or

RESIDENT

	'Be Lean'	'Be Clean'	'Be Green'	Fabric Energy Efficiency
Energy saving/generation technologies (-)	DER	DER	DER	Target Fabric Energy Efficiency
(kgCO ₂ p.a.) (Row 269)	(kgCO ₂ / m ²) (Row 273 or 384)	(kgCO ₂ / m ²) (Row 273 or 384)	(kgCO ₂ / m ²) (Row 273 or 384)	(kWh/m ²)
-37.70	12.59	12.59	5.03	32.94
-48.89	9.69	9.69	3.87	24.63
-41.40	11.00	11.00	4.39	27.35
-32.82	12.98	12.98	5.11	29.38
-32.93	13.73	13.73	5.44	32.35
-32.72	12.38	12.38	4.84	26.67
-37.75	12.45	12.45	4.82	34.11
-37.75	11.88	11.88	4.71	31.38
-32.77	13.75	13.75	5.53	35.19
-26.87	13.69	13.69	5.28	27.17
-32.77	13.57	13.57	5.45	31.85
-32.77	13.98	13.98	5.63	35.19
-32.77	13.57	13.57	5.45	31.85

0.0	1.5	1.5	0.3	0.0

NON-RESID

	'Be Lean'	'Be Clean'	'Be Green'	
BRUKL Displaced electricity (-)	BRUKL BER	BRUKL BER	BRUKL BER	
(kWh / m²)	(kgCO₂ / m²)	(kgCO₂ / m²)	(kgCO₂ / m²)	
0.00	3.11	3.11	0.44	

0.0	3.1	3.1	0.4	
-	-	-	-	

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

TIAL CO₂ ANALYSIS (PART L1)

Energy Efficiency (FEE)	Baseline		'Be Lean'	
	Part L 2021 CO ₂ emissions (kgCO ₂ p.a.)	Energy saving/generation technologies (kgCO ₂ p.a.)	Part L 2021 CO ₂ emissions (kgCO ₂ p.a.)	Part L 2021 CO ₂ emissions with Notional PV savings included (kgCO ₂ p.a.)
(kWh/m ²)				
31.06	3,914	-151	3,540	3,390
22.63	4,097	-196	3,535	3,339
25.28	3,869	-166	3,397	3,231
26.84	3,430	-131	3,178	3,046
32.16	3,605	-132	3,372	3,240
24.48	3,289	-131	3,021	2,890
30.09	4,058	-151	3,506	3,355
28.21	3,869	-151	3,345	3,194
32.30	7,567	-262	6,721	6,459
24.87	5,904	-215	5,487	5,272
29.76	7,229	-262	6,633	6,371
32.30	7,567	-262	6,833	6,571
29.76	7,229	-262	6,633	6,371

0.0	65,627	-2,471	59,201	56,730

ENTIAL CO₂ ANALYSIS (PART L2)

	Baseline		'Be Lean'	
	Part L 2021 CO ₂ emissions (kgCO ₂ p.a.)	Energy saving/generation technologies (kgCO ₂ p.a.)	Part L 2021 CO ₂ emissions (kgCO ₂ p.a.)	Part L 2021 CO ₂ emissions with Notional PV savings included (kgCO ₂ p.a.)
	985	0.00	810.16	810

	985	0	810	810
	66,612	-2,471	60,011	57,540

ER/BER and the TFEE/DFEE.

		'Be Clean'		'Be G
'Be Lean' savings	Part L 2021 CO ₂ emissions	Part L 2021 CO ₂ emissions with Notional PV savings included	'Be Clean' savings	Part L 2021 CO ₂ emissions
(kgCO ₂ p.a.)	(kgCO ₂ p.a.)	(kgCO ₂ p.a.)	(kgCO ₂ p.a.)	(kgCO ₂ p.a.)
525	3,540	3,390	0	1,414
757	3,535	3,339	0	1,412
638	3,397	3,231	0	1,356
383	3,178	3,046	0	1,251
365	3,372	3,240	0	1,336
399	3,021	2,890	0	1,181
703	3,506	3,355	0	1,357
675	3,345	3,194	0	1,326
1,108	6,721	6,459	0	2,703
632	5,487	5,272	0	2,116
858	6,633	6,371	0	2,664
995	6,833	6,571	0	2,752
858	6,633	6,371	0	2,664

8,898	59,201	56,730	0	23,533

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	'Be Clean'			'Be G
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'Be Lean' savings (kgCO₂ p.a.)	Part L 2021 CO₂ emissions (kgCO₂ p.a.)	Part L 2021 CO₂ emissions with Notional PV savings included (kgCO₂ p.a.)	'Be Clean' savings (kgCO₂ p.a.)	Part L 2021 CO₂ emissions (kgCO₂ p.a.)
175	810	810	0	115

175	810	810	0	115
9,072	60,011	57,540	0	23,647



Green'

'Be Green' savings

(kgCO₂ p.a.)

