

GLA Carbon Emission Reporting Spreadsheet

BACKGROUND AND PURPOSE

The GLA has decided that from **January 2019** and until central Government updates Part L with the latest applicants are encouraged to use the SAP 10 emission factors for **referable applications** when estimating London Plan policies. This is a new approach being taken by the GLA to reflect the decarbonisation of the taken into account by Part L of Building Regulations. This approach will remain in place until Government a updated emission factors.

This GLA Carbon Emission Reporting Spreadsheet facilitates the use of the SAP 10 emission factors and a process for updating Part L 2013 CO₂ emission performance. In particular, the approach has been developed to be validated against supporting Part L 2013 BRUKL and SAP outputs.

From **January 2019** all GLA referable applications (including refurbishments) are expected to use this spreadsheet for the performance of a development. This includes planning applicants who are continuing to use SAP 2012 emission factors. Applicants need to be supported by sufficient justification in line with the Energy Assessment Guidance. Applicants are required to submit the GLA alongside the energy assessment. It should be used for both domestic and non-domestic uses. The spreadsheet is an alternative methodologies or tools. This is to ensure consistency and to minimise the need for clarifications.

Planning applicants should use Part L 2013 BRUKL and SAP outputs to fill in this spreadsheet which serve as evidence of carbon emission performance of the proposed energy strategy. **It is solely for the purpose of reporting the calculations submitted for Building Regulations approval.**

The spreadsheet has been developed to fit as wide a range of policy compliant approaches for referable schemes as possible. Applicants with a policy compliant approach that the spreadsheet does not serve should contact the GLA at environment@london.gov.uk. Applicants must not amend or alter the spreadsheet to suit non-policy compliant strategies. Any unauthorised changes 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. The latest version at the time of the planning submission.

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

METHODOLOGY

Applicants are required to complete all light blue input cells in the applicable tabs ('Carbon Factors', 'Baseline', 'Green' and 'GLA Summary Tables').

Input Data

For all applications, the input data required includes:

- Bespoke Carbon Factors (if applicable)
- Type of units modelled
- Area of units modelled (m²)
- Number of units modelled
- Total area represented by model (m²)
- Regulated energy consumption by end use (kWh p.a. for residential and kWh/m² p.a. for non-residential)
- Regulated energy consumption by fuel type (kWh/m² p.a. for non-residential)
- TER, DER and BER figures (kgCO₂/m² p.a.)
- TFEE and DFEE figures for residential (kWh/m² p.a.)
- Regulated energy demand figures (kWh p.a. for both residential and non-residential)

- Applicants should update the highlighted cells with the type, area and number of modelled units. The constant (kWh/m² p.a. for non-domestic) from the Part L modelling output reports should be reported and used throughout the Energy Hierarchy. The TER, DER and BER figures from the Part L 2013 modelling output sheets should be used for reference purposes. The applicant should ensure that the manually calculated TER, DER and BER figures are consistent with the output sheets. TFE and DFE information should also be provided as well as unregulated uses constant and cooling demand performance.

Required Part L Outputs for the GLA spreadsheet

For the domestic conversion applicants are required to use the outputs from the SAP TER and DER works process the required SAP worksheet rows have been referenced in each input cell. For Space Heating and manually convert the SAP energy requirements to energy consumption by fuel type, the appropriate SAP r listed. **Note.** The SAP worksheet rows are based on a communal heating system, which is an expectation f proposing individual systems must first seek confirmation from the GLA as to whether the approach will be

The required Part L outputs from non-domestic modelling will be energy consumption by **fuel type** (e.g. gas consumption by end use (e.g. heating, hot water, cooling etc.) included in the BRUKL documents are no longer in line with SAP 10 emission factors in this spreadsheet. This decision has been taken as the consumption may include a mixture of fuel types, for instance heating may include energy consumption from gas boilers and electric radiators. The required data can be found in:

- The above output files should be appended to the energy assessment document.

Note: GLA are aware that the Part L outputs for grid supplied electricity consumption does not account for factor correction is present applicants may be required to amend the electricity consumption by the appropriate factor. The factor correction is found in Table 1 of the Government's Approved Document L2A (ADL2A). Applicants should not apply the factor correction if it has been applied.

The carbon factors for SAP 2012 and SAP 10 scenarios have been provided in the 'Carbon Factors' tab. TI electricity and gas factors. Additional space has been included for alternative fuel factors that are included in the methodology document. For applications with non-domestic buildings connecting to external heat networks introduced, the applicant should provide the full calculation behind the introduced bespoke carbon factor.

