

Appendix 15-1 GHG Emissions Assessment – Data Inputs and Assumptions

General Project Inputs

Gross Internal Floor Area: 62,000 m²

Scope of Whole Life Carbon Assessment

The GHG assessment adopts the modules for building environmental assessments set out in BS EN 15978:2011. Modules included within the scope align with UKGBC Net Zero Carbon Buildings: A Framework Definition (UKGBC, 2019).

PROJECT LIFE CYCLE INFORMATION													SUPPLEMENTARY INFORMATION BEYOND THE PROJECT LIFE CYCLE			
[A1 – A3]			[A4 – A5]		[B1 – B7]					[C1 – C4]			[D]			
PRODUCT Stage			CONSTRUCTION PROCESS stage		USE Stage					END OF LIFE stage			Benefits and loads beyond the system boundary			
[A1]	[A2]	[A3]	[A4]	[A5]	[B1]	[B2]	[B3]	[B4]	[B5]	[C1]	[C2]	[C3]	[C4]			
Raw material extraction and supply	Transport to manufacturing plant	Manufacturing & fabrication	Transport to project site	Construction & Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Deconstruction & Demolition	Transport to disposal facility	Waste processing for reuse, recovery or recycling	Disposal	Reuse Recovery Recycling Potential		
					[B6] Operational energy use											
					[B7] Operational water use											

For modules [A1-A5], the construction elements included align with BREEAM NC2018 Mat 01, as defined using the RICS New Rules of Measurement:

☒	Included in the embodied carbon assessment (as per BREEAM NC2018 Mat 01)
☐	Not included

Level 1 - Group Element	Level 2 - Element	Level 3 - Sub-element
1 Substructure	1 Substructure	1 Standard foundations 2 Specialist foundation systems 3 Lowest floor construction 4 Basement excavation 5 Basement retaining walls
	2 Superstructure	
2 Superstructure	1 Frame (other than floors)	1 Steel frames 2 Space decks 3 Concrete casing to steel frames 4 Concrete frames 5 Timber frames 6 Other frame systems
	2 Upper floors	1 Floors 2 Balconies 3 Drainage to balconies
	3 Roofs	1 Roof structure 2 Roof covering 3 Specialist roof systems 4 Roof drainage 5 Rooflights, skylights and openings 6 Roof features
	4 Stairs and ramps	1 Stair /ramp structures 2 Stair / ramp finishes 3 Stair / ramp balustrades and handrails 4 Ladders / chutes / slides
	5 External walls	1 External enclosing walls above ground level 2 External enclosing walls below ground level 3 Solar / rain screening 4 External soffits Subsidiary walls, balustrades, handrails, 5 railings and proprietary balconies 6 Façade access / cleaning systems
	6 Windows and external doors	1 External windows 2 External doors
	7 Internal walls and partitions	1 Walls and partitions 2 Balustrades and handrails 3 Moveable room dividers 4 Cubicles
	8 Internal doors	1 Internal doors
	3 Internal Finishes	
	1 Wall finishes	1 Finishes to walls
3 Internal Finishes	2 Floor finishes	1 Finishes to floors 2 Raised access floors
	3 Ceiling finishes	1 Finishes to ceilings 2 False ceilings 3 Demountable suspended ceilings
4 Fittings, Furnishings and Equipment - N/A		
5 Services - N/A		
6 Prefabricated Buildings and building units- N/A		
7 Works to existing buildings- N/A		
8 External Works	1 Site Preparation works	
	2 Roads, Paths and Pavings	1 Roads, paths and 2 Special surfacings and pavings
	3 Soft landscaping, planting and irrigation systems	
	4 Fencing, railings and walls	
	5 External fixtures	
	6 External drainage	
	7 External services	
	8 Minor building works and ancillary buildings	

Construction Effects

Data Source:

Material Quantities	RIBA Stage 3 design (structural and architectural models)
Carbon factors	OneClick LCA software

Operational Effects

Data Source:

Energy Consumptions	Energy Statement 'Be Green' scenario supplemented by preliminary estimates of unregulated energy (MEE, 20.02.20)
Carbon factors	Electricity Grid Carbon Factor based on: Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - Data Table 1 (March 2019) https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal (Long run marginal consumption-based carbon factors for commercial buildings) Gas Carbon Factor 0.184kgCO₂e / kWh, based on: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019

Data Table 1 (Extract) Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - (March 2019)

Grid Average Consumption-based		Grid Average Consumption-based	
Year	Commercial/ Public sector kgCO2e/kWh	Year	Commercial/ Public sector kgCO2e/kWh
2023	0.110	2053	0.027
2024	0.102	2054	0.027
2025	0.103	2055	0.027
2026	0.097	2056	0.027
2027	0.103	2057	0.027
2028	0.098	2058	0.027
2029	0.090	2059	0.027
2030	0.081	2060	0.027
2031	0.072	2061	0.027
2032	0.060	2062	0.027
2033	0.056	2063	0.027
2034	0.048	2064	0.027
2035	0.040	2065	0.027
2036	0.040	2066	0.027
2037	0.040	2067	0.027
2038	0.040	2068	0.027
2039	0.040	2069	0.027
2040	0.040	2070	0.027
2041	0.039	2071	0.027
2042	0.038	2072	0.027
2043	0.036	2073	0.027
2044	0.035	2074	0.027
2045	0.034	2075	0.027
2046	0.032	2076	0.027
2047	0.031	2077	0.027
2048	0.030	2078	0.027
2049	0.028	2079	0.027
2050	0.027	2080	0.027
2051	0.027	2081	0.027
2052	0.027	2082	0.027