- 1,975
- 1,928
- 1,876
- 1,795
- 1,904
- 1,709
- 1,998
- 1,868
- 3,756
- 3,156
- 3,707
- 3,819
- 3,707

33,197

'Be Green'

'Be Green' savings

(kgCO₂ p.a.)

696

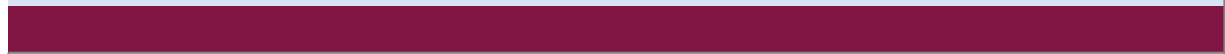
696
33,893

Total	260.5	3220.56	18258.78546	0	0

0	0	0	0	0		



m.



Methodology used

Software	Operational energy use assessment	notes (if expected performance differs from the Table 4 values in the guidance or other software used)
Part L1 - SAP 10.2	none	



Methodology used

Software	Operational energy use assessment	notes (if expected performance differs from the Table 4 values in the guidance or other software used)
Part L2 - SBEM	CIBSE TM54	

Residential

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

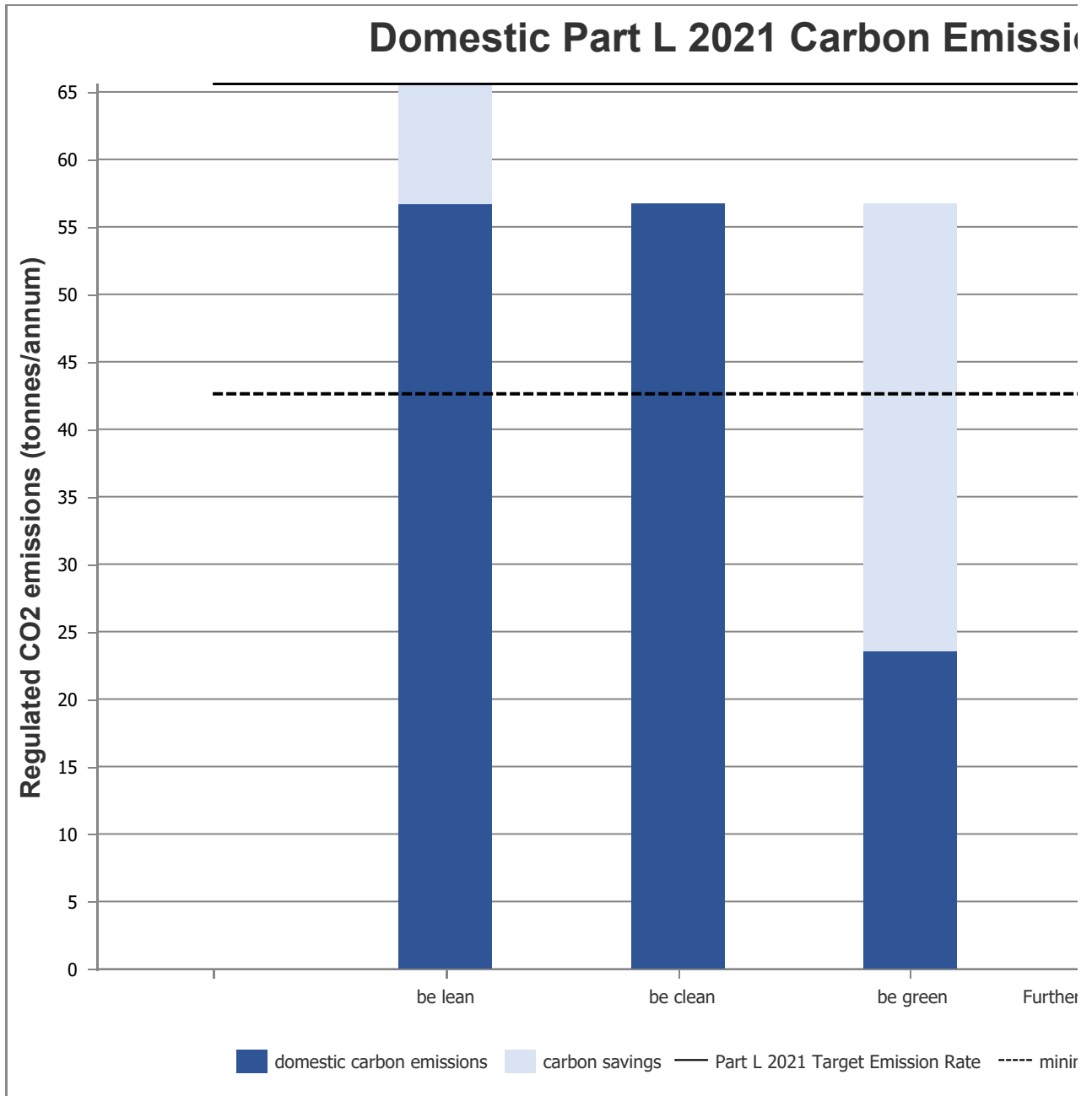
	Carbon Dioxide Emissions for residential buildings (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	65.6	32.5
After energy demand reduction (be lean)	56.7	32.5
After heat network connection (be clean)	56.7	32.5
After renewable energy (be green)	23.5	32.5

