The River Lea Crossing is a single 60m span steel arch bridge built in the 1930s, which now carries the A13 through East London. The bridge was due to be replaced, but an alternative proposal to refurbish the existing structure was developed by Hewson, in partnership with Road Management Services (A13) plc, adopting the ‘build less’ principle in PAS 2080.

Following an extensive programme of inspections, surveys, material sampling and testing a load assessment of the structure was undertaken. Unusually, this included assessment of the substructure and fatigue life predictions, to demonstrate the technical feasibility of the proposed refurbishment.

Further studies were undertaken to assess other impacts of the replacement and refurbishment schemes, including predictions of whole-life costs and embodied carbon calculations.

Predictions for life cycle stages A1 to A5 (materials and construction) showed the impact of the refurbishment scheme to be about 51% of the impact of a replacement scheme – a saving of almost 1.2 million kgCO₂e (kg carbon dioxide equivalent emissions).

It was further demonstrated that the vastly shorter construction programme for the refurbishment would have a significantly lower impact on traffic, air quality and noise.

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Tags: Build Less, Build Nothing, Existing Bridges, Steel Bridges