A validation check is required for each model entered to ensure that the conversion is robust. Applicants must ensure that the TER/DER/BER in this spreadsheet matches the actual values from the Part L 2013 BRUKL and SAP workbooks.

sheet

carbon emission factors, planning
CO₂ emission performance against
electricity grid, which is not currently
adopts new Building Regulations with

ensures a consistent and transparent
ed to ensure that SAP 10 results can still

adsheet to report the anticipated carbon
ission factors; although doing so will
e required to submit this spreadsheet to
e GLA will not accept the use of
during the determination period.

is as a the final step in reporting the
to the GLA and does not replace Part L

chemes as possible. Any planning
t: **environment@london.gov.uk**.
ed amendment to the spreadsheet will

pose. Applicants are expected to use the

ne', 'Be Lean', 'Be Clean', 'Be

1 the 'GLA Summary tables' tab only]

umption figures (kWh p.a. for domestic
o estimate the CO₂ emissions for each
ets should also be reported for cross-
are equal to the figures reported within
umption, energy demand figures and

input for 'Total area represented by
the development area schedule (included

heets. To assist in the conversion
l Hot Water applicants will be required to
ows for this calculation have also been
for GLA referable schemes. Applicants
acceptable.

d electricity, natural gas).The energy
nger used to estimate the CO₂ emission
mption figures provided in the BRUKL
and electrically driven heat pumps. The

ding in "*BRUKL.inp"

ed independently and apportioned to the
d, however, include the results from all
/PTION AND CO₂ ANALYSIS" sections.

power factor correction. Where power
riate adjustment factor. The power factor
ote in the appropriate cells where power

he table has been pre-populated with grid
in Table 12 of the SAP 2012 and SAP 10
; a bespoke carbon factor needs to be

must ensure that the calculated
sheets.

Table 1. CARBON (CO ₂) FACTORS		
Fuel type	Fuel Carbon Factor (kgCO ₂ /kWh)	
	SAP 2012	SAP 10
Natural Gas	0.216	0.210
Grid Electricity	0.519	0.233
Waste Heat From Power Station	0.058	0.015
Enter Carbon Factor 2		
Enter Carbon Factor 3		
Enter Carbon Factor 4		
Bespoke DH Factor	0.058	0.015

Table 2. BESPOKE DH CARBON FACTOR CALCULATION METHODOLOGY
<p>Please provide below details of the calculation methodology used to determine the bespoke DH carbon factor.</p>

Notes

SAP 2012 and SAP 10 carbon emission factors (Table 12).

These factors should be used where alternative fuel is used to grid gas and electricity. Carbon emission factors used here must be taken from Table 12 within the SAP 2012 and SAP 10 documents.

Fuel type should be updated and referenced in Column A when additional carbon factor values have been added.

This should only be used for non-domestic buildings that are connecting to District Heating (DH) networks. The network carbon factor should be calculated in line with Part L requirements and a separate factors should be provided using SAP 2012 and SAP 10 fuel factors. Assumptions and workings should be shown below in Table 4.

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

The applicant should complete all the light blue cells including information on the modelled units, the

DOMESTIC ENERGY CONSUMPTION AND CO₂ ANALYSIS

Unit identifier (e.g. plot number, dwelling type etc.)	Model total floor area (m²)	Number of units	Total area represented by model (m²)	VALIDATION CHECK	
				Calculated TER 2012 (kgCO2 / m2)	TER Worksheet TER 2012 (kgCO2 / m2)
TER Worksheet (Row 4)				TER Worksheet (Row 273)	
Copperfield	390.12	1	390.12	14.2	14.3

Sum	390	1	390	14.2	-
NON-DOMESTIC ENERGY CONSUMPTION AND CO2 ANALYSIS					
Building Use	Area per unit (m²)	Number of units	Total area represented by model (m²)	VALIDATION CHECK	
				Calculated TER 2012 (kgCO2 / m2)	BRUKL TER 2012 (kgCO2 / m2)

Sum	0	0	0	-
SITE-WIDE ENERGY CONSUMPTION AND CO ₂ ANALYSIS				
Use	Total Area (m ²)			Calculated TER 2012 (kgCO ₂ / m ²)
				-
Sum	390			14.2
				-

0	0	0	0	0	0
REGULATED ENERGY CONSUMPTION					
Space Heating (kWh p.a.)	N/A	Domestic Hot Water (kWh p.a.)	N/A	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)
20,832		2,720		831	75

Category	Value
SAP 2012 CO2 PERFORMANCE	10%

	REGULATED CO2 EMISSIONS PER UNIT (kgCO2 p.a.)				
Cooling	Space Heating	Domestic Hot Water	Lighting	Auxiliary	Cooling
N / A					
	4,500	588	431	39	

0	4,500	588	431	39	0
	REGULATED ENERGY CONSUMPTION BY FUEL TYPE (kWh/m² p.a.) TER - SOURCE: BRUKL.INP				
Cooling	Natural Gas	Grid Electricity			
	#####	#####			

0	0	0	N/A	N/A
Cooling (kWh p.a.)				
0				

5,557	4,375	571	194	17	0
or *SIM.CSV FILE	REGULATED ENERGY CONSUMPTION BY FUEL TYPE (kWh/m² p.a.) - TER BRUKL				
2012 CO2 emissions (kgCO2 p.a.)	Natural Gas	Grid Electricity			
	#####	#####			

0	0	0	N/A	N/A	N/A
REGULATED CO2 EMISSIONS					
2012 CO2 emissions (kgCO2 p.a.)					
5,557					



