# A data cornerstone for a low-carbon built environment

**New Zealand's National Embodied Carbon Data Repository will support the industry to make more informed, environmentally responsible decisions when selecting materials and designing buildings.**

BY MIKE JACKSON, GENERAL MANAGER – CONSTRUCTION SPECIFICATION, CIL-MASTERSPEC, REGISTERED ARCHITECT

In 2016, BRANZ introduced Aotearoa New Zealand's first freely available life cycle assessment tool, LCAQuick, which included a database showing the environmental impacts of construction products. While ground-breaking, the initial release included only limited products and third-party data licensing prevented open visibility. A more accessible yet narrower dataset, $CO_2$NSTRUCT, followed, focusing only on product manufacturing impacts.

Over the years, both tools were incrementally expanded. However, infrequent updates meant delays in integrating new data, which reduced their relevance amid rapidly evolving construction practices.

