Waterman Energy Environment and Design Sustainability

Critical Report Review 'Life Cycle Carbon Analysis of Extensions and Subterranean Development in RBK&C' – Eight Associates, July 2010

Executive Summary

Following a review of the Eight Associates report (EA), **Waterman identified a significant number of inaccuracies and miscalculations surrounding the assessment of the lifecycle carbon of both the basement and the extension. The Eight Associates report is inconsistent in its approach and the calculations, resulting in uncertainty in the robustness of its conclusions. In particular, the following key issues were identified in relation to the assessment:**

- The calculations of embodied carbon in the extension do not take into account the carbon emissions from the foundations and steel beams, which represents a substantial proportion of the development.

- The calculations of embodied carbon for the extension use a wall height of 2m, whereas the drawings included in the planning application show the wall height as 2.6m.

- Eight Associates' assessment is based on the assumption that 1,200m3 of spoil was removed, but the Construction Traffic Management Plan (CTMP) states that 750m3 of spoil is expected.

- There are no waste values for the construction of the extension. At least some waste would be produced during construction and some spoil would be generated from excavations of the foundations.

- The SAP calculations for operational carbon emissions of the extension are not representative of the case study used in the Eight Associates report. A development with a floor area of 55m2 was used, when the extension in the Eight Associates report has a floor area of 10.35m2. This is a completely different case study to the one used in the Eight Associates report.

- A number of inconsistencies have been noted in the SAP calculations for the basement, including that the calculations show only one sheltered side when a basement would be expected to have at least three. Furthermore, the basement is shown to have a roof, through which heat could escape; however, it is expected that in reality the basement would be insulated by the rooms above it, thereby reducing operational carbon.

- Section 9 of the SAP document shows a gas boiler in the basement, but according to the Sustainability Code Assessment, submitted as part of the planning application, the development will have a Ground Source Heat Pump, representing a lower carbon technology.

- Re-calculations of embodied carbon were made by the incorporation and correction of the errors identified above and show that the construction of the extension actually results in the emissions of only 3.4% fewer carbon emissions than the basement.