DEMAND

		Fabric Energy Efficiency (FEE)
SAP10 CO2 emissions (kgCO2 p.a.)	Calculated TER SAP10 (kgCO2 / m2)	Target Fabric Energy Efficiency (TFEE) (kWh/m²)
5,157	13.2	

5,157	13.2	0.00



REGULATED CO2 EMISSIONS

SAP10 CO2 emissions (kgCO2 p.a.)	BRUKL TER SAP10 (kgCO2 / m2)
--	------------------------------------

0	#DIV/0!	
REGULATED CO2 EMISSIONS PER UNIT		
SAP10 CO2 emissions (kgCO2 p.a.)	Calculated TER SAP10 (kgCO2 / m2)	
5,157	13.2	

The applicant should complete all the light blue cells including information on the 'be lean' energy con

DOMESTIC ENERGY CONSUMPTION AND CO₂ ANALYSIS

Unit identifier (e.g. plot number, dwelling type etc.)	Model total floor area (m²)	Number of units	Total area represented by model (m²)	VALIDATION CHECK	
				Calculated DER 2012 (kgCO2 / m2)	DER Worksheet DER 2012 (kgCO2 / m2)
				DER Sheet (Row 384)	
Copperfield	390.12	1	390.12	13.2	13.2

Sum	390	1	390	13.2	-
NON-DOMESTIC ENERGY CONSUMPTION AND CO2 ANALYSIS					
Building Use	Area per unit (m²)	Number of units	Total area represented by model (m²)	VALIDATION CHECK	
				Calculated BER 2012 (kgCO2 / m2)	BRUKL BER 2012 (kgCO2 / m2)

Sum	0	0	#DIV/0!
SITE-WIDE ENERGY CONSUMPTION AND CO ₂ ANALYSIS			
Use	Total Area (m ²)	Calculated BER 2012 (kgCO ₂ / m2)	-
Sum	390	13.2	-

19,013	N/A	2,628	N/A	831	75
REGULATED ENERGY CONSUMPTION BY END USE (kWh/m² p.a.) 'BE LEAN' BER - SOURCE: BRUKL OUT					
Space Heating (kWh/m² p.a.)	Fuel type Space Heating	Domestic Hot Water (kWh/m² p.a.)	Fuel type Domestic Hot Water	Lighting (kWh/m² p.a.)	Auxiliary (kWh/m² p.a.)

0	N/A	0	N/A	0	0

REGULATED ENERGY CONSUMPTION

Space Heating (kWh p.a.)	N/A	Domestic Hot Water (kWh p.a.)	N/A	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)
19,013		2,628		831	75

SAP 2012 CO2 PERFORMANCE						
	REGULATED CO2 EMISSIONS PER UNIT (kgCO2 p.a.)					
Cooling	Space Heating	Domestic Hot Water	Lighting	Auxiliary	Cooling	
DER Sheet Row 315						
0	4,107	568	431	39	0	

0	4,107	568	431	39	0	
PUT	JLATED ENERGY CONSUMPTION BY FUEL TYPE (kWh/m² p.a.) 'BE LEAN' BER - SOURCE: BRUK					
Cooling (kWh/m² p.a.)	Natural Gas	Grid Electricity				
	#####	#####				

0	0	0	N/A	N/A
Cooling (kWh p.a.)				
0				

	SAP10 CO2 PERFORMANCE				
	REGULATED CO2 EMISSIONS PER UNIT				
2012 CO2 emissions (kgCO2 p.a.)	Space Heating CO2 emissions (kgCO2 p.a.)	Domestic Hot Water CO2 emissions (kgCO2 p.a.)	Lighting CO2 emissions (kgCO2 p.a.)	Auxiliary CO2 emissions (kgCO2 p.a.)	Cooling CO2 emissions (kgCO2 p.a.)
5,145	3,993	552	194	17	0

5,145	3,993	552	194	17	0
CL.INP or *SIM.CSV	REGULATED CO2 EMISSIONS PER UNIT				
2012 CO2 emissions (kgCO2 p.a.)	Natural Gas	Grid Electricity			
	#####	#####			

0	0	0	
REGULATED CO2 EMISSIONS			
2012 CO2 emissions (kgCO2 p.a.)			
5,145			



DOMESTIC ENERGY DEMAND D

		Fabric Energy Efficiency (FEE)	REGULATED ENERGY DEMAND PER UNIT F		
SAP10 CO2 emissions (kgCO2 p.a.)	Calculated DER SAP10 (kgCO2 / m2)	Dwelling Fabric Energy Efficiency (DFEE) (kWh/m²)	Space Heating (kWh p.a.)	Domestic Hot Water (kWh p.a.)	Lighting (kWh p.a.)
4,756	12.2				

4,756	12.2	0.00	0	0	0
NON-DOMESTIC ENERGY DEMAND					
		N/A	REGULATED ENERGY DEMAND PER UNIT F		
SAP10 CO2 emissions (kgCO2 p.a.)	BRUKL BER SAP10 (kgCO2 / m2)		Space Heating (kWh p.a.)	Domestic Hot Water (kWh p.a.)	Lighting (kWh p.a.)