Table 2: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for r

	Regulated residential carbon dioxide savings	
	(Tonnes CO ₂ per annum)	(%)
Be lean: savings from energy demand reduction	8.9	14%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	33.2	51%
Cumulative on site savings	42.1	64%
Annual savings from off-set payment	23.5	-

	(Tonnes CO ₂)	
Cumulative savings for off-set payment	706	-
Cash in-lieu contribution (£)	67,068	

*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 ₂ / year)	CO ₂ savings (Tonnes CO ₂ / year)
Part L 2021 baseline	66.6	
Be lean	57.5	9.1
Be clean	57.5	0.0
Be green	23.6	33.9
Total Savings	-	43.0
	-	CO₂ savings off-set (Tonnes CO₂)
Off-set	-	709.4

EUI & space heating demand (predicted energy use)

Residential

Building type	EUI (kWh/m ² /year) (excluding renewable energy)	Space heating demand (kWh/m ² /year) (excluding renewable energy)
Residential	89.45196787	21.15550733

Non-residential

Part L 2021 Performance

Non-residential

al buildings

Table 3: Carbon Dioxide Emis

Baseline: Part L 2021 of the Building Regulations Compliant Development
After energy demand reduction (be lean)
After heat network connection (be clean)
After renewable energy (be green)

residential buildings

Table 4: Regulated Carbon D

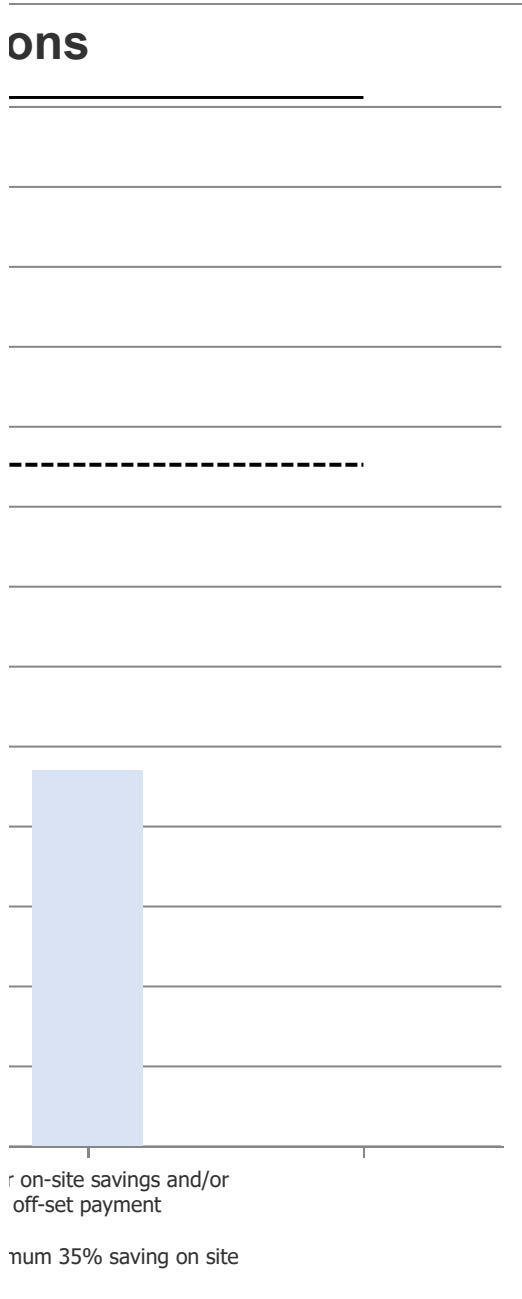
Be lean: savings from energy demand reduction
Be clean: savings from heat network
Be green: savings from renewable energy
Total Cumulative Savings
Annual savings from off-set payment

