Greater London Authority - Whole Life-Cycle Carbon (WLC) Assessment template

HOW TO USE THIS SPREADSHEET

This template should be used by planning applicants to fulfil the requirements of the Mayor's Whole Life-Cycle Carbon assessment policy set out in London Plan Policy SI 2. Before completing and submitting this spreadsheet to the GLA, applicants should read the Whole Life-Cycle Carbon Assessment guidance:
https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/planning-guidance/whole-life-cycle-carbon-assessments-guidance-pre-consultation-draft

Applicants are required to submit WLC information to the GLA at the following three stages: pre-application, outline/detailed planning submission and post-construction. Separate tabs are provided in this spreadsheet for each stage. An outline of the information required at each stage and how to submit it is provided below.

1. Pre-application stage

At pre-application stage, applicants are required to complete the pre-application information tab of this template which requires applicants to confirm various details about the site and to provide details of the WLC principles which are informing the development of the site. This should be submitted to the GLA along with all other pre-application material.

2. Outline/detailed planning submission stage

At this stage, applicants are required to complete the outline or detailed planning stage tab of this template (whichever is relevant) and submit it to the GLA along with their planning application. This stage of the process requires a baseline WLC assessment against each life-cycle module to be undertaken. At outline stage this can be based on default figures from the RICS Professional Statement: Whole Life Carbon assessment for the built environment. At detailed stage this should be based on bespoke building assumptions. Applicants are required to undertake two assessments; the first accounts for the current status of the electricity grid and the second accounts for its expected decarbonisation. Applicants may determine which assessment is to form the basis of design decisions (which should be confirmed in the relevant cell) but both assessments should be completed. This spreadsheet allows for both assessments to be provided.

3. Post-construction stage

At the final stage of the WLC assessment process, applicants should complete the post-construction result tab of this template and submit it to the GLA within three months of practical completion. This will require an update of the information provided at planning submission stage and for the actual WLC carbon emission figures to be reported using actual material quantities and site emissions during construction. Information should be submitted to:
ZeroCarbonPlanning@london.gov.uk

QUERIES

Any queries or feedback on this template should be submitted to:
ZeroCarbonPlanning@london.gov.uk

Project details	
Project name	
Planning application reference number (if applicable)	
Use Type	
Brief description of the project	
GIA (m^2)	
Authors (organisation or individuals)	
Date of assessment	

	WLC reduction principles	Key benefits	Has this principle been adopted? (Y/N)	If yes provide examples, and if no please provide reasons for this
1	Reuse and retrofit of existing buildings	Significant retention and reuse of structures is carbon efficient and reduces construction costs.		
2	Use recycled or repurposed material	Reduces carbon emissions and reduces waste.		
3	Material selection	Appropriate material choices is key to carbon reduction. Ensuring that there is synchronicity between materials selected and planned life expectancy of the building reduces waste and the need for replacement, thus reducing in use costs.		
4	Minimise operational energy use	A 'fabric first' approach should be prioritised to minimise energy demand and reduce carbon and in-use costs.		
5	Minimise operational water use	Choice of materials and durability of systems, to avoid leakage and subsequent building damage, contribute to reducing the carbon cost of water use.		
6	Disassembly and reuse	Designing for future disassembly ensures that products do not become future waste, and maintain their environmental and economic value.		
7	Building shape and form	Compact efficient shapes help minimise both operational and embodied carbon emissions for a given floor area. This means a more efficient building overall resulting in lower construction and in use costs.		
8	Regenerative design	Removing CO_2 from the atmosphere through materials and systems absorbing it makes a direct positive contribution to carbon reduction.		
9	Designing for durability and flexibility	Durability means that repair and replacement is reduced which in turn helps reduce life-time building costs. A building designed for flexibility can respond with minimum environmental impact to future changing requirements and a changing climate, thus avoiding obsolescence which also underwrites future building value.		
10	Optimisation of the relationship between operational and embodied carbon	Optimising the operational/embodied carbon relationship contributes directly to resource efficiency and overall cost reduction.		
11	Building life expectancy	Defining building life expectancy gives guidance to project teams as to the most efficient choices for materials and products. This aids overall resource efficiency, including cost efficiency and helps future proof asset value.		
12	Local sourcing	Sourcing local materials reduces transport distances and supply chain lengths and has associated local social and economic benefits.		
13	Minimising waste	Waste represents an unnecessary and avoidable carbon cost. Buildings should be designed to minimise fabrication and construction waste, and to ease repair and replacement with minimum waste, which helps reduce initial and in-use costs.		
14	Efficient fabrication	Efficient construction methods (e.g. modular systems, precision manufacturing and modern methods of construction) contribute to better build quality, reduce construction phase waste and reduce the need for repairs during post completion and the defects period (snagging).		
15	Lightweight construction	Lightweight construction uses less material which reduces the carbon footprint of the building as there is less material to source, fabricate and deliver to site.		
16	Circular economy	The circular economy principle focusses on a more efficient use of materials which in turn leads to carbon and financial efficiencies.		

Project details	
Project name	Former Stag Brewery
Planning application reference number (if applicable	220900/OUT
Use Type	Residential apartmentsFlexible commercial and community floorspace to include:i.Retail, financial and professional services, café/restauran
Brief description of the project	The former Stag Brewery Site is bounded by Lower Richmond Road to the south, the river Thames and the Thames Bank to the north, Williams Lane to the east and Bulls Alley (off Mortlake High Street) to the west. The Site is bisected by Ship Lane. The Site currently comprises a mixture of large scale industrial brewing structures, large areas of hardstanding and playing fields.
GIA (m^2)	54962
Authors (organisation or individuals	Hoare Lea
Date of assessment	29/07/2022
Nationally recognised assessment method used	e.g. BS EN 15978, with additional guidance from RICS Professional Statement
Reference study period (if not 60 years)	60 years
Software tool used	OneClick LCA - Carbon assessment, RICS Tool
Source of carbon data for materials and products	Type III EPD's (BSEN15804), Type III EPD's (ISO21930), Type III EPD's (ISO14067), EPDs & Data to ISO 14025, 14040, 1404
EPD database used	One Click LCA generic construction materials database, Envirodec, DAPconstrucción, GBC Espana, and AENOR, BAU-EPD, CENIA, DAP

Estimated WLC emissions (Assessment 1)
N.B. This forms the WLC baseline for the development. The results from Assessment 1 below are automatically populated here.