0	#DIV/0!		0	0	0
REGULATED CO2 EMISSIONS		N/A	REGULATED ENERGY DEMAND PER UNIT F		
SAP10 CO2 emissions (kgCO2 p.a.)	Calculated BER SAP10 (kgCO2 / m2)		Space Heating (kWh p.a.)	Domestic Hot Water (kWh p.a.)	Lighting (kWh p.a.)
4,756	12.2		0	0	0

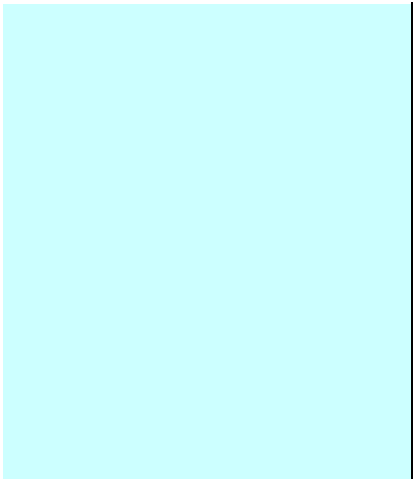
DATA

PER ANNUM (kWh p.a.)

Auxiliary (kWh p.a.)	Cooling (kWh p.a.)
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Auxiliary (kWh p.a.)	Cooling (kWh p.a.)
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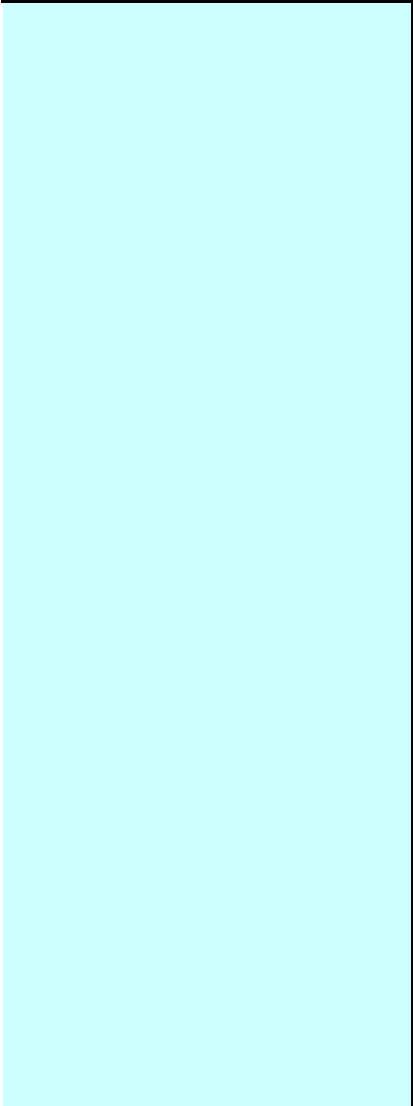


0	0
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AND

PER ANNUM (kWh p.a.)

Auxiliary (kWh p.a.)	Cooling (kWh p.a.)
-------------------------	-----------------------



0	0
PER ANNUM (kWh p.a.)	
Auxiliary (kWh p.a.)	Cooling (kWh p.a.)
0	0

The applicant should complete all the light blue cells including information on the 'be clean' energy co

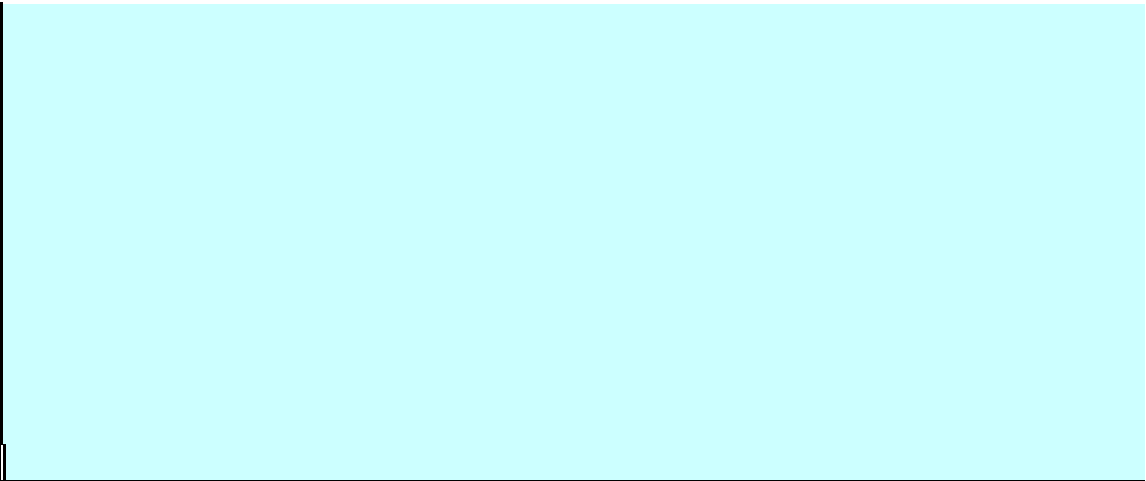
DOMESTIC ENERGY CONSUMPTION AND CO2 ANALYSIS

