

Appendix 7.1 – Operational Energy Decarbonisation

Table 7.1 shows the operational energy emissions estimated to occur over the 60-year design life of the Proposed Development under a decarbonisation scenario.

First operating year emissions (309.79 tCO₂e) have been taken from the Wallace Whittle WLCA. These emissions are split between domestic (308.59 tCO₂e) and non-domestic (1.2 tCO₂e). Future years emissions have been calculated using the same domestic/non-domestic split in emissions and based on the electricity emissions factors produced by BEIS in 2023¹. For domestic emissions the grid average consumption-based domestic factors were used. For non-domestic emissions the grid average consumption-based commercial/public sector factors were used.

In the period between 2026 and 2086, the Proposed Development is expected to generate a total of 2,129.31 tCO₂e of operational energy emissions.

Table 7.1 – Estimated operational energy emissions – decarbonisation scenario

Year	Grid Average Consumption-based electricity emissions factors (kgCO ₂ e/kWh)		Estimated Operational Energy Emissions for the Proposed Development (tCO ₂ e/year)
	Domestic Sector	Commercial / Public Sector	
2026 (First operating year)	0.098	0.096	309.79
2027	0.073	0.072	276.16
2028	0.063	0.062	240.17
2029	0.054	0.053	201.63
2030	0.049	0.049	160.38
2031	0.042	0.041	133.53
2032	0.033	0.032	111.18
2033	0.026	0.025	92.57
2034	0.021	0.020	77.07
2035	0.020	0.020	64.17
2036	0.020	0.019	53.43
2037	0.018	0.018	44.48
2038	0.018	0.018	37.04
2039	0.017	0.017	30.84
2040	0.016	0.016	25.67
2041	0.015	0.015	24.47
2042	0.015	0.014	23.24
2043	0.009	0.009	14.62
2044	0.008	0.008	13.59
2045	0.008	0.008	12.63
2046	0.008	0.008	12.35
2047	0.005	0.005	8.54
2048	0.005	0.005	8.30
2049	0.003	0.003	5.26
2050	0.003	0.002	4.00
2051	0.003	0.002	4.00
2052	0.003	0.002	4.00
2053	0.003	0.002	4.00
2054	0.003	0.002	4.00
2055	0.003	0.002	4.00
2056	0.003	0.002	4.00
2057	0.003	0.002	4.00
2058	0.003	0.002	4.00
2059	0.003	0.002	4.00
2060	0.003	0.002	4.00
2061	0.003	0.002	4.00
2062	0.003	0.002	4.00
2063	0.003	0.002	4.00

¹ [Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/green-book-supplementary-guidance-valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal).

Year	Grid Average Consumption-based electricity emissions factors (kgCO ₂ e/kWh)		Estimated Operational Energy Emissions for the Proposed Development (tCO ₂ e/year)
	Domestic Sector	Commercial / Public Sector	
2064	0.003	0.002	4.00
2065	0.003	0.002	4.00
2066	0.003	0.002	4.00
2067	0.003	0.002	4.00
2068	0.003	0.002	4.00
2069	0.003	0.002	4.00
2070	0.003	0.002	4.00
2071	0.003	0.002	4.00
2072	0.003	0.002	4.00
2073	0.003	0.002	4.00
2074	0.003	0.002	4.00
2075	0.003	0.002	4.00
2076	0.003	0.002	4.00
2077	0.003	0.002	4.00
2078	0.003	0.002	4.00
2079	0.003	0.002	4.00
2080	0.003	0.002	4.00
2081	0.003	0.002	4.00
2082	0.003	0.002	4.00
2083	0.003	0.002	4.00
2084	0.003	0.002	4.00
2085	0.003	0.002	4.00
2086 (Last operating year)	0.003	0.002	4.00
TOTAL EMISSIONS			2,129.31

Source: Department for Business, Energy and Industrial Strategy, 2023; Atkins' analysis