Appendix 1 Policy background and example carbon offsetting calculations

1) Policy Background

1.1 London Plan

The carbon targets to which offsetting applies derive from the London Plan 2016

London Plan Policy 5.2 - Minimising carbon dioxide emissions

Planning decisions

A. Development proposals should make the fullest contribution to minimising carbon dioxide

emissions in accordance with the following energy hierarchy:

1. Be lean: use less energy

2. Be clean: supply energy efficiently

3. Be green: use renewable energy

B. The Mayor will work with boroughs and developers to ensure that major developments meet the following targets for carbon dioxide emissions reduction in buildings. These targets are expressed as minimum improvements over the Target Emission Rate (TER) outlined in the national Building Regulations leading to zero carbon residential buildings from 2016 and zero carbon non-domestic buildings from 2019

	uildings:			
Year	Improvement on 2010			
	Building Regulations			
2010 – 2013	25 per cent			
	(Code for Sustainable			
	Homes level 4)			
2013 – 2016	40 per cent			
2016 – 2031	Zero carbon			
	buildings: Improvement on 2010			
Year				
Year	Improvement on 2010			
	Improvement on 2010 Building Regulations			
2010 – 2013	Improvement on 2010			
2010 – 2013 2013 – 2016	Improvement on 2010 Building Regulations 25 per cent			
2010 – 2013 2013 – 2016	Improvement on 2010 Building Regulations 25 per cent 40 per cent			
Year 2010 – 2013 2013 – 2016 2016 – 2019 2019 – 2031	Improvement on 2010 Building Regulations 25 per cent 40 per cent As per building regulations			

no et de cartel de citati

- C. Major development proposals should include a detailed energy assessment to demonstrate how the targets for carbon dioxide emissions reduction outlined above are to be met within the framework of the energy hierarchy
- D. As a minimum, energy assessments should include the following details:
- a) calculation of the energy demand and carbon dioxide emissions covered by the Building Regulations and, separately, the energy demand and carbon dioxide emissions from any other part of the development, including plant or equipment, that are not covered by the Building Regulations (see paragraph 5.22) at each stage of the energy hierarchy
- b) proposals to reduce carbon dioxide emissions through the energy efficient design of the site, buildings and services
- c) proposals to further reduce carbon dioxide emissions through the use of decentralised energy where feasible, such as district heating and cooling and combined heat and power (CHP)
- d) proposals to further reduce carbon dioxide emissions through the use of on-site renewable energy technologies.
- E. The carbon dioxide reduction targets should be met on-site. Where it is clearly demonstrated that the specific targets cannot be fully achieved on-site, any shortfall may be provided off-site or through a cash in lieu contribution to the relevant borough to be ring fenced to secure delivery of carbon dioxide savings elsewhere.

These targets are enforced through planning obligations, on a borough by borough basis, and the most common clause in the City's present S106 agreements is the 35% improvement on the 2013 Part L Building Regulations (which is broadly equivalent to a 40% reduction on the 2010 Part L Building Regulations – see Mayor's Sustainable Design & Construction SPG).

The London Plan is under review with the draft New London Plan Policy SI2 *Minimising Greenhouse Gas Emissions* continuing with the requirement for all major development to be zero carbon.

1.2 City of London Local Plan 2015

The City Local Plan reiterates the requirement to offset carbon emissions where carbon targets cannot be met on site.

Policy DM 15.2 Energy and CO₂ emissions assessments

- 1. Development design must take account of location, building orientation, internal layouts and landscaping to reduce likely energy consumption.
- 2. For all major development energy assessments must be submitted with the application demonstrating:
- energy efficiency showing the maximum improvement over current Building Regulations to achieve the required Fabric Energy Efficiency Standards;
- carbon compliance levels required to meet national targets for zero carbon development using low and zero carbon technologies, where feasible;
- where on-site carbon emission reduction is unviable, offsetting of residual CO₂ emissions through 'allowable solutions' for the lifetime of the building to achieve national targets for zero-carbon homes and non-domestic buildings.
 Achievement of zero carbon buildings in advance of national target dates will be encouraged;
- anticipated residual power loads and routes for supply.

2) Example Carbon Offsetting S106 agreement

Where carbon offsetting is required this is secured through S106 agreement. An example S106 carbon offsetting clause is included below:

CARBON OFF-SETTING

- 1 The Developer shall:
- 1.1 pay the Carbon Off-set Contribution (as specified in paragraph 1.2 of this Schedule 3) calculated in accordance with the following formula:

Carbon Off-set Contribution = $(T - R) \times Y \times Z$

Where T is the target reduction ("the Target Reduction") in the amount of carbon dioxide (expressed in tonnes) which reflects 35% of the New Build / Development's annual carbon dioxide emissions if constructed in accordance with the 2013 Building Regulations

R is the reduction in the amount of carbon dioxide (expressed in tonnes) which reflects the reduction in the Development's annual carbon dioxide emissions (when compared to the annual carbon dioxide emissions if constructed in accordance with the Building Regulations) which it is calculated will be achieved by the implementation of carbon reduction measures as determined by reference to the Energy Statement submitted to the City Corporation pursuant to the Application OR (in the event that a subsequent revised assessment of carbon dioxide emissions of the completed New Build / Development is provided pursuant to paragraph 1.2) by reference to that subsequent revised assessment