	Module A1-A5	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	14,705,308 kg CO2e	2,120,640 kg CO2e	22,996,071 kg CO2e	94,053 kg CO2e	-3,746,697 kg CO2e
TOTAL kg CO_2e/m^2 GIA	267.554091	38.58375566	418.3994654	1.711235716	-68.16885764
Comparison with WLC benchmarks (see Appendix 2 of the guidance) if Assessment 1 was used to inform design decisions	N/A- Assessment 1 not used to inform design decisions.				

Estimated WLC emissions (Assessment 2)
N.B. The results from Assessment 2 below are automatically populated here.

	Module A1-A5	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	14,705,308 kg CO2e	2,120,640 kg CO2e	7,284,091 kg CO2e	94,053 kg CO2e	###############
TOTAL kg CO_2e/m^2 GIA	267.554091	38.58375566	132.5295916	1.711235716	-68.16885764
Comparison with WLC benchmarks (see Appendix 2 of the guidance) if Assessment 2 was used to inform design decisions	[Explain the reasons for any divergences from WLC benchmarks, including against the WLC aspirational benchmarks. Please note that grid decarbonisation has not been accounted for in the benchmarks]				

Key site opportunities and constraints in reducing WLC emissions	The existing site contains existing buildings alongside associated existing hard standing. This could be reprocessed and used as aggregate on site. Due to the early stages of the project a pre-demolition has not yet been undertaken in order to inform the potential quanitity of available materials but this could inform later design desicions. The Proposed Development also has the opportunity to further reduce embodied carbon in the technical design stages by analysing EPD's of the proposed services, facade and fit out products, and selecting lower carbon alternatives which meet the same functional requirements. A concrete frame has been proposed for the development, and despite considering the inclusion of low carbon cement replacement, the

Summary of key actions to reduce whole life-cycle carbon emissions that have informed this assessment, including the WLC reductions	Action	WLC reduction (kg CO_2e/m^2 GIA)
	Reductions in total energy consumption due to passive design, LZCs, and heat pumps- Reduction from Baseline	16 kg CO2e/m2 GIA
	Selection of R454B over R410A	108 kg CO2e/m2 GIA

Specify further opportunities to reduce the development's whole life-cycle carbon emissions. including the WLC reduction potential	Further potential opportunities	WLC reduction potential (kg CO_2e/m^2 GIA)
	Increase Cement replacement percentage from 20% to 50%	20 kg CO2e/m2 GIA
	Explore specification of durable and robust materials and products to reduce B2-5 emissions	90 kg CO2e/m2 GIA

MATERIAL QUANTITY AND END OF LIFE SCENARIOS		Product and Construction Stage (Module A)		Assumptions made with respect to maintenance, repair and replacement cycles (Module B)	Material 'end of life' scenarios (Module C)	Benefits and loads beyond the system boundary (Module D)	
Building element category		Material type	Material quantity (kg)			Estimated reusable materials (kg)	Estimated recyclable materials (kg)
	Note/example	Breakdown of material type in each category [Insert more lines if needed] e.g. Concrete	65000 kg	For all primary building systems (structure, substructure, envelope, MEP services, internal finishes)	Declare 'end of life' scenario as per project's Circular Economy Statement	0 kg	25 kg
		e.g. Reinforcement	5000 kg			2 kg	8 kg
		e.g. Formwork	250 kg			0 kg	0 kg
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment						
0.2	Major Demolition Works						
0.3	Temporary Support to Adjacent Structures						
0.4	Specialist Ground Works						
1	Substructure	Concrete, Steel, InsulationTiles	14,122,580 kg	Permanent	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone, Asphalt to replace primary gravel	0 kg	11,298,064 kg
2.1	Superstructure: Frame	Concrete, Steel	6,100,913 kg	60	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone, Asphalt to replace primary gravel	0 kg	4,880,730 kg
2.2	Superstructure: Upper Floors	Wood, vynil	24,582,924 kg	60	Recycling of Concrete, Cement to replace primary gravel	0 kg	19,666,339 kg
2.3	Superstructure: Roof	Concrete, Steel, Insulation, Tiles	4,110,110 kg	60	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone, Asphalt to replace primary gravel	0 kg	3,288,088 kg
2.4	Superstructure: Stairs and Ramps	Concrete, Steel	1,182,004 kg	60	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone, Asphalt to replace primary gravel	0 kg	945,603 kg
2.5	Superstructure: External Walls	Masonry, Concrete, insulation, Plaserboard	5,439,727 kg	35-60	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone to replace primary gravel	0 kg	4,351,781 kg
2.6	Superstructure: Windows and External Doors	Glazing, wood, aluminimum	0 kg	25-45	Recycling of aluminium, steel	0 kg	0 kg
2.7	Superstructure: Internal Walls and Partitions	Wooden stud , plasterboard	1,249,590 kg	40 for plasterboard	Recycling of plaster to replace primary gravel Wood products to being incinerated for energy	0 kg	999,672 kg
2.8	Superstructure: Internal Doors		0 kg	25 for wooden doors.	Wood products to being incinerated for energy recovery	0 kg	0 kg
3	Finishes	Paint, Floor coverings, Tiles	1,025,152 kg	15 years for paint	-	0 kg	820,121 kg
4	Fittings, furnishings & equipment (FFE)	Aluminium, Steel, Stainless steel, Galvanized steel	32,915 kg	25-50 years	Recycling of Porcelain, Ceramic, Stone to replace primary gravel	0 kg	26,332 kg
5	Services (MEP)		1,826,647 kg	s and other heat emitters25 years for elect	Recycling for Aluminium, Steel, Stainless steel, Galvanized steel, Copper coated, Copper uncoated	0 kg	1,461,318 kg
6	Prefabricated Buildings and Building Units		0 kg	-	-	0 kg	0 kg
7	Work to Existing Building		0 kg	-	-	0 kg	0 kg
8	External works	Soil, Concrete	2,922,842 kg	60 years	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone, Asphalt to replace primary gravel	0 kg	2,338,273 kg
		TOTAL	62,595,403 kg			0 kg	50,076,323 kg
		Material intensity (kg/m2 GIA)	1,139 kg/m2 GIA			0 kg/m2 GIA	911 kg/m2 GIA

Confirm here whether Assessment 1 or Assessment 2 (see below) is to form the basis of design decisions	Assessment 2

