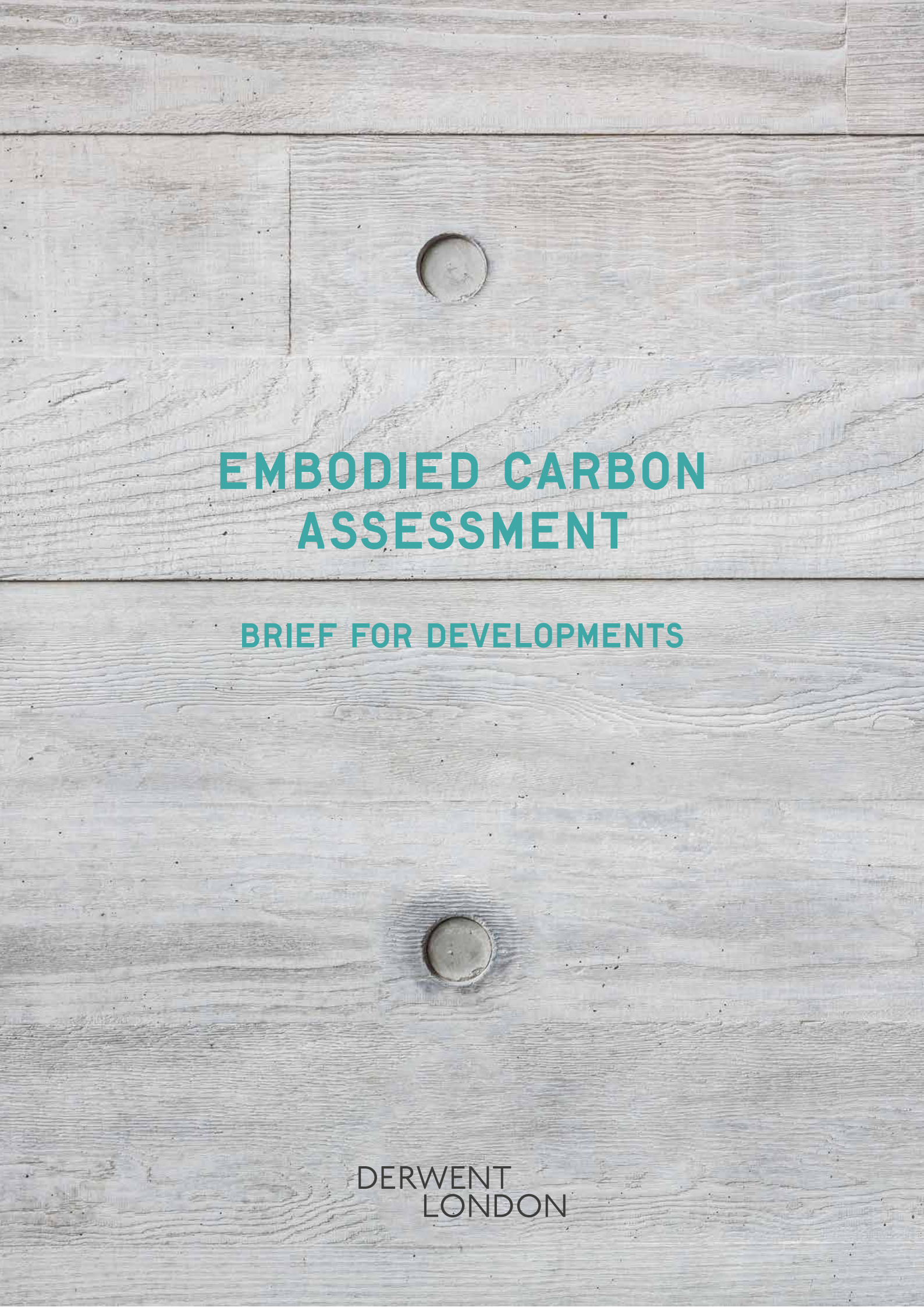

EMBODIED CARBON ASSESSMENT

BRIEF FOR DEVELOPMENTS

DERWENT LONDON

CONTEXT

As part of our ongoing sustainability programme we are continuing to map and understand our carbon footprint in greater detail. As part of this process we are looking to explore further our Scope 3 emissions by mapping and investigating the embodied carbon footprints of our new developments and major refurbishments, to help us understand its significance and where there are opportunities to reduce our footprint.

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 measure embodied carbon across our project portfolio effectively and consistently 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 C (Stage 2 in the new plan of work) to capture the design concept, moreover to run through to Stage D (Stage 3) to capture the design development stage. Where required it may be that this assessment window will be extended beyond these stages to capture other aspects, but this will be dealt with on an individual basis.

During the delivery phase of the project the main contractor will be required separately to map the footprint during construction to allow for comparison at project completion.

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

- Up until very recently there have no specific 'made-for-purpose' embodied carbon assessment frameworks focused specifically on buildings, however this has changed with the introduction of BS EN 15978:2011, which is becoming the 'pillar' standard in terms of life cycle assessment in buildings.

- 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 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; and
  – Environmental Product Declarations (EPDs)

- 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, timber sequestration, cut-offs and end-of-life have been dealt with.

Assessment boundaries & metrics

- The boundary condition to be used is: Cradle-to-Completed Construction.

- 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 m^2 (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

- 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 & 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; and
  – Total tCO_2e per major building component i.e. walls, floors etc and each expressed as a percentage of the total footprint

- 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 compare the results effectively. 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 & 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.

WRAP embodied carbon database

- The results from the assessment are to be incorporated into the WRAP Embodied Carbon database of buildings using the prerequisite template which can be found at: http://www.wrap.org.uk/content/embodied-carbon-database