Unit identifier (e.g. plot number, dwelling type etc.)	Model total floor area (m²)	Number of units	Total area represented by model (m²)	VALIDATION CHECK	
				Calculated DER 2012 (kgCO2 / m2)	DER Worksheet DER 2012 (kgCO2 / m2)
				DER Sheet (Row 384)	
Copperfield	390.12	1	390.12		

Sum	390	1	390	0.0	-
NON-DOMESTIC ENERGY CONSUMPTION AND CO2 ANALYSIS					
Building Use	Area per unit (m²)	Number of units	Total area represented by model (m²)	VALIDATION CHECK	
				Calculated BER 2012 (kgCO2 / m2)	BRUKL BER 2012 (kgCO2 / m2)

Sum	0	0	0
			#DIV/0!
SITE-WIDE ENERGY CONSUMPTION AND CO2 ANALYSIS			
Use	Total Area (m²)		Calculated BER 2012 (kgCO2 / m2)
			-
Sum	390		0.0
			-

consumption figures and the 'be clean' DER.				
REGULATED ENERGY CONSUMPTION PER UNIT (k				
Space Heating (Heat Source 1)	Fuel type Space Heating	Domestic Hot Water (Heat Source 1)	Fuel type Domestic Hot Water	Space and Domestic Hot Water from CHP if applicable
DER Sheet [Row 307b ÷ (Row 367b x 0.01)]	Select fuel type	DER Sheet [Row 310b ÷ (Row 367b x 0.01)]	Select fuel type	DER Sheet [(Row 307a + 310a) ÷ (Row 362 x 0.01)]



0	N/A	0	N/A	0
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REGULATED ENERGY CONSUMPTION BY END USE (kWh/

Space Heating	Fuel type Space Heating	Domestic Hot Water	Fuel type Domestic Hot Water	
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N/A

0	N/A	0	N/A	
REGULATED ENERGY				
Space Heating (kWh p.a.)	N/A	Domestic Hot Water (kWh p.a.)	N/A	Space and Domestic Hot Water from CHP (kWh p.a.)
0		0		0

Wh p.a.) - 'BE CLEAN' SAP DER WORKSHEET					
Fuel type CHP	Total Electricity generated by CHP (-)	Lighting	Auxiliary	Cooling	Space Heating
if applicable	if applicable				
Select fuel type	DER Sheet [(Row 307a + 310a) × (Row 361 ÷ 362)]	DER Sheet Row 332	DER Sheet (Row 313 + 331)	DER Sheet Row 315	

N/A	0	0	0	0	0
'm² p.a.) 'BE CLEAN' BER - SOURCE: BRUKL OUTPUT					REGU
N/A	Total Electricity generated by CHP (-)	Lighting	Auxiliary	Cooling	Natural Gas
	if applicable	#####			

	0	0	0	0	0
CONSUMPTION					
N/A	Electricity generated by CHP (kWh p.a.) <i>if applicable</i>	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)	Cooling (kWh p.a.)	
	0	0	0	0	

SAP 2012 CO2 PERFORMANCE

REGULATED CO2 EMISSIONS PER UNIT (kgCO2 p.a.)

Domestic Hot Water	Space Heating and DHW from CHP	Electricity generated by CHP	Lighting	Auxiliary	Cooling
	if applicable	if applicable			

0	0	0	0	0	0

LATED ENERGY CONSUMPTION BY FUEL TYPE (kWh/m² p.a.) 'BE CLEAN' BER - SOURCE: BRUKL.INP or *SIM.CSV

Grid Electricity	Bespoke DH Factor	Electricity generated by CHP (-) <i>if applicable</i>			
#####	#####	#####			

0	0	0			

	SAP10 CO2 PERFORM				
	REGULATED CO2 EMISSIONS PER				
2012 CO2 emissions (kgCO2 p.a.)	Space Heating	Domestic Hot Water	Space Heating and DHW from CHP	Electricity generated by CHP	Lighting
			if applicable	if applicable	

0	0	0	0	0		
REGULATED CO2 EMISSIONS						
2012 CO2 emissions (kgCO2 p.a.)						
0						

ANCE

UNIT (kgCO2 p.a.)