Cumulative savings for off-set payment

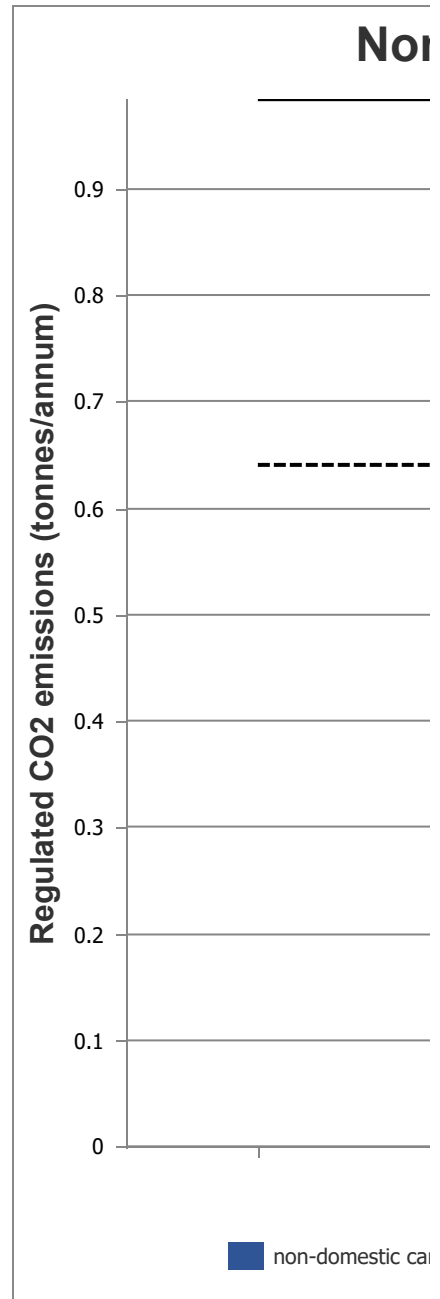
Cash in-lieu contribution (£)

*carbon price is based on G unless Local Planning Autho

ons



Non



Percentage savings (%)
14%
0%
51%
65%
-
-

Development total

Actual
Notional

se)

EUI value from Table 4 of the guidance (kWh/m ² /year) (excluding renewable energy)	Space heating demand from Table 4 of the guidance(kWh/m ² /year) (excluding renewable energy)	Methodology used (e.g. 'be seen' methodology or an alternative predictive energy modelling methodology)
35	15	Part L1 - SAP 10.2 & none dwellings / & Landlord Circulation

EUI value from Table 4 of the guidance (kWh/m²/year) (excluding renewable energy)	Space heating demand from Table 4 of the guidance(kWh/m²/year) (excluding renewable energy)	Methodology used (e.g. 'be seen' methodology or an alternative predictive energy modelling methodology)
55	15	Part L2 - SBEM & CIBSE TM54

missions after each stage of the Energy Hierarchy for non-residential buildings

Carbon Dioxide Emissions for non-residential buildings (Tonnes CO₂ per annum)	
Regulated	Unregulated
1.0	1.4
0.8	1.4
0.8	1.4
0.1	1.4