ASSESSMENT 1 - current status of the electricity grid

GWP POTENTIAL FOR ALL LIFE-CYCLE MODULES[1] (kgCO2e)		Sequestered (or biogenic) carbon (negative value) (kgCO2e)	Product stage (kgCO2e)	Construction process stage (kgCO2e)		Use stage (kgCO2e)							End of Life (EoL) stage (kgCO2e)				TOTAL Modules A-C $kgCO_2e$	Benefits and loads beyond the system boundary (kgCO2e)
			Module A			Module B							Module C					Module D*
Building element category			[A1] to [A3]	[A4][2]	[A5]	[B1]	[B2]*	[B3]*	[B4]*	[B5]*	[B6]	[B7]	[C1]	[C2]	[C3]	[C4]		
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment												0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
0.2	Major Demolition Works												0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
0.3	Temporary Support to Adjacent Structures	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
0.4	Specialist Ground Works	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
0.5	Temporary Diversion Works	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
1	Substructure	0 kg CO2e	4,550,839 kg CO2e	97,664 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	14,472 kg CO2e	0 kg CO2e			30,990 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-1,556,857 kg CO2e
2.1	Superstructure: Frame	0 kg CO2e	887,929 kg CO2e	26,911 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			5,044 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-187,205 kg CO2e
2.2	Superstructure: Upper Floors	0 kg CO2e	3,237,420 kg CO2e	115,782 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			49,805 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-968,991 kg CO2e
2.3	Superstructure: Roof	0 kg CO2e	579,399 kg CO2e	19,254 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	14,472 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-79,520 kg CO2e
2.4	Superstructure: Stairs and Ramps	0 kg CO2e	106,881 kg CO2e	5,899 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-22,675 kg CO2e
2.5	Superstructure: External Walls	0 kg CO2e	1,232,941 kg CO2e	8,869 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	4,032 kg CO2e	0 kg CO2e			2,030 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-278,055 kg CO2e
2.6	Superstructure: Windows and External Doors	0 kg CO2e	202,750 kg CO2e	420 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	164,270 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-23,883 kg CO2e
2.7	Superstructure: Internal Walls and Partitions	0 kg CO2e	444,343 kg CO2e	2,077 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	66,904 kg CO2e	0 kg CO2e			194 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-46,932 kg CO2e
2.8	Superstructure: Internal Doors	0 kg CO2e	316,859 kg CO2e	1,029 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	316,859 kg CO2e	0 kg CO2e			160 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-104,246 kg CO2e
3	Finishes	0 kg CO2e	362,392 kg CO2e	1,825 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	423,046 kg CO2e	0 kg CO2e			323 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-116,505 kg CO2e
4	Fittings, furnishings & equipment	0 kg CO2e	292,244 kg CO2e	477 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	80,794 kg CO2e	0 kg CO2e			1,279 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-25,357 kg CO2e
5	Services (MEP)	0 kg CO2e	1,023,231 kg CO2e	2,002 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	1,035,791 kg CO2e	0 kg CO2e	8,607,346 kg CO2e 14,353,588 kg CO2e	35,137 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-295,745 kg CO2e
6	Prefabricated Buildings and Building Units	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
7	Work to Existing Building	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
8	External works	0 kg CO2e	123,193 kg CO2e	5,121 kg CO2e	1,057,559 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			4,229 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-40,725 kg CO2e
	TOTAL kg CO2e	**0 kg CO2e**	**13,360,420 kg CO2e**	**287,329 kg CO2e**	**1,057,559 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**2,120,640 kg CO2e**	**0 kg CO2e**	**22,960,934 kg CO2e**	**35,137 kg CO2e**	**94,053 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**##############**	**-3,746,697 kg CO2e**
	TOTAL - kg CO2e/m2 GIA	**0 kg CO2e/m2 GIA**	**243 kg CO2e/m2 GIA**	**5 kg CO2e/m2 GIA**	**19 kg CO2e/m2 GIA**	**0 kg CO2e/m2 GIA**	**###############**	**0 kg CO2e/m2 GIA**	**39 kg CO2e/m2 GIA**	**0 kg CO2e/m2 GIA**	**418 kg CO2e/m2 GIA**	**1 kg CO2e/m2 GIA**	**##############**	**#########**	**#########**	**#########**	**##############**	**-68 kg CO2e/m2 GIA**

Notes:
* Report non-decarbonised values for both material and operational emissions using current status of the electricity grid.
[1] If you have entered a reference study period in cell C10 because the assumed building life expectancy is greater or less than 60 years, this table should be copied and pasted below using the actual assumed life expectancy. This should be done for both GWP reporting tables and should be clearly labelled.
[2] Use the 'European manufactured' transportation scenarios (see Table 7, page 19 of the RICS PS) to calculate transportation emissions of MEP equipment.

(blue)	Mandatary cells for completion
(crossed)	N/A

ASSESSMENT 2 - expected decarbonisation of the electricity grid

GWP POTENTIAL FOR ALL LIFE-CYCLE MODULES[1] (kgCO2e)		Sequestered (or biogenic) carbon (negative value) (kgCO2e)	Product stage (kgCO2e)	Construction process stage (kgCO2e)		Use stage (kgCO2e)							End of Life (EoL) stage (kgCO2e)				TOTAL Modules A-C $kgCO_2e$	Benefits and loads beyond the system boundary (kgCO2e)
			Module A			Module B							Module C					Module D*
Building element category			[A1] to [A3]	[A4][2]	[A5]	[B1]	[B2]*	[B3]*	[B4]*	[B5]*	[B6]	[B7]	[C1]	[C2]	[C3]	[C4]		
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment												0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
0.2	Major Demolition Works												0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
0.3	Temporary Support to Adjacent Structures	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
0.4	Specialist Ground Works	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
0.5	Temporary Diversion Works	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
1	Substructure	0 kg CO2e	4,550,839 kg CO2e	97,664 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	14,472 kg CO2e	0 kg CO2e			30,990 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-1,556,857 kg CO2e
2.1	Superstructure: Frame	0 kg CO2e	887,929 kg CO2e	26,911 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			5,044 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-187,205 kg CO2e
2.2	Superstructure: Upper Floors	0 kg CO2e	3,237,420 kg CO2e	115,782 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			49,805 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-968,991 kg CO2e
2.3	Superstructure: Roof	0 kg CO2e	579,399 kg CO2e	19,254 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	14,472 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-79,520 kg CO2e
2.4	Superstructure: Stairs and Ramps	0 kg CO2e	106,881 kg CO2e	5,899 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-22,675 kg CO2e
2.5	Superstructure: External Walls	0 kg CO2e	1,232,941 kg CO2e	8,869 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	4,032 kg CO2e	0 kg CO2e			2,030 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-278,055 kg CO2e
2.6	Superstructure: Windows and External Doors	0 kg CO2e	202,750 kg CO2e	420 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	164,270 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-23,883 kg CO2e
2.7	Superstructure: Internal Walls and Partitions	0 kg CO2e	444,343 kg CO2e	2,077 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	66,904 kg CO2e	0 kg CO2e			194 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-46,932 kg CO2e
2.8	Superstructure: Internal Doors	0 kg CO2e	316,859 kg CO2e	1,029 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	316,859 kg CO2e	0 kg CO2e			160 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-104,246 kg CO2e

