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Circular Economy

Rapidly diminishing natural resources and increasing global consumption means an renewed approach is required to resource management in the built environment with the aim of optimising resource flows in design, construction and operation. Developed through engagement with the built environment value chain, our approach aligns with each RIBA stage to consider whole life impacts that support wider sustainability issues like net zero carbon and health and well-being. We are currently working to develop a greater understanding of CapEx and OpEx impacts and exploring partners to further our understanding of the materials banks of existing buildings.

Our Approach

Optimising resource consumption and material value throughout a building's life cycle and beyond requires new ways of designing and decision making. In response to this challenge we have developed a set of circular economy principles and framework to influence our multidisciplinary designers. Our approach follows 8 design principles:

1. Designing in Layers: This principle promotes designing from the inside out. Each building layer should be considered independently based on maintenance and replacement cycles to minimise the impact on other elements when works are required.

2. Resources Re-use: The consideration of retaining high value resource cycles throughout the design, demolition, construction and operational stages of a project. Where possible materials will be retained in their current state, with recycling and biodegrading seen as worst case scenarios.

3. Materials Selection: Specifying out virgin technical materials by prioritizing low toxic, bio-based materials where replacements or new construction is required. Ensuring performance, durability and quality of materials specification.

4. Designing out Waste: This includes rationalising the level of intervention in the first instance. Additionally waste can be designed out through selecting products that can be manufactured with minimal waste by-products and using standardised components and sizing.

5. Designing for Adaptability: Spaces that are functionally, volumetrically and temporarily adaptable. Optimising the use of available floor spaces and building in future adaptability to the building services. Consideration in the design of newly constructed buildings to the multi-space concept.

6. Designing for Deconstruction: Where new building elements will be introduced there will be the opportunity to disassemble them in the future to extract the maximum value, where feasible reusing the material in the same form, re-manufacturing, and dissembled to optimise material cycles.

7. Circular Economy Business Models: Where possible a move to leasing and/or adopting manufacturer take back schemes are pursued. This will re-focus material flows through the value chain, placing incentives for manufacturers to place materials in high value cycles.

8. Circular Economy Enablers: The use of technology to support circular economy objectives in the design, construction and operation of a building. Technology enablers identified include BIM, materials passports, resource redistribution platforms, wireless technology, and the virtualisation of services/ activities.

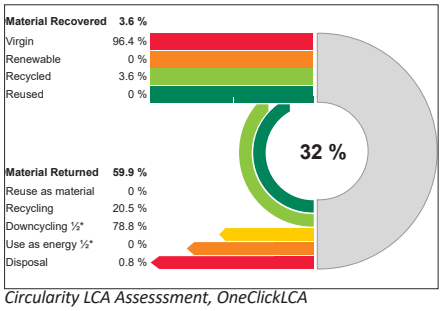
Monitoring, Implementation and Evaluation
We use a range of tools to help embedd the circular design principles across each of the RIBA Stages.

We have developed workshops to embed circular objectives into client briefs, establish monitoring indicators to evaluate performance through a circularity plug-in for our LCA tool to assess resource consumption and whole-life carbon impacts.

Our Experience

Enterprise Centre, UEA, Norwich

One Angel Square, Northampton



Circularity LCA Assesssment, OneClickLCA