

## Appendix A: NZC – Construction Minimum Reporting Template

These minimum reporting requirements align with the RICS Professional Statement ‘Whole life carbon assessment for the built environment’<sup>1</sup> – please see section 3.6 ‘Reporting Requirements’ for full details. Table 12 is provided below for reference.

Date of assessment	24/08/2020			
Verified by	The Planet Mark verified the embodied carbon assessment, undertaken by Circular Ecology Ltd			
Project type	New build			
Assessment objective	<ul style="list-style-type: none"> <li>To measure the whole life carbon</li> <li>To inform GLP of the key hotspots to focus reduction measures in future builds</li> <li>To achieve the Planet Mark for New Developments certification, measuring the impact of reduction measures carried out in comparison to a baseline</li> <li>To achieve UK GBC Net Zero Construction</li> </ul>			
Project location	GLP - Magnitude 314, Milton Keynes, MK17 8EW, United Kingdom			
Date of project completion	24/08/2020			
Property type	Warehouse / logistics centre. Planning use class A1			
Building description	A steel frame, steel clad, single story warehouse. 19 m clear height, two story office, 50 m yard depth, 33 dock levellers and 4 level access doors			
Size	29,183 m <sup>2</sup> (GIA)			
Project design life	30 years			
Assessment scope	Modules A-C (excluding B1-3, B5 and B7)			
Assessment stage	Practical Completion			
Data sources	<p><b>Primary data on material specification and quantity, and site energy and waste</b> – GLP, Readie Construction Ltd, Chetwoods Thrive, KAM plc, Hydrock, Lysander Associates, Rider Levett Bucknall, amongst other suppliers. Including Bill of Quantities, design drawings, foundation plans, pavement specifications ...etc</p> <p><b>Concrete specification</b> - Concrete design certificates were provided for ground floor, foundations, office floors, plant deck, external service yard and kerbs and drains. Concrete mixtures were modelled in the ICE Database embodied carbon model. Available from <a href="https://circularecology.com/concrete-embodied-carbon-footprint-calculator.html">https://circularecology.com/concrete-embodied-carbon-footprint-calculator.html</a></p> <p><b>Embodied carbon of materials</b> – Manufacturer specific EN 15804 Environmental Product Declarations (EPDs), where available. Notably steel frame and roof / wall cladding, which were carbon hotspots</p> <p><b>Embodied carbon of materials</b> - Jones and Hammond, 2019. The ICE Database, version 3.0. Available from, <a href="http://www.circularecology.com/embodied-energy-and-carbon-footprint-database.html">www.circularecology.com/embodied-energy-and-carbon-footprint-database.html</a></p> <p><b>Embodied carbon of materials</b> – ecoinvent v3.1, Swiss Centre for Life Cycle Inventories. Available from <a href="http://www.ecoinvent.ch">www.ecoinvent.ch</a></p> <p><b>Fuels, freight transport and electricity impact factors</b> - Defra, 2020. GHG Emissions Factors for Company Reporting. Factors were applied including all 3 scopes, including well to tank emissions. Available from <a href="http://www.ukconversionfactorscarbonsmart.co.uk">www.ukconversionfactorscarbonsmart.co.uk</a></p> <p><b>Default values in lieu of primary data for lifetime of materials, incoming transportation of materials and Module C1 (demolition)</b> - RICS, 2017. Whole life carbon assessment for the built environment, RICS professional statement. RICS, London, UK</p>			
Building elements coverage	#	Building parts/ element groups	Building elements	Coverage (%)
	0	Facilitating works	0.1 Temporary/Enabling works/Preliminaries	100%*
			0.2 Specialist groundworks	100%*
	1	Substructure	1.1 Substructure	100%*
	2	Substructure	2.1 Frame 2.2 Upper floors incl. balconies 2.3 Roof 2.4 Stairs and ramps	100%*

		Superstructure	2.5 External Walls 2.6 Windows and External Doors	100%*
		Superstructure	2.7 Internal Walls and Partitions 2.8 Internal Doors	100%*
	3	Finishes	3.1 Wall finishes 3.2 Floor finishes 3.3 Ceiling finishes	100%*
	4	Fittings, furnishings and equipment (FF&E)	Building-related Non-building-related	Building related only
	5	Building services / MEP	5.1–5.14 Building-related* services	Includes lift and solar thermal
			Non-building-related	-
	6	Prefabricated Buildings and Building Units	6.1 Prefabricated Buildings and Building Units	100%*
	7	Work to Existing Building	7.1 Minor Demolition and Alteration Works	N/A
8	External works	8.1 Site preparation works 8.2 Roads, Paths, Pavings and Surfacing 8.3 Soft landscaping, Planting and Irrigation Systems 8.4 Fencing, Railings and Walls 8.5 External fixtures 8.6 External drainage 8.7 External Services 8.8 Minor Building Works and Ancillary Buildings	100%*	
Assumptions and scenarios	<p>* Subject to study cut off criteria. The assessment cut of criteria allowed all items that were expected to be less than 1% of the footprint or mass to be excluded. Up to a cumulative 5% exclusion</p> <p><b>Material quantities:</b> For any instances that required assumptions, e.g. minor mass items, they were conservatively applied and were in line with the project cut off criteria*</p> <p><b>Construction site waste:</b> The initial primary data for construction site waste, was measured by volume of mixed waste. This was improved by the main contractor and waste management company, to report a monthly breakdown by material mass and volume. The material breakdown was extrapolated to the months where only total volume of waste was available. This was considered a conservative assumption</p> <p><b>Construction site energy:</b> Primary data was provided covering energy consumed by the main contractor and key subcontractors on a monthly basis. This includes primary data for the energy intensive ground / earth works. Data was not available for a short period of construction for some of the sub-contractors. This was extrapolated in a conservative manner</p> <p><b>Biogenic carbon:</b> Biogenic carbon has been calculated, but the carbon storage was not included in the embodied carbon results</p>			

## Offsets

Indicator	Amount
Total embodied carbon (tCO <sub>2</sub> & kgCO <sub>2</sub> e/m <sup>2</sup> ) from construction (modules A1 to A5 of EN15978) at practical completion	11,735 tCO <sub>2</sub> e
Total embodied carbon offset (tCO <sub>2</sub> e) at practical completion	11,735 tCO <sub>2</sub> e
Total embodied carbon cumulatively offset (tCO <sub>2</sub> e) in previous years through net export of renewable energy	-
Total embodied carbon offset (tCO <sub>2</sub> e) this year through net export of renewable energy	-
Total outstanding embodied carbon (tCO <sub>2</sub> e) balance	0 tCO <sub>2</sub> e

Amount and type of offsets procured this year, including relevant framework used:	11,735 tCO <sub>2</sub> e Gold Standard credits Split across several projects: clean cookstoves, clean water, biogas and renewables
Expected verification processes:	Gold Standard credits retired on behalf of GLP Circular Ecology offset certificate number GS-SE-1X57F-08-20
Cost per tonne of CO <sub>2</sub> e:	£4 to £12

<sup>1</sup> Royal Institution of Chartered Surveyors (RICS) (2017). Whole life carbon assessment for the built environment RICS professional statement, UK. [online] Available at: <https://www.rics.org/globalassets/rics-website/media/upholding-professional-standards/sector-standards/building-surveying/whole-life-carbon-assessment-for-the-built-environment-1st-edition-rics.pdf>

\* Building-related items: Building-integrated technical systems and furniture, fittings and fixtures built into the fabric. Building-related MEP and FF&E typically include the items classified under shell and core and Category A fit-out.