3	Finishes	0 kg CO2e	362,392 kg CO2e	1,825 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	423,046 kg CO2e	0 kg CO2e				323 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-116,505 kg CO2e
4	Fittings, furnishings & equipment	0 kg CO2e	292,244 kg CO2e	477 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	80,794 kg CO2e	0 kg CO2e				1,279 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-25,357 kg CO2e
5	Services (MEP)	0 kg CO2e	1,023,231 kg CO2e	2,002 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	1,035,791 kg CO2e	0 kg CO2e	2,717,409 kg CO2e	4,531,545 kg CO2e	35,137 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-295,745 kg CO2e
6	Prefabricated Buildings and Building Units	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e				0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
7	Work to Existing Building	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e				0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
8	External works	0 kg CO2e	123,193 kg CO2e	5,121 kg CO2e	1,057,559 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e				4,229 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	##############	-40,725 kg CO2e
	TOTAL kg CO2e	**0 kg CO2e**	**13,360,420 kg CO2e**	**287,329 kg CO2e**	**1,057,559 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**2,120,640 kg CO2e**	**0 kg CO2e**	**7,248,954 kg CO2e**		**35,137 kg CO2e**	**94,053 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**##############**	**-3,746,697 kg CO2e**
	TOTAL - kg CO2e/m2 GIA	**0 kg CO2e/m2 GIA**	**243 kg CO2e/m2 GIA**	**5 kg CO2e/m2 GIA**	**19 kg CO2e/m2 GIA**	**0 kg CO2e/m2 GIA**	**###############**	**0 kg CO2e/m2 GIA**	**39 kg CO2e/m2 GIA**	**0 kg CO2e/m2 GIA**	**132 kg CO2e/m2 GIA**		**1 kg CO2e/m2 GIA**	**##############**	**##########**	**##########**	**##########**	**##############**	**-68 kg CO2e/m2 GIA**

Notes:

* Report decarbonised values for both material and operational emissions using expected decarbonisation of the electricity grid.

[1] If you have entered a reference study period in cell C10 because the assumed building life expectancy is greater or less than 60 years, this table should be copied and pasted below using the actual assumed life expectancy. This should be done for both GWP reporting tables and should be clearly labelled.

[2] Use the 'European manufactured' transportation scenarios (see Table 7, page 19 of the RICS PS) to calculate transportation emissions of MEP equipment.

	Mandatary cells for completion
	N/A

Project details	
Project name	Former Stag Brewery
Planning application reference number (if applicable)	220902/FUL
Use Type	Residential apartmentsFlexible commercial and community floorspace to include:i.Retail, financial and professional services, café/restaurant and drinking establishment uses ii.Offices iii.C
Brief description of the project	The former Stag Brewery Site is bounded by Lower Richmond Road to the south, the river Thames and the Thames Bank to the north, Williams Lane to the east and Bulls Alley (off Mo
GIA (m²)	82795
Authors (organisation or individuals)	Hoare Lea
Date of assessment	29 July 2022
Nationally recognised assessment method used	e.g. BS EN 15978, with additional guidance from RICS Professional Stateme
Reference study period (if not 60 years)	60 years
Software tool used	OneClick LCA - Carbon assessment, RICS Tool
Source of carbon data for materials and products	Type III EPD's (BSEN15804), Type III EPD's (ISO21930), Type III EPD's (ISO14067), EPDs & Data to ISO 14025, 14040, 14044
EPD database used	One Click LCA generic construction materials database, Envirodec, DAPconstrucción, GBC Espana, and AENOR, BAU-EPD, CENIA, DAP Habitat, EPD Danmark, EPD Italy, IMPACT

Estimated WLC emissions (Assessment 1)
N.B. This forms the WLC baseline for the development. The results from Assessment 1 below are automatically populated here.

	Module A1-A5	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	50,923,414 kg CO2e	15,239,670 kg CO2e	30,071,362 kg CO2e	2,263,257 kg CO2e	-10,399,675 kg CO2e
TOTAL kg CO_2e/m^2 GIA	615.054	184.065	363.203	27.336	-125.608
Comparison with WLC benchmarks (see Appendix 2 of the guidance) if Assessment 1 was used to inform design decisions	N/A- Assessment 1 not used to inform design decisions.				

Estimated WLC emissions (Assessment 2)
N.B. The results from Assessment 2 below are automatically populated here.

	Module A1-A5	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	50,923,414 kg CO2e	15,239,670 kg CO2e	7,161,460 kg CO2e	2,263,257 kg CO2e	##############
TOTAL kg CO_2e/m^2 GIA	615	184	86	27	-126
Comparison with WLC benchmarks (see Appendix 2 of the guidance) if Assessment 2 was used to inform design decisions	[Explain the reasons for any divergences from WLC benchmarks, including against the WLC aspirational benchmarks. Please note that grid decarbonisation has not been accounted for in the benchmarks]				

Key site opportunities and constraints in reducing WLC emissions	The existing site contains existing buildings alongside associated existing hard standing. This could be reprocessed and used as aggregate on site. Due to the early stages of the project a pre-demolition has not yet been undertaken in order to inform the potential quanitity of available materials but this could inform later design desicions. The Proposed Development also has the opportunity to further reduce embodied carbon in the technical design stages by analysing EPD's of the proposed services, facade and fit out products, and selecting lower carbon alternatives which meet the same functional requirements. Two buildings, The Maltings and the Bottleworks building are also being retained and facade and some structure re-used, reducing the development's carbon impact.

