



Form, fit & finish

PENDOCK LINEA
BUILDING LININGS



[Awards](#) | [Forum](#) | [Works](#) | [Specification](#) | [Events](#) | [Podcasts](#) | [In practice](#) | [Subscribe](#) | [Q](#)

Why we must rethink procurement to facilitate reuse and disassembly

As a sector, we are getting more adept at producing designs and specifications that reduce operational carbon, but there is less clarity on how to reduce the embedded carbon in the projects we deliver. Ruth Lang, one of our three industry experts, gives her view

Trending



Meet the client:
Caswell&Dainow on
how to make the
switch from
architect to
developer

4 April 2023

as to how this should be addressed.



The cross-laminated timber structure of Mæ Architects' Sands End Arts & Community Centre in London has been designed to enable future disassembly. Credit: James Retief



Stables Yard

30 March 2023



Alice Brownfield

4 April 2023



Best practice for roofing guarantees

19 March 2023



Rethinking Resi 2023

22 March 2023

This article is part of a mini-series of thought pieces titled, 'Embodied carbon: what now?' where we asked three leading industry experts on how we can address issues surrounding embodied carbon. Also in this series:

- [Greg Shannon, LTS Architects: Introduce RIBA Stage Minus 1](#)

- *Tom Webster, Webb Yates Engineers: Change legislation and policy*

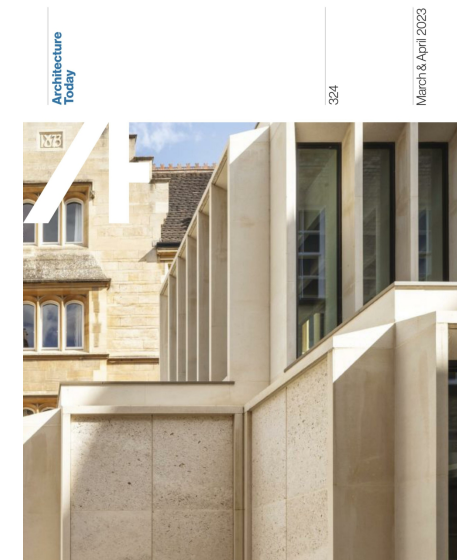
Rethink procurement to facilitate reuse and disassembly

As a sector, we are increasingly confident in developing building designs and specifications which can reduce operational carbon consumption. But in contrast, there is still much uncertainty regarding how best to reduce embodied carbon within our schemes. Adopting a zero carbon imperative asks us to move beyond reducing waste to build fewer new buildings – a strategy which undermines so many expectations regarding the previously accepted role of the architect. Yet within this, there are opportunities to adopt alternative roles which offer new creative territories for us to apply our architectural skills.

Among different initiatives being undertaken in practice, one strategy for reducing embodied carbon is to break the cycle of construction and demolition that has characterised the industry's mindset. As part of this, efforts to reuse building materials and components which have already been produced minimise the extractive processes involved in the construction of new buildings. Such an approach is complemented by design initiatives which will enable the future disassembly and reuse of materials being applied in construction now.

However, there are critical flaws at different scales in the current context of the construction industry, which create

Architecture Today March-April 2023



[View the digital edition](#)

barriers to adopting both of these reuse strategies, including clients' expectations for project timescales, knowledge of costs and availability of materials, and a hesitance for insurers to guarantee works incorporating reused buildings and materials due to the unknown qualities they are anxious not to adopt responsibility for. Without such support in place, it is currently still less complex to continue the familiar approach of discarding and buying anew. So how can we gain greater leverage in bringing reuse strategies to fruition?

Redesigning procurement

To break free of the normative approach to consumption, it's our responsibility within the design team to begin to raise the questions which might provoke alternative approaches to be used instead. Much work needs to be done to convince our clients and collaborators of the radical changes to the order and duration of activities undertaken across the design and procurement processes from briefing and concept onwards. This is because the labour intensive processes of surveying, research, testing, iterative detail design, and the supply chains for restoration and storing materials for reuse shift the anticipated timescales for the project programme. Employing reuse and disassembly also demands increased collaboration earlier on across the project team, which usurps the expectations of the linear stages of the RIBA Plan of Work, and the ordinary procedures for contractual appointments to be made.



The cross-laminated timber structure of Mæ Architects' Sands End Arts & Community Centre in London. Credit: Rory Gardiner

Designing for disassembly

There are great savings in terms of cost and carbon which the client can benefit from in allowing such processes to be shaken up. In designing Sands End Arts & Community Centre in London, Mæ Architects acted as lead consultant and architect for the coordination of the scheme's CLT construction. From the outset, the intention was set to ensure the structure would use renewable and non-toxic cross-laminated timber, as well as timber-to-timber joints in place of glue or steel flitch plates with dry-joints and bolts to allow for future disassembly. Although the project was undertaken via traditional procurement, value engineering and detailed construction design were undertaken early on in close collaboration with the contractor and structural engineer. This enabled the design to benefit from their fabrication expertise, improved the quality of construction detailing, and reduced the profile size of the proposed frame. Paying careful attention to the design of the frame early on meant it didn't need to be subsequently covered up, thereby removing the need for aesthetic linings, such as plasterboard and reducing the need for wet trades on site. It also enabled the footings for the frame to be reduced to a mere 175mm of concrete.

