Embodied Carbon Assessment

Brief for Projects

DERWENT LONDON

NET ZERO

Context

In February 2020 we announced our commitment to achieve net zero carbon by 2030. We plan to do this through driving down energy demand across our portfolio, investing in renewable energy, reducing the embodied carbon of development projects and offsetting the residual emissions we cannot eliminate. Further details of our journey to net zero can be found in our Net Zero Carbon Pathway.

As part of our net zero carbon ambition we are required to map and ultimately reduce the embodied carbon of new developments, refurbishment and fit out projects. This process allows us to understand its significance and where there are opportunities to reduce it.

From the initial studies undertaken it has been demonstrated that our preferred approach to development i.e. re-energising older buildings to add value and unlock potential, achieves lower embodied carbon profiles when compared to more standard/generic approaches. However, it is important for us to understand exactly where the true reduction opportunities lie and how we can take advantage of them.

To enable us to effectively and consistently measure embodied carbon across our project portfolio we have developed this brief which is designed to guide carbon consultants as to the extent of the assessment and outputs required.

Summary

This brief sets out the base requirements and outputs for an embodied carbon assessment instructed by Derwent London. It is envisaged that any assessment commissioned will be done so at the earliest opportunity, with a target start point of RIBA Stage 2 to capture the design concept and run through to Stage 4 to capture the design development stage. The actual embodied carbon of the project is assessed during key milestones of Stage 5 up until Practical Completion (PC). Details of actual materials used on site will be provided by the appointed Contractor to inform the assessment process.

It is recognised that each consultant practice will have their own format/house style for presenting the results for their assessments; this brief is not intended to direct this, rather set out some of the basic parameters Derwent London requires.

Requirements

Framework

- It is necessary that all assessments undertaken must have their methods aligned to/conform with **BS EN 15978:2011 Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method.**

- With regards to datasets it is recognised that there are no formally endorsed databases/sets referenced by the above standard or others (outwith of Environmental Product Declarations [EPDs]), however it is recognised that there a number of well-used industry benchmarks and sources, which include:

    - The Bath ICE Database
    - Proprietary databases and software packages such as SimaPro; OneClick, eTool
    - Environmental Product Declarations (EPDs)
    - Environment Agency Carbon Calculator Tool

- In addition to these it is understood that many practices will have data obtained from other sources such as first principle studies based on research undertaken elsewhere. As a result it is to be made clear in the method description all the data sources used to complete the assessment – both primary and secondary, and their provenance and treatment i.e. how they have been used and the standards they conform to e.g. PAS 2050 or ISO 14040. Moreover, how issues such as recycled material allocation, cut-off's and end-of-life have been dealt with.

Assessment boundaries and metrics

- The boundary condition to be used is: **Cradle-to-Completed Construction (A1-A5).**

- The primary reporting unit is to be: **tCO_2e**

- As a minimum the assessment is to present the following headline metrics:

    - Total tCO_2e i.e. the total embodied carbon footprint
    - Total tCO_2e per m2, based on Gross Internal floor Area (GIA)
    - Total tCO_2e per carbon source, split by materials, transport, site activities/impacts; and waste – also to be expressed as a percentage of the total footprint
    - Total tCO_2e per building element and major building component

- It is recognised that there may be multiple buildings or use types under investigation in an assessment. Where this is the case the above metrics are to be presented for each distinct building/use type.

Results presentation and benchmark comparison

- The assessment as a minimum should present the outcomes from the assessment graphically in the following ways:
    - Total tCO_2e per building element i.e. superstructure, substructure etc and each expressed as a percentage of the total footprint
    - Total tCO_2e per major building component i.e. walls, floors etc and each expressed as a percentage of the total footprint
    - Total tCO_2e per m^2, based on GIA per build element and component
- Commentary should also be provided explaining the results, significant findings, relationships etc
- The assessment should also provide a benchmark comparison building(s) in order to effectively compare the results. Any benchmarks used should be as directly comparable as possible, however it is recognised that this may not always be possible. Therefore, it is acceptable to use a generic benchmark, however full explanation is to be given as to the make-up of the benchmark and its limitations.

Conclusions and reduction opportunities

- Within the conclusion section the top five reduction opportunities are to be presented together with their reduction potential against the total footprint. These opportunities should be practicable and realistic and in-line with the project objectives.
- Where opportunities identified have operational energy implications or require additional analysis using operational energy data to qualify them, these are to be brought to the attention of the Derwent London Development Manager and Head of Sustainability such that an appropriate decision can be made, as to whether these are to be pursued.

Planned vs actual reporting

- Over the course of construction, the embodied carbon of materials used on site for each building element / component will be assessed against the estimations calculated at Stage 4. The frequency of this process will be dependant on the scope and scale of the project and will be agreed on an individual basis.
- Results should be presented as previously outlined in the brief.
- A final assessment and report will be completed at PC for the project.

RICS Building Carbon Database

- The results from the assessment are be updated on the **RICS Building Carbon Database website.**

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