Summary of key actions to reduce whole life-cycle carbon emissions that have informed this assessment, including the WLC reductions	Action	WLC reduction (kg CO_2e/m^2 GIA)
	Reductions in total energy consumption due to passive design, LZCs, and heat pumps- Reduction from Baselin	16
	Selection of R454B over R410A	108

Specify further opportunities to reduce the development's whole life-cycle carbon emissions. including the WLC reduction potential	Further potential opportunities	WLC reduction potential (kg CO_2e/m^2 GIA)
	Increase Cement replacement percentage from 20% to 50%	20
	Explore specification of durable and robust materials and products to reduce B2-5 emissions	90

MATERIAL QUANTITY AND END OF LIFE SCENARIOS		Product and Construction Stage (Module A)		Assumptions made with respect to maintenance, repair and replacement cycles (Module B)	Material 'end of life' scenarios (Module C)	Benefits and loads beyond the system boundary (Module D)	
Building element category		Material type	Material quantity (kg)			Estimated reusable materials (kg)	Estimated recyclable materials (kg)
	Note/example	Breakdown of material type in each category [Insert more lines if needed] e.g. Concrete	65000 kg	For all primary building systems (structure, substructure, envelope, MEP services, internal finishes)	Declare 'end of life' scenario as per project's Circular Economy Statement	0 kg	25 kg
		e.g. Reinforcement	5000 kg			2 kg	8 kg
		e.g. Formwork	250 kg			0 kg	0 kg
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment						
0.2	Major Demolition Works						
0.3	Temporary Support to Adjacent Structures						
0.4	Specialist Ground Works						
1	Substructure	Concrete, Steel, Insulation, Tiles	35,827,695 kg	Permanent	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone, Asphalt to replace primary gravel Recycling of aluminium, steel, copper, brass, Zinc & Lead	0 kg	28,662,156 kg
2.1	Superstructure: Frame	Concrete, Steel	17,203,081 kg	60	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone, Asphalt to replace primary gravel Recycling of aluminium, steel, copper, brass, Zinc & Lead	0 kg	13,762,465 kg
2.2	Superstructure: Upper Floors	Wood, vynil	76,552,271 kg	60	Recycling of Concrete, Cement to replace primary gravel Recycling of steel	0 kg	61,241,817 kg
2.3	Superstructure: Roof	Concrete, Steel, Insulation, Tiles	2,676,965 kg	60	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone, Asphalt to replace primary gravel Recycling of steel	0 kg	2,141,572 kg
2.4	Superstructure: Stairs and Ramps	Concrete, Steel	2,774,948 kg	60	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone, Asphalt to replace primary gravel Recycling of steel	0 kg	2,219,958 kg
2.5	Superstructure: External Walls	Masonry, Concrete, insulation, Plaserboard	15,604,276 kg	35-60	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone to replace primary gravel Recycling of aluminium, stee	0 kg	12,483,421 kg
2.6	Superstructure: Windows and External Doors	Glazing, wood, aluminimum	1,151,252 kg	25-45	Recycling of aluminium, steel	0 kg	921,002 kg
2.7	Superstructure: Internal Walls and Partitions	Wooden stud , plasterboard	3,737,177 kg	40 for plasterboard	Recycling of plaster to replace primary gravel Wood products to being incinerated for energy recovery	0 kg	2,989,742 kg
2.8	Superstructure: Internal Doors	-	-	-	-	0 kg	0 kg
3	Finishes	Paint, Floor coverings, Tiles	3,287,151 kg	15 years for paint	-	0 kg	2,629,721 kg
4	Fittings, furnishings & equipment (FFE)	Aluminium, Steel, Stainless steel, Galvanized steel, Copper coated, Copper uncoated, Brass, Zinc, Lead	39,208 kg	25-50 years	Recycling of Porcelain, Ceramic, Stone to replace primary gravel Recycling of aluminium, steel, copper, brass, Zinc & Lead Wood products to being incinerated for energy recovery	0 kg	31,366 kg
5	Services (MEP)	-	5,644,213 kg	iators and other heat emitters25 years for electrica	Recycling for Aluminium, Steel, Stainless steel, Galvanized steel, Copper coated, Copper uncoated, Brass, Zinc, Lead	0 kg	4,515,370 kg
6	Prefabricated Buildings and Building Units	-	-	-	-	-	-
7	Work to Existing Building	-	-	-	-	-	-
8	External works	Soil, Concrete	6,654,025 kg	60 years	Recycling of Concrete, Cement, Bricks, Stone, Ceramic, Stone, Asphalt to replace primary gravel	0 kg	5,323,220 kg
		TOTAL	171,152,262 kg			0 kg	136,921,810 kg
		Material intensity (kg/m2 GIA)	2,067 kg/m2 GIA			0 kg/m2 GIA	1,654 kg/m2 GIA

Confirm here whether Assessment 1 or Assessment 2 (see below) is to form the basis of design decisions	Assessment 2