Auxiliary	Cooling	SAP10 CO2 emissions (kgCO2 p.a.)	Calculated DER SAP10 (kgCO2 / m2)

0	0	0	0.0
		SAP 10 CO2 emissions (kgCO2 p.a.)	BRUKL BER SAP10 (kgCO2 / m2)

	0	#DIV/0!
	REGULATED CO2 EMISSIONS PER UNIT	
	SAP 10 CO2 emissions (kgCO2 p.a.)	Calculated BER SAP10 (kgCO2 / m2)
	0	0.0

The applicant should complete all the light blue cells including information on the 'be green' energy co

DOMESTIC ENERGY CONSUMPTION AND CO₂ ANALYSIS

Unit identifier (e.g. plot number, dwelling type etc.)	Model total floor area (m²)	Number of units	Total area represented by model (m²)	VALIDATION CHECK	
				Calculated DER 2012 (kgCO2 / m2)	DER Worksheet DER 2012 (kgCO2 / m2)
				DER Sheet (Row 384)	
Copperfield	390.12	1	390.12	8.8	8.8

Sum	390	1	390	8.8	-
NON-DOMESTIC ENERGY CONSUMPTION AND CO ₂ ANALYSIS					
				VALIDATION CHECK	
				Calculated BER 2012 (kgCO ₂ / m ²)	BRUKL BER 2012 (kgCO ₂ / m ²)
Use	Area per unit (m ²)	Number of units	Total area represented by model (m ²)		

Sum	0	0	0
			#DIV/0!
SITE-WIDE ENERGY CONSUMPTION AND CO 2 ANALYSIS			
Use	Total Area (m²)		Calculated BER 2012 (kgCO2 / m2)
			-
Sum	390		0.0
			-

consumption figures and the 'be green' DER.

Space Heating (Heat Source 1)	Fuel type Space Heating	Domestic Hot Water (Heat Source 1)	Fuel type Domestic Hot Water	Space Heating (Heat source 2) if applicable
DER Sheet [Row 307b ÷ (Row 367b x 0.01)]	Select fuel type	DER Sheet [Row 310b ÷ (Row 367b x 0.01)]	Select fuel type	DER Sheet [Row 307c ÷ (Row 367c x 0.01)]
6076.37	Grid Electricity	1371.41	Grid Electricity	

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6,076	N/A	1,371	N/A	0
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				REG
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Space Heating	Fuel type Space Heating	Domestic Hot Water	Fuel type Domestic Hot Water	
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				N/A
--	--	--	--	-----

0	N/A	0	N/A	
Space Heating (kWh p.a.)	N/A	Domestic Hot Water (kWh p.a.)	N/A	Space Heating (kWh p.a.)
6,076		1,371		0

REGULATED ENERGY CONSUMPTION PER UNIT (kWh p.a.) - 'BE GREEN' SAP DER WORKSHEET				
Fuel type Space Heating	Domestic Hot Water (Heat source 2)	Fuel type Domestic Hot Water	Space and Domestic Hot Water from CHP	Fuel type CHP
	if applicable		if applicable	if applicable
Select fuel type	DER Sheet [Row 310c ÷ (Row 367c x 0.01)]	Select fuel type	DER Sheet [(Row 307a + 310a) ÷ (Row 362 x 0.01)]	Select fuel type
Grid Electricity		Grid Electricity		

Fuel type Space Heating	Domestic Hot Water (Heat source 2)	Fuel type Domestic Hot Water	Space and Domestic Hot Water from CHP	Fuel type CHP
	if applicable		if applicable	if applicable
Select fuel type	DER Sheet [Row 310c ÷ (Row 367c x 0.01)]	Select fuel type	DER Sheet [(Row 307a + 310a) ÷ (Row 362 x 0.01)]	Select fuel type
Grid Electricity		Grid Electricity		

REGULATED CO2 EMISSIONS

N/A	Domestic Hot Water (kWh p.a.)	N/A	Space and Domestic Hot Water from CHP (kWh p.a.)	N/A
	0		0	

Total Electricity generated by CHP (-)	Electricity generated by renewable (-)	Lighting	Auxiliary	Cooling	Space Heating
if applicable	if applicable				
DER Sheet [(Row 307a + 310a) × (Row 361 ÷ 362)]	DER Sheet Row 380	DER Sheet Row 332	DER Sheet (Row 313 + 331)	DER Sheet Row 315	
-1630.23 830.87					3,154

0	-1,630	831	0	0	3,154
Electricity generated by CHP (-)	Electricity generated by renewable technology (-)	Lighting	Auxiliary	Cooling	Natural Gas
if applicable	if applicable				#####

0	0	0	0	0	0
					REGULATED CO2 E
Electricity generated by CHP (kWh p.a.) <i>if applicable</i>	Electricity generated by renewable (kWh p.a.) <i>if applicable</i>	Lighting (kWh p.a.)	Auxiliary (kWh p.a.)	Cooling (kWh p.a.)	Space Heating CO2 emissions
0	-1,630	831	0	0	3,154

SAP 2012 CO2 PERFORMANCE

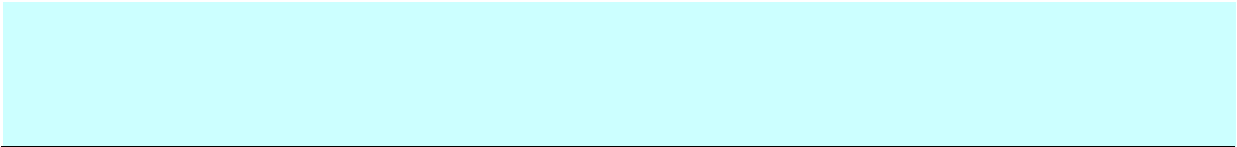
REGULATED CO2 EMISSIONS PER UNIT (kgCO2 p.a.)

