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Project	Lever Street, Manchester
Title	A1-A5 Embodied Carbon Assessment
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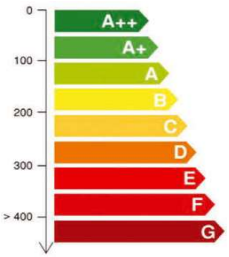
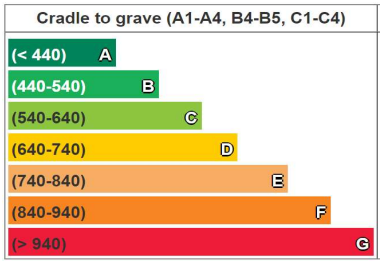
Result category	Biogenic carbon (kg CO2e)	A1-A3 Product Stage	A4 Transportation to site	A5 Site operations	TOTAL kg CO2e
0.1 Toxic Mat.					
0.2 Demolition					
0.3 Supports					
0.4 Groundworks					
0.5 Diversion					
1 Substructure	0	45125.55	375.98	2382.02	47883.55
2.1 Frame	0	238089.18	1456.87	11046.77	250592.82
2.2 Upper Floors	0	358683.96	2988.5	18933.64	380606.1
2.3 Roof					
2.4 Stairs & Ramps	0	11172.7	93.09	589.77	11855.56
2.5 Ext. Walls	0	4381134.64	219597.02	173720.33	4774451.99
2.6 Windows & Ext. Doors					
2.7. Int. Walls & Partitions					
2.8 Int. Doors					
3 Finishes					
4 Fittings, furnishings & equipments					
5 Services (MEP)					
6 Prefabricated					
7 Existing bldg					
8 Ext. works					
Other or overall site construction				384055	384055
Unclassified / Other					
TOTAL kg CO2e	0	5034206.03	224511.46	590727.52	5849445.01

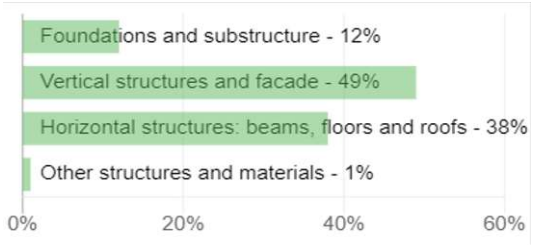
Stage A1-A5 Embodied Carbon Summary		
Total Stage A1-A5 Embodied Carbon	5849445.01	kgCO2e
GIFA	15640	m²
Stage A1-A5 Embodied Carbon	374	kgCO2e/m²
IStructE SCORS Rating	F	
Sequested Carbon	0	kgCO2e/m²
Average number of one way flights to Nev	11865	



Istructe SCORS Rating System



OneClick Carbon Whole life carbon assessment, GLA / RICS / Green Mark including EN15804 +A2 data Supports EPDs according to both EN15804 amendments, A1 and A2.



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Scope of Assessment

This embodied carbon assessment for the structural frame of building has been conducted in line with the Royal Institute of Chartered Surveyors (RICS) guidance and the IStructE document 'How to calculate embodied carbon'. The assessment has been carried out using Oneclick LCA software

The embodied carbon value should be treated as an estimate only and no reliance should be placed upon it

The assessment covers life cycle stages A1-A5 and C1 (embodied carbon to practical completion as defined in BS EN 15978. Stages A1-A5 have been assessed because:
1) A1–A5 emissions will be released before 2050. They are therefore the emissions we most urgently need to understand and minimise to keep global warming within 1.5°C.
2) We have most certainty over A1–A5 emissions data.
3) Typically, the majority of the embodied carbon of structures is associated with Modules A1–A5, therefore this should be the focus of structural engineering carbon reduction efforts.
4) The assessment can be benchmarked against the IStructE SCORS rating scheme.

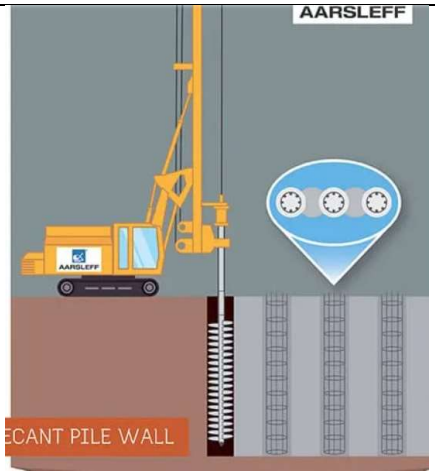
We recognise that this assessment is limited to the structural elements and for a whole life and whole building embodied carbon assessment requires collaboration across the project team and stages B, C and need to be considered.

The embodied carbon assessment is based on current industry average embodied carbon values for each material based on the RICS database. The actual value of embodied carbon may be significantly different depending on the source of the material and construction process. This assessment should therefore be considered as an estimate only.

The embodied carbon assessment is limited to the structural elements including the primary substructure and superstructure as indicated in the table 4.6 below.

Building part / element group (BCIS SFCA)		Building Element (BCIS SFCA)	Possible breakdown of structural elements for carbon analysis
1	Substructure	1.1 Substructure	Foundations (including pilecaps)
			Ground bearing slab
			Basement retaining walls
2	Superstructure	2.1 Frame	Columns
			Braces
		2.2 Upper Floors	Beams
			Slabs
		2.3 Roof	Roof beams
			Roof slab
		2.4 Stairs and Ramps	Stairs and ramps
		2.5 External Walls	Structural external walls

Job No.	**233555**		
Project	**Lever Street, Manchester**	Date: 26/02/24	By: JJ
Title	**A1-A5 Carbon assessment assumptions**		

Number	Assumption	Comment
1	From DWG 21098, diameter of secant piles assumed to be 750mm.	
2	From DWG 21098, it has been assumed that the first set are secant piles are not reinforced, but that the second set are. C32/40 concrete grade assumed.	12 x 16mm diameter bars longitudinally, 10mm dia links at 200mm centres Approx. with laps etc allow 60kg/m3
3	From DWG 21098, it has been assumed that the total length of a single secant pile is 17.4m.	Length above basement =5.8m. 3:1 ratio applied to determine total length, therefore total length = 3 x 5.8 = 17.4m.
4	From DWG 21098, it has been assumed that the main piles are to same depth as secant walls. Concrete grade is C32/40.	5.8 x 2 = 11.6m
5	From DWG 21098, the reinforcement allowance is assumed to be 60kg/m3 for secant and 80kg/m3 for main piles	
6	From DWG 21098, 300mm thick liner wall assume to be from B2 to underside of level 0 = 43.2m to 49m – 0.325m thick slab.	Height = 5.475m
7	Core walls go full height of structure.	Height = 83.65m * 0.9 to allow for floor slab thicknesses.
9	Core walls reinforcement assumed to be 65kg/m3.	
10	Column CC01 - 4m floor to floor height.	100 no. CC01 Columns at 4m each, therefore 400m total. Similar approach taken to other columns to determine total meterage.