ASSESSMENT 1 - current status of the electricity grid

GWP POTENTIAL FOR ALL LIFE-CYCLE MODULES (kgCO2e)		Sequestered (or biogenic) carbon (negative value) (kgCO2e)	Product stage (kgCO2e)	Construction process stage (kgCO2e)		Use stage (kgCO2e)							End of Life (EoL) stage (kgCO2e)				TOTAL Modules A-C $kgCO_2e$	Benefits and loads beyond the system boundary (kgCO2e)
			Module A			Module B							Module C					Module D*
Building element category			[A1] to [A3]	[A4][2]	[A5]	[B1]	[B2]*	[B3]*	[B4]*	[B5]*	[B6]	[B7]	[C1]	[C2]	[C3]	[C4]		
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment												0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
0.2	Major Demolition Works												0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
0.3	Temporary Support to Adjacent Structures	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
0.4	Specialist Ground Works	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
0.5	Temporary Diversion Works	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
1	Substructure	0 kg CO2e	7,393,782 kg CO2e	257,612 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	57,114 kg CO2e	0 kg CO2e			201,226 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	7,909,733 kg CO2e	-1,419,559 kg CO2e
2.1	Superstructure: Frame	0 kg CO2e	3,507,964 kg CO2e	125,584 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			180,342 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	3,813,889 kg CO2e	-652,574 kg CO2e
2.2	Superstructure: Upper Floors	0 kg CO2e	13,186,428 kg CO2e	557,671 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			816,548 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	14,560,647 kg CO2e	-3,419,945 kg CO2e
2.3	Superstructure: Roof	0 kg CO2e	1,073,288 kg CO2e	15,651 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	57,117 kg CO2e	0 kg CO2e			33,070 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	1,179,126 kg CO2e	-132,497 kg CO2e
2.4	Superstructure: Stairs and Ramps	0 kg CO2e	388,008 kg CO2e	21,399 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			30,623 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	440,031 kg CO2e	-82,320 kg CO2e
2.5	Superstructure: External Walls	0 kg CO2e	5,083,583 kg CO2e	43,246 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	16,712 kg CO2e	0 kg CO2e			200,843 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	5,344,384 kg CO2e	-1,195,159 kg CO2e
2.6	Superstructure: Windows and External Doors	0 kg CO2e	1,136,319 kg CO2e	2,350 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	918,594 kg CO2e	0 kg CO2e			46,715 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	2,103,977 kg CO2e	-125,789 kg CO2e
2.7	Superstructure: Internal Walls and Partitions	0 kg CO2e	2,147,424 kg CO2e	9,580 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	320,544 kg CO2e	0 kg CO2e			141,825 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	2,619,374 kg CO2e	-210,423 kg CO2e
2.8	Superstructure: Internal Doors	0 kg CO2e	1,450,525 kg CO2e	4,711 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	1,450,525 kg CO2e	0 kg CO2e			118,783 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	3,024,544 kg CO2e	-477,013 kg CO2e
3	Finishes	0 kg CO2e	1,985,123 kg CO2e	9,183 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	2,148,564 kg CO2e	0 kg CO2e			263,731 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	4,406,600 kg CO2e	-631,620 kg CO2e
4	Fittings, furnishings & equipment	0 kg CO2e	1,820,220 kg CO2e	2,749 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	656,898 kg CO2e	0 kg CO2e			21,919 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	2,501,786 kg CO2e	-145,034 kg CO2e
5	Services (MEP)	0 kg CO2e	6,194,994 kg CO2e	11,918 kg CO2e	0 kg CO2e	3,353,060 kg CO2e	0 kg CO2e	0 kg CO2e	6,260,542 kg CO2e	0 kg CO2e	22,257,824 kg CO2e 7,681,479 kg CO2e	132,059 kg CO2e	193,050 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	46,084,926 kg CO2e	-1,767,328 kg CO2e
6	Prefabricated Buildings and Building Units	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
7	Work to Existing Building	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
8	External works	0 kg CO2e	425,061 kg CO2e	18,241 kg CO2e	4,050,799 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			14,582 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	4,508,684 kg CO2e	-140,415 kg CO2e
TOTAL kg CO2e		0 kg CO2e	45,792,720 kg CO2e	1,079,895 kg CO2e	4,050,799 kg CO2e	3,353,060 kg CO2e	0 kg CO2e	0 kg CO2e	11,886,610 kg CO2e	0 kg CO2e	29,939,303 kg CO2e	132,059 kg CO2e	##############	0 kg CO2e	0 kg CO2e	0 kg CO2e	98,497,702 kg CO2e	-10,399,675 kg CO2e
TOTAL - kg CO2e/m2 GIA		0 kg CO2e/m2 GIA	553 kg CO2e/m2 GIA	13 kg CO2e/m2 GIA	49 kg CO2e/m2 GIA	40 kg CO2e/m2 GIA	0 kg CO2e/m2 GIA	0 kg CO2e/m2 GIA	144 kg CO2e/m2 GIA	0 kg CO2e/m2 GIA	362 kg CO2e/m2 GIA	2 kg CO2e/m2 GIA	##############	##############	##############	##############	1,190 kg CO2e/m2 GIA	-126 kg CO2e/m2 GIA

Notes:

* Report non-decarbonised values for both material and operational emissions using current status of the electricity grid.

[1] If you have entered a reference study period in cell C10 because the assumed building life expectancy is greater or less than 60 years, this table should be copied and pasted below using the actual assumed life expectancy. This should be done for both GWP reporting tables and should be clearly labelled.

[2] Use the 'European manufactured' transportation scenarios (see Table 7, page 19 of the RICS PS) to calculate transportation emissions of MEP equipment.

(blue cell)	Mandatary cells for completion
(crossed cell)	N/A

ASSESSMENT 2 - expected decarbonisation of the electricity grid

GWP POTENTIAL FOR ALL LIFE-CYCLE MODULES (kgCO2e)		Sequestered (or biogenic) carbon (negative value) (kgCO2e)	Product stage (kgCO2e)	Construction process stage (kgCO2e)		Use stage (kgCO2e)							End of Life (EoL) stage (kgCO2e)				TOTAL Modules A-C $kgCO_2e$	Benefits and loads beyond the system boundary (kgCO2e)
			Module A			Module B							Module C					Module D*
Building element category			[A1] to [A3]	[A4][2]	[A5]	[B1]	[B2]*	[B3]*	[B4]*	[B5]*	[B6]	[B7]	[C1]	[C2]	[C3]	[C4]		
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment												0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
0.2	Major Demolition Works												0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
0.3	Temporary Support to Adjacent Structures	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
0.4	Specialist Ground Works	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
0.5	Temporary Diversion Works	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	
1	Substructure	0 kg CO2e	7,393,782 kg CO2e	257,612 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	57,114 kg CO2e	0 kg CO2e			201,226 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	7,909,733 kg CO2e	-1,419,559 kg CO2e
2.1	Superstructure: Frame	0 kg CO2e	3,507,964 kg CO2e	125,584 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			180,342 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	3,813,889 kg CO2e	-652,574 kg CO2e
2.2	Superstructure: Upper Floors	0 kg CO2e	13,186,428 kg CO2e	557,671 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			816,548 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	14,560,647 kg CO2e	-3,419,945 kg CO2e
2.3	Superstructure: Roof	0 kg CO2e	1,073,288 kg CO2e	15,651 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	57,117 kg CO2e	0 kg CO2e			33,070 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	1,179,126 kg CO2e	-132,497 kg CO2e
2.4	Superstructure: Stairs and Ramps	0 kg CO2e	388,008 kg CO2e	21,399 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			30,623 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	440,031 kg CO2e	-82,320 kg CO2e
2.5	Superstructure: External Walls	0 kg CO2e	5,083,583 kg CO2e	43,246 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	16,712 kg CO2e	0 kg CO2e			200,843 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	5,344,384 kg CO2e	-1,195,159 kg CO2e
2.6	Superstructure: Windows and External Doors	0 kg CO2e	1,136,319 kg CO2e	2,350 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	918,594 kg CO2e	0 kg CO2e			46,715 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	2,103,977 kg CO2e	-125,789 kg CO2e
2.7	Superstructure: Internal Walls and Partitions	0 kg CO2e	2,147,424 kg CO2e	9,580 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	320,544 kg CO2e	0 kg CO2e			141,825 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	2,619,374 kg CO2e	-210,423 kg CO2e
2.8	Superstructure: Internal Doors	0 kg CO2e	1,450,525 kg CO2e	4,711 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	1,450,525 kg CO2e	0 kg CO2e			118,783 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	3,024,544 kg CO2e	-477,013 kg CO2e
3	Finishes	0 kg CO2e	1,985,123 kg CO2e	9,183 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	2,148,564 kg CO2e	0 kg CO2e			263,731 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	4,406,600 kg CO2e	-631,620 kg CO2e
4	Fittings, furnishings & equipment	0 kg CO2e	1,820,220 kg CO2e	2,749 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	656,898 kg CO2e	0 kg CO2e			21,919 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	2,501,786 kg CO2e	-145,034 kg CO2e
5	Services (MEP)	0 kg CO2e	6,194,994 kg CO2e	11,918 kg CO2e	0 kg CO2e	3,353,060 kg CO2e	0 kg CO2e	0 kg CO2e	6,260,542 kg CO2e	0 kg CO2e	7,026,976 kg CO2e 2,425 kg CO2e	132,059 kg CO2e	193,050 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	23,175,024 kg CO2e	-1,767,328 kg CO2e
6	Prefabricated Buildings and Building Units	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
7	Work to Existing Building	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e