Y is the number of years for which the contribution is payable, being 30 years

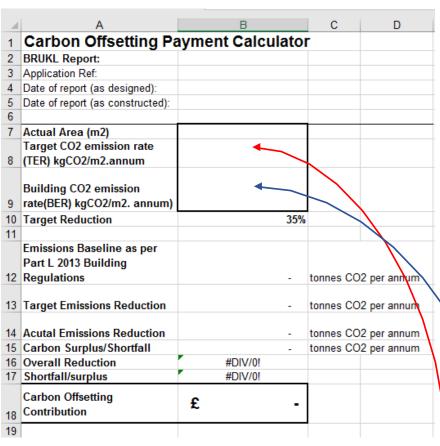
Z is the cost of carbon per tonne taken from the Mayor's draft Sustainable Design & Construction SPG (paragraph 2.4.39) being £60 per tonne of carbon dioxide

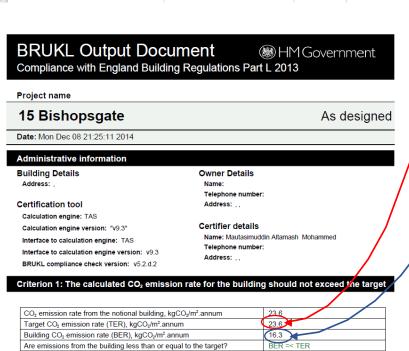
and provided that the Carbon Off-set Contribution may be zero (or if negative shall be deemed to be zero).

- 1.2 Following the Completion Date but prior to Occupation the Developer shall confirm that the Energy Statement has been implemented and submit to the City Corporation an assessment of the carbon dioxide emissions of the completed Development so as to calculate the reduction in the amount of carbon dioxide (expressed in tonnes) which reflects the Development's annual carbon dioxide emissions which it is calculated will be achieved by the implementation of carbon reduction measures ("R" in the formula in paragraph 1.1).
- 1.3 In the event of a shortfall in the Target Reduction, the Developer will calculate the amount of Carbon Off-set Contribution referable to the said shortfall in accordance with the formula in paragraph 1.2 and shall pay the Carbon Off Set Contribution as follows:
- 1.4 to the City Corporation to be paid into the City of London Carbon Off-set Scheme no later than eight (8) weeks following Completion of the Development (as notified to the City Corporation pursuant to clause 17.5); or
- 11.5 evidence that the payment has been made shall be provided to the City Corporation within eight (8) weeks of the payment being made.

3) Example Calculation of the Carbon Offsetting contribution

The City Corporation has set up a carbon offsetting payment calculator to use a BRUKL report, submitted on completion of the development, to discharge the carbon offsetting obligation. This is the easiest and most straightforward way to check how much carbon is required to be offset.





Separate submission

Are as built details the same as used in the BER calculations

The floor area (m2) can be found in the technical data section of the BRUKL report.

Technical Data Sheet (Actual vs			s. Notional Building) Building Use		
Area [m²]	Actual 8326	Notional 8326	% Area	Building Type A1/A2 Retail/Financial and Professional services	
External area [m²] Veather	6443 6443 LON LON 92		A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways B1 Offices and Workshop businesses B2 to B7 General Industrial and Special Industrial Groups		
nfiltration [m³/hm²@ 50Pa] Average conductance [W/K]	5 3230	3 2789		B8 Storage or Distribution C1 Hotels C2 Residential Inst.; Hospitals and Care Homes	
verage U-value [W/m²K] Ipha value* [%] Percentage of the building's average heat trar	0.5 0.43 6.62 6.62	6.62	- -	C2 Residential Inst.: Residential schools C2 Residential Inst.: Universities and colleges C2A Secure Residential Inst.	
i etemage vi ure validing s arenge near val	siel weinderk wind	aris due to thermal program		D1 Non-residential Inst.: Community/Day Centre D1 Non-residential Inst.: Libraries, Museums, and Galleries D1 Non-residential Inst.: Education D1 Non-residential Inst.: Primary Health Care Building D1 Non-residential Inst.: Crown and County Courts	
				DT Non-residential inst. Colon and county counts D2 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	

When these values have been entered – the carbon calculator will work out the charge, and how much carbon shortfall/surplus there is.

	A	В	С	D	Е					
1	Carbon Offsetting Payment Calculator									
2	BRUKL Report:	15 Bishopsgate								
3	Application Ref:	14/01251/FULMAJ								
4	Date of report (as designed):	Dec 8th 2014								
5	Date of report (as constructed):									
6										
7	Actual Area (m2)	8,326.00								
	Target CO2 emission rate									
8	(TER) kgCO2/m2.annum	23.60)							
	Building CO2 emission									
9	rate(BER) kgCO2/m2. annum)	16.30	4							
10	Target Reduction	35%	6							
11										
	Emissions Baseline as per									
40	Part L 2013 Building	400.40								
12	Regulations	196.49	196.49 tonnes CO2 per annum							
13	Target Emissions Reduction	68.77 tonnes CO2 per annum								
-13	rarget Emissions Reduction	00.77 tollies 002 per allifulli		z per annum						
14	Acutal Emissions Reduction	60.78	tonnes CO2 per annum							
15	Carbon Surplus/Shortfall		2 per annum							
16	Overall Reduction	30.93%	_							
17	Shortfall/surplus	4.07%	5							
	Carbon Offsetting	C 44 202 00								
18	Contribution	£ 14,382.00								
19										