Domestic Hot Water	Space Heating and DHW from CHP	Electricity generated by CHP	Electricity generated by renewable	Lighting	Auxiliary
	if applicable	if applicable	if applicable		
712			-846	431	

712	0	0	-846	431	0

REGULATED ENERGY CONSUMPTION BY FUEL TYPE (kWh/m² p.a.) 'BE GREEN' BER - SOURCE: BRUKL.INP or

Grid Electricity	Bespoke DH Factor	Electricity generated by CHP (-) <i>if applicable</i>	Electricity generated by renewable technology (-) <i>if applicable</i>	Waste Heat From Power Station	Enter Carbon Factor 2
#####	#####	#####	#####	#####	#####



0	0	0	0	0	0
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MISSIONS

Domestic Hot Water CO2 emissions	Space Heating and DHW from CHP CO2 emissions if applicable	Electricity generated by CHP CO2 savings if applicable	Electricity generated by renewable CO2 savings if applicable	Lighting CO2 emissions	Auxiliary CO2 emissions
712	0	0	-846	431	0

0	3,451	1,41632000
*SIM.CSV FILE		
Enter Carbon Factor 3	2012 CO2 emissions (kgCO2 p.a.)	Natural GasGrid ElectricityBespoke DH FactorElectricity generated by CHP (-)if applicable
#####		#####

0	0	0	0	0	0
Cooling CO2 emissions	2012 CO2 emissions	Space Heating CO2 emissions	Domestic Hot Water CO2 emissions	Space Heating and DHW from CHP CO2 emissions if applicable	Electricity generated by CHP CO2 savings if applicable
0	3,451	1,416	320	0	0

SAP10 CO2 PERFORMANCE					
REGULATED CO2 EMISSIONS PER UNIT					
Electricity generated by renewable if applicable	Lighting	Auxiliary	Cooling	SAP10 CO2 emissions (kgCO2 p.a.)	Calculated DER SAP10 (kgCO2 / m2)
-380	194			1,549	4.0

-380	194	0	0	1,549	4.0
REGULATED CO2 EMISSIONS PER UNIT					
Electricity generated by renewable technology (-) if applicable	Waste Heat From Power Station	Enter Carbon Factor 2	Enter Carbon Factor 3	SAP10 CO2 emissions	BRUKL BER SAP10 (kgCO2 / m2)
#####	#####	#####	#####		

0	0	0	0	0	#DIV/0!
REGULATED CO2 EMISSIONS PER UNIT					
Electricity generated by renewable CO2 savings if applicable	Lighting CO2 emissions	Auxiliary CO2 emissions	Cooling CO2 emissions	SAP10 CO2 emissions	Calculated BER SAP10 (kgCO2 / m2)
-380	194	0	0	1,549	4.0

SAP 2012 PERFORMANCE

DOMESTIC

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

	Carbon Dioxide Emissions for domestic buildings (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline: Part L 2013 of the Building Regulations Compliant Development	6	
After energy demand reduction	5	
After heat network / CHP	0	
After renewable energy	3	

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

	Regulated domestic carbon dioxide savings	
	(Tonnes CO ₂ per annum)	(%)
Savings from energy demand reduction	0	7%
Savings from heat network / CHP	5	93%
Savings from renewable energy	-3	-62%
Cumulative on site savings	2	38%
Annual savings from off-set payment	3	-
	(Tonnes CO ₂)	
Cumulative savings for off-set payment	104	-
Cash in-lieu contribution (£)	6,211	

NON-DOMESTIC

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

	Carbon Dioxide Emissions for non-domestic buildings (Tonnes CO2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2013 of the Building Regulations Compliant Development	0	
After energy demand reduction	0	
After heat network / CHP	0	
After renewable energy	0	

Table 4: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for non-domestic building:

	Regulated non-domestic carbon dioxide savings	
	(Tonnes CO ₂ per annum)	(%)
Savings from energy demand reduction	0	#DIV/0!
Savings from heat network / CHP	0	#DIV/0!
Savings from renewable energy	0	#DIV/0!
Total Cumulative Savings	0	#DIV/0!