8	External works	0 kg CO2e	425,061 kg CO2e	18,241 kg CO2e	4,050,799 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e			14,582 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	4,508,684 kg CO2e	-140,415 kg CO2e
TOTAL kg CO2e		**0 kg CO2e**	**45,792,720 kg CO2e**	**1,079,895 kg CO2e**	**4,050,799 kg CO2e**	**3,353,060 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**11,886,610 kg CO2e**	**0 kg CO2e**	**7,029,401 kg CO2e**	**132,059 kg CO2e**	###############	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**75,587,800 kg CO2e**	**-10,399,675 kg CO2e**
TOTAL - kg CO2e/m2 GIA		**0 kg CO2e/m2 GIA**	**553 kg CO2e/m2 GIA**	**13 kg CO2e/m2 GIA**	**49 kg CO2e/m2 GIA**	**40 kg CO2e/m2 GIA**	**0 kg CO2e/m2 GIA**	**0 kg CO2e/m2 GIA**	**0 kg CO2e/m2 GIA**	**0 kg CO2e/m2 GIA**	**144 kg CO2e/m2 GIA**	**0 kg CO2e/m2 GIA**	**85 kg CO2e/m2 GIA**	**2 kg CO2e/m2 GIA**	###############	###############	###############	###############	**913 kg CO2e/m2 GIA**	**-126 kg CO2e/m2 GIA**

Notes:

* Report decarbonised values for both material and operational emissions using expected decarbonisation of the electricity gric

[1] If you have entered a reference study period in cell C10 because the assumed building life expectancy is greater or less than 60 years, this table should be copied and pasted below using the actual assumed life expectancy. This should be done for both GWP reporting tables and should be clearly labelled.

[2] Use the 'European manufactured' transportation scenarios (see Table 7, page 19 of the RICS PS) to calculate transportation emissions of MEP equipment.

	Mandatary cells for completion
	N/A

Project details	
Project name	
Planning application reference number (if applicable)	
Use Type	e.g. A1, B1 etc.
Brief description of the project	
GIA (m^2)	
Authors (organisation or individuals)	
Date of assessment	
Nationally recognised assessment method used	e.g. BS EN 15978, with additional guidance from RICS Professional Statement
Reference study period (if not 60 years)	[This cell should only be filled in if the reference study period, i.e. the assumed building life expectancy, exceeds or is less than 60 years. Applicants should state the reference study period in this cell. While the assessment should still be done to 60 years, applicants may, if they choose to, submit an additional assessment of the modules B, C and D for the actual reference study period by copying and pasting an additional 'GWP potential for all life-cycle modules' table, see below].
Software tool used	[This should align with the software tool used at outline/detailed planning stage]
Source of carbon data for materials and products	[See guidance for acceptable sources]
EPD database used	[If using more than one database please list all]

WLC emissions baseline (Assessment 1)
(automatically populated from the 'detailed planning stage' tab)

	Module A1-A5	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	50,923,414 kg CO2e	15,239,670 kg CO2e	30,071,362 kg CO2e	2,263,257 kg CO2e	############
TOTAL kg CO_2e/m^2 GIA	615.054	184.065	363.203	27.336	-125.608

WLC emissions baseline (Assessment 2)
(automatically populated from the 'detailed planning stage' tab)

	Module A1-A5	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	50,923,414 kg CO2e	15,239,670 kg CO2e	7,161,460 kg CO2e	###########	#########
TOTAL kg CO_2e/m^2 GIA	615.054	184.065	86.496	27.336	-125.608

Post-construction WLC emissions (Assessment 1) (automatically populated from Assessment 1 below)

	Module A1-A5	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	0 kg CO2e	0 kg CO2e	#VALUE!	0 kg CO2e	0 kg CO2e
TOTAL kg CO_2e/m^2 GIA	#DIV/0!	#DIV/0!	#VALUE!	#DIV/0!	#DIV/0!
Commentary comparing the post-construction results against the WLC emissions baseline (Assessment 1) above	[Explain the reasons for any divergences from assessment 1 result against the WLC emissions baseline above]				
Commentary comparing the post-construction results against the WLC benchmarks (see Appendix 2)	[Explain the reasons for any divergences from WLC benchmarks, including against the WLC aspirational benchmarks]				

Post-construction WLC emissions (Assessment 2) (automatically populated from Assessment 2 below)

	Module A1-A5	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	0 kg CO2e	0 kg CO2e	#VALUE!	0 kg CO2e	0 kg CO2e
TOTAL kg CO_2e/m^2 GIA	#DIV/0!	#DIV/0!	#VALUE!	#DIV/0!	#DIV/0!
Commentary comparing the post-construction results against the WLC emissions baseline (Assessment 2) above	[Explain the reasons for any divergences from assessment 2 result against the WLC emissions baseline above]				
Commentary comparing the post-construction results against the WLC benchmarks (see Appendix 2)	[Explain the reasons for any divergences from WLC benchmarks, including against the WLC aspirational benchmarks. Please note that grid decarbonisation has not been accounted for in the benchmarks]				

Confirm here whether Assessment 1 or Assessment 2 formed the basis of design decisions	

	Action undertaken	WLC reduction achieved (kg CO_2e/m^2 GIA)
Summary of key actions undertaken to reduce whole life-cycle carbon emissions, including the reductions achieved	[This list does not need to be exhaustive but should identify the actions with the biggest impacts. Insert more lines if needed]	

Lessons learnt from the process of undertaking a WLC assessment that will inform future projects	i.e. Design options or materials that could be used, design principles that could be applied.
	[Insert more lines if needed]