In accordance with the skills-building imperatives of the Green New Deal for young people, the contractors supported the local workforce by establishing apprenticeship schemes and working with local tradespeople. In doing so, the project has provided a platform that demonstrates the successful use of repurposed and reprocessed materials at a large scale, and

provides a way forward towards a more circular way of building. Sharing detailed examples such as these with clients can help demonstrate the benefits of procurement aspects we rarely discuss as an industry.

Building collaboration

To gain greater traction, designing for reuse and disassembly demands that we familiarise ourselves with a wide range of potential design and construction approaches, rather than falling back on tried-and-tested practices. It may well feel that implementing reuse strategies puts an additional burden on an already time pressured profession to nurture more skills and awareness. It's a humbling process, which requires us to embrace uncertainty, establish research and feedback loops with those who deconstruct our buildings, and develop a greater understanding of post-construction material processing to enable these materials to be used in other applications. Our understanding of the materials we specify will need to become more responsive to what we uncover and what is available, radically impacting the way we approach design and construction.

Reuse strategies will also require a robust system for surety of structural capacities and life safety, and the provision of product-based warranties. Although the testing and certification of new materials is an essential assurance within the specification process for new and refurbished buildings, there are few equivalents for reused building components, without entailing extensive testing of possible combinations of materials and components. There's

currently a gap in the industry for the collation of such information, including details of best practice models, which have been tested and certified to form the basis for setting clear parameters and recommended robust details for potential applications, providing the benchmark assurances required for implementation.

There's also a necessity to employ the means to safeguard reuse within schemes from the outset, so that in the case of shifts in the design team's involvement, establishing Employers' Requirements, KPIs, Section 106 Agreements, and planning conditions can help ensure the continuity of application of reuse strategies, rather than having these aspects value engineered out, or removed as a process of de-risking the project. There's been much discussion of the potential benefits of using material passports in facilitating such processes for new-build schemes, but this is as yet hampered by a lack of benchmark coordination of the information required across the industry. However, the proliferation of BIM models provide an opportunity to catalogue information about materials which can then be shared at the building's end-of-life as a list of potential resources for subsequent projects. Providing ESG data can also offer greater leverage for carbon credits, by providing information for the tracking and trading of sequestration and subsequent use, which is particularly pertinent when schemes are subject to carbon taxation.

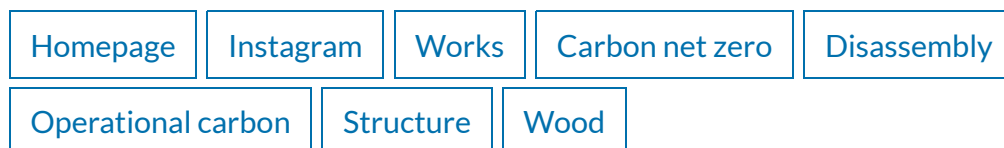
Structures of support

Confronting these issues in isolation is a risky and time-intensive process, so it's essential that we find ways to work

together across disciplinary and professional boundaries to exchange knowledge, insight, expertise and – importantly – mistakes, to identify opportunities and safeguards for material reuse. We will need to engage parties beyond the direct project team in order to plug the gaps in knowledge which currently exist from our educational backgrounds – a complex process, which, thankfully, organisations, such as LETI and ACAN are already undertaking.

Adopting reuse principles necessitates a design ethos based on humility, listening, collaboration and iteration, led by our ingenuity in repurposing the resources we are presented with, rather than delivering a Fountainhead-esque creative vision. But it also necessitates the restructuring of the entire procurement process and radical changes across the sector.

Ruth Lang, architect and senior lecturer, LSA/RCA



Related Posts



[Advertising & Marketing](#) | [Subscribe](#) | [Contact us](#) | [Privacy & Terms](#) | [Newsletter Sign Up](#)

© Built Environment and Architecture Media Ltd 2023



[Advertising & Marketing](#) | [Subscribe](#) | [Contact us](#) | [Privacy & Terms](#) | [Newsletter Sign Up](#)

© Built Environment and Architecture Media Ltd 2023



[Advertising & Marketing](#) | [Subscribe](#) | [Contact us](#) | [Privacy & Terms](#) | [Newsletter Sign Up](#)

© Built Environment and Architecture Media Ltd 2023