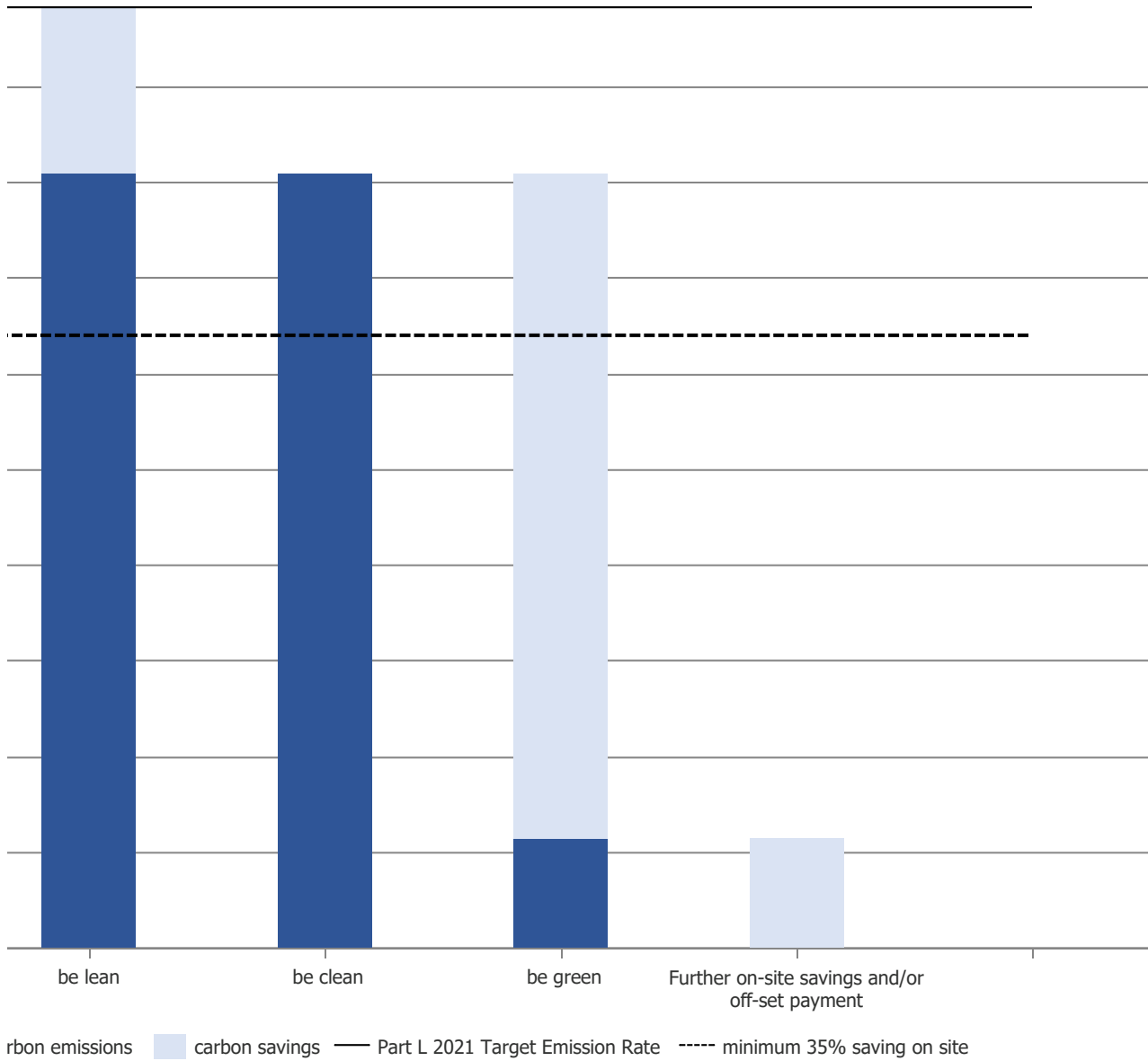
Carbon dioxide savings from each stage of the Energy Hierarchy for non-residential buildings

Regulated non-residential carbon dioxide savings	
(Tonnes CO₂ per annum)	(%)
0.2	18%
0.0	0%
0.7	71%
0.9	88%
0.1	-

(Tonnes CO ₂)	
3	-
327	

LA recommended price of £95 per tonne of carbon dioxide
 ority price is inputted in the 'Development Information' tab

Non-domestic Part L 2021 Carbon Emissions



Target Fabric Energy Efficiency (kWh/m ²)	Dwelling Fabric Energy Efficiency (kWh/m ²)	Improvement (%)
0.00	0.00	

Area weighted non-residential cooling demand (MJ/m ²)	Total non-residential cooling demand (MJ/year)



Explanatory notes (if expected performance differs from the Table 4 values in the guidance)