MATERIAL QUANTITY AND END OF LIFE SCENARIOS		Product and Construction Stage (Module A)		Assumptions made with respect to maintenance, repair and replacement cycles (Module B)	Material 'end of life' scenarios (Module C)	Benefits and loads beyond the system boundary (Module D)	
Building element category		Material type	Material quantity (kg)			Estimated reusable materials (kg)	Estimated recyclable materials (kg)
Note/example		Breakdown of material type in each category [Insert more lines if needed] e.g. Concrete	65000 kg	For all primary building systems (structure, substructure, envelope, MEP services, internal finishes)	Declare 'end of life' scenario as per project's Circular Economy Statement	0 kg	25 kg
		e.g. Reinforcement	5000 kg			2 kg	8 kg
		e.g. Formwork	250 kg			0 kg	0 kg
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment						
0.2	Major Demolition Works						
0.3	Temporary Support to Adjacent Structures						
0.4	Specialist Ground Works						
1	Substructure						
2.1	Superstructure: Frame						
2.2	Superstructure: Upper Floors						
2.3	Superstructure: Roof						
2.4	Superstructure: Stairs and Ramps						
2.5	Superstructure: External Walls						
2.6	Superstructure: Windows and External Doors						
2.7	Superstructure: Internal Walls and Partitions						
2.8	Superstructure: Internal Doors						
3	Finishes						
4	Fittings, furnishings & equipment (FFE)						
5	Services (MEP)						
6	Prefabricated Buildings and Building Units						
7	Work to Existing Building						
8	External works						
		TOTAL	0 kg			0 kg	0 kg
		Material intensity (kg/m2 GIA)	#DIV/0!			#DIV/0!	#DIV/0!

ASSESSMENT 1 - current status of the electricity grid

GWP POTENTIAL FOR ALL LIFE-CYCLE MODULES[1] (kgCO2e)		Sequestered (or biogenic) carbon (negative value)(kgCO2e)	Product stage (kgCO2e)	Construction process stage (kgCO2e)		Use stage (kgCO2e)							End of Life (EoL) stage (kgCO2e)				TOTAL Modules A-C $kgCO_2e$	Benefits and loads beyond the system boundary (kgCO2e)
			Module A			Module B							Module C					Module D*
Building element category			[A1] to [A3]	[A4]	[A5]	[B1]	[B2]*	[B3]*	[B4]*	[B5]*	[B6]	[B7]	[C1]	[C2]	[C3]	[C4]		
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment																0 kg CO2e	
0.2	Major Demolition Works																0 kg CO2e	
0.3	Temporary Support to Adjacent Structures																0 kg CO2e	
0.4	Specialist Ground Works																0 kg CO2e	
0.5	Temporary Diversion Works																0 kg CO2e	
1	Substructure																0 kg CO2e	
2.1	Superstructure: Frame																0 kg CO2e	
2.2	Superstructure: Upper Floors																0 kg CO2e	
2.3	Superstructure: Roof																0 kg CO2e	
2.4	Superstructure: Stairs and Ramps																0 kg CO2e	
2.5	Superstructure: External Walls																0 kg CO2e	
2.6	Superstructure: Windows and External Doors																0 kg CO2e	
2.7	Superstructure: Internal Walls and Partitions																0 kg CO2e	
2.8	Superstructure: Internal Doors																0 kg CO2e	
3	Finishes																0 kg CO2e	
4	Fittings, furnishings & equipment																0 kg CO2e	
5	Services (MEP)										Regulated emissions / Unregulated emissions						0 kg CO2e	
6	Prefabricated Buildings and Building Units																0 kg CO2e	
7	Work to Existing Building																0 kg CO2e	
8	External works																0 kg CO2e	
TOTAL kg CO2e		0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	#VALUE!	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
TOTAL - kg CO2e/m2 GIA		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#VALUE!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Notes:
* Report non-decarbonised values for both material and operational emissions using current status of the electricity grid.
[1] If you have entered a reference study period in cell C10 because the assumed building life expectancy is greater or less than 60 years, this table should be copied and pasted below using the actual assumed life expectancy. This should be done for both GWP reporting tables and should be clearly labelled.

Mandatary cells for completion
N/A

ASSESSMENT 2 - expected decarbonisation of the electricity grid

GWP POTENTIAL FOR ALL LIFE-CYCLE MODULES[1] (kgCO2e)		Sequestered (or biogenic) carbon (negative value)(kgCO2e)	Product stage (kgCO2e)	Construction process stage (kgCO2e)		Use stage (kgCO2e)							End of Life (EoL) stage (kgCO2e)				TOTAL Modules A-C $kgCO_2e$	Benefits and loads beyond the system boundary (kgCO2e)
			Module A			Module B							Module C					Module D*
Building element category			[A1] to [A3]	[A4]	[A5]	[B1]	[B2]*	[B3]*	[B4]*	[B5]*	[B6]	[B7]	[C1]	[C2]	[C3]	[C4]		
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment																0 kg CO2e	
0.2	Major Demolition Works																0 kg CO2e	
0.3	Temporary Support to Adjacent Structures																0 kg CO2e	
0.4	Specialist Ground Works																0 kg CO2e	
0.5	Temporary Diversion Works																0 kg CO2e	
1	**Substructure**																0 kg CO2e	
2.1	Superstructure: Frame																0 kg CO2e	
2.2	Superstructure: Upper Floors																0 kg CO2e	
2.3	Superstructure: Roof																0 kg CO2e	
2.4	Superstructure: Stairs and Ramps																0 kg CO2e	
2.5	Superstructure: External Walls																0 kg CO2e	
2.6	Superstructure: Windows and External Doors																0 kg CO2e	
2.7	Superstructure: Internal Walls and Partitions																0 kg CO2e	
2.8	Superstructure: Internal Doors																0 kg CO2e	
3	Finishes																0 kg CO2e	
4	Fittings, furnishings & equipment																0 kg CO2e	

5	Services (MEP)										Regulated emissions	Unregulated emissions						0 kg CO2e	
6	Prefabricated Buildings and Building Units																	0 kg CO2e	
7	Work to Existing Building																	0 kg CO2e	
8	External works																	0 kg CO2e	
TOTAL kg CO2e		0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	#VALUE!		0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e
TOTAL - kg CO2e/m2 GIA		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#VALUE!		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Notes:

* Report decarbonised values for both material and operational emissions using expected decarbonisation of the electricity grid.

[1] If you have entered a reference study period in cell C10 because the assumed building life expectancy is greater or less than 60 years, this table should be copied and pasted below using the actual assumed life expectancy. This should be done for both GWP reporting tables and should be clearly labelled.

	Mandatary cells for completion
	N/A