Table 5: Shortfall in regulated carbon dioxide savings

	Annual Shortfall (Tonnes CO ₂)	Cumulative Shortfall (Tonnes CO ₂)
Total Target Savings	0	-

Shortfall	0	0
Cash in-lieu contribution (£)	0	-

SITE-WIDE

	Total regulated emissions (Tonnes CO ₂ / year)	CO ₂ savings (Tonnes CO ₂ / year)
Part L 2013 baseline	6	
Be lean	5	0
Be clean	0	5
Be green	3	-3
	-	CO ₂ savings off-set (Tonnes CO ₂)
Off-set	-	104

Building use		
	Space Heating	Hot Water
Domestic	0	0
Non-domestic	0	0

	Target Fabric Energy Efficiency (kWh/m ²)	Dwelling Fabric Energy Efficiency (kWh/m ²)
Development total	0.00	0.00

	Area weighted average non-domestic cooling demand (MJ/m ²)	Total area weighted non-domestic cooling demand (MJ/year)
Actual		
Notional		



Table 1: Carbon Dioxide Emissions at

Baseline: Part L 2013 of the Building Regulations Compliant Development
After energy demand reduction
After heat network / CHP
After renewable energy

Table 2: Regulated Carbon Dioxide s:

Savings from energy demand reduction
Savings from heat network / CHP
Savings from renewable energy
Cumulative on site savings
Annual savings from off-set payment
Cumulative savings for off-set payment
Cash in-lieu contribution (£)

Table 3: Carbon Dioxide Emissions at

Baseline: Part L 2013 of the Building Regulations Compliant Development
After energy demand reduction
After heat network / CHP
After renewable energy

Table 4: Regulated Carbon Dioxide s:

Savings from energy demand reduction
Savings from heat network / CHP
Savings from renewable energy
Total Cumulative Savings

Table 5: Shortfall in regulated carbon

Total Target Savings

Shortfall
Cash in-lieu contribution (£)

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Percentage savings (%)		
7%		Part L 2013 baseline
93%		Be lean
-62%		Be clean
-		Be green
-		
		Off-set

Energy demand following energy efficiency measures (MWh/year)			
Lighting	Auxiliary	Cooling	Unregulated electricity
0	0	0	
0	0	0	

Improvement (%)

SAP10 PERFORMANCE

After each stage of the Energy Hierarchy for domestic buildings

Carbon Dioxide Emissions for domestic buildings (Tonnes CO ₂ per annum)	
Regulated	Unregulated
5	
5	
0	
2	

Savings from each stage of the Energy Hierarchy for domestic buildings

Regulated domestic carbon dioxide savings	
(Tonnes CO ₂ per annum)	(%)
0	8%
5	92%
-2	-30%
4	70%
2	-
(Tonnes CO ₂)	
46	-
2,788	

After each stage of the Energy Hierarchy for non-domestic buildings

Carbon Dioxide Emissions for non-domestic buildings (Tonnes CO2 per annum)	
Regulated	Unregulated
0	
0	
0	
0	

Savings from each stage of the Energy Hierarchy for non-domestic buildings

Regulated non-domestic carbon dioxide savings	
(Tonnes CO ₂ per annum)	(%)
0	#DIV/0!
0	#DIV/0!
0	#DIV/0!
0	#DIV/0!

Carbon dioxide savings

Annual Shortfall (Tonnes CO ₂)	Cumulative Shortfall (Tonnes CO ₂)
0	-

0	0
0	-

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Total regulated emissions (Tonnes CO2 / year)	CO2 savings (Tonnes CO2 / year)	Percentage savings (%)
5		
5	0	8%
0	5	92%
2	-2	-30%
-	CO2 savings off-set (Tonnes CO2)	-
-	46	-

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Unregulated gas
0
0







Issue	1.1
Date	10/01/2019
Author	Greater London Authority

Update Location	Description of changes made to GLA Carbon Emission Reporting Spreads
Introduction / Version Control	<p>Additional explanatory wording has been included in the 'Background and Purpose' and 'Methodology' sections to further assist applicants with the reporting process</p> <p>A version control tab has been added to list all changes made to the spreadsheet versions</p>
Baseline, be lean, be clean & be green tabs	<p>Domestic SAP worksheet row reference numbers have been included in the input tabs</p> <p>Non-domestic Non-domestic calculation is now based on 'energy consumption by fuel type' instead of 'energy consumption figures in the BRUKL tab to enable the accurate calculation of the 'Total Energy Consumption'. This data is available in the output file ending in "*BRUKL.inp" for government approved schemes and output file ending "*sim.csv" for SBEM. Where these files are used they should be included in the Energy Statement.</p> <p>Total calculation is now based on the 'total area represented by model (m²)' rather than 'total floor area of units'. This is to ensure that the total model area aligns with the development footprint</p> <p>Rows with void formulas have now been fixed</p> <p>Formula for CHP/Renewable contribution now fixed in SAP 10 calculation</p> <p>Extra input rows have been added to account for larger schemes</p> <p>Columns used to calculate the carbon emissions using SAP10 carbon factors have been added to allow for greater transparency in the calculation methodology</p> <p>Validation check moved to be more prominent</p> <p>Additional heat source has been added into the calculation</p> <p>Reporting of electricity generated by CHP or renewable technologies has been added and can now be inputted as a negative value (-)</p>
Be Green tab	Additional heat source has been added into the calculation in the 'be green' tabs to account for multiple heating systems, if present
Carbon factors tab	<p>The carbon emission factor table has been updated and clarification has been provided on how it should be used</p> <p>A typo in the carbon factor unit has been corrected (kgCO₂/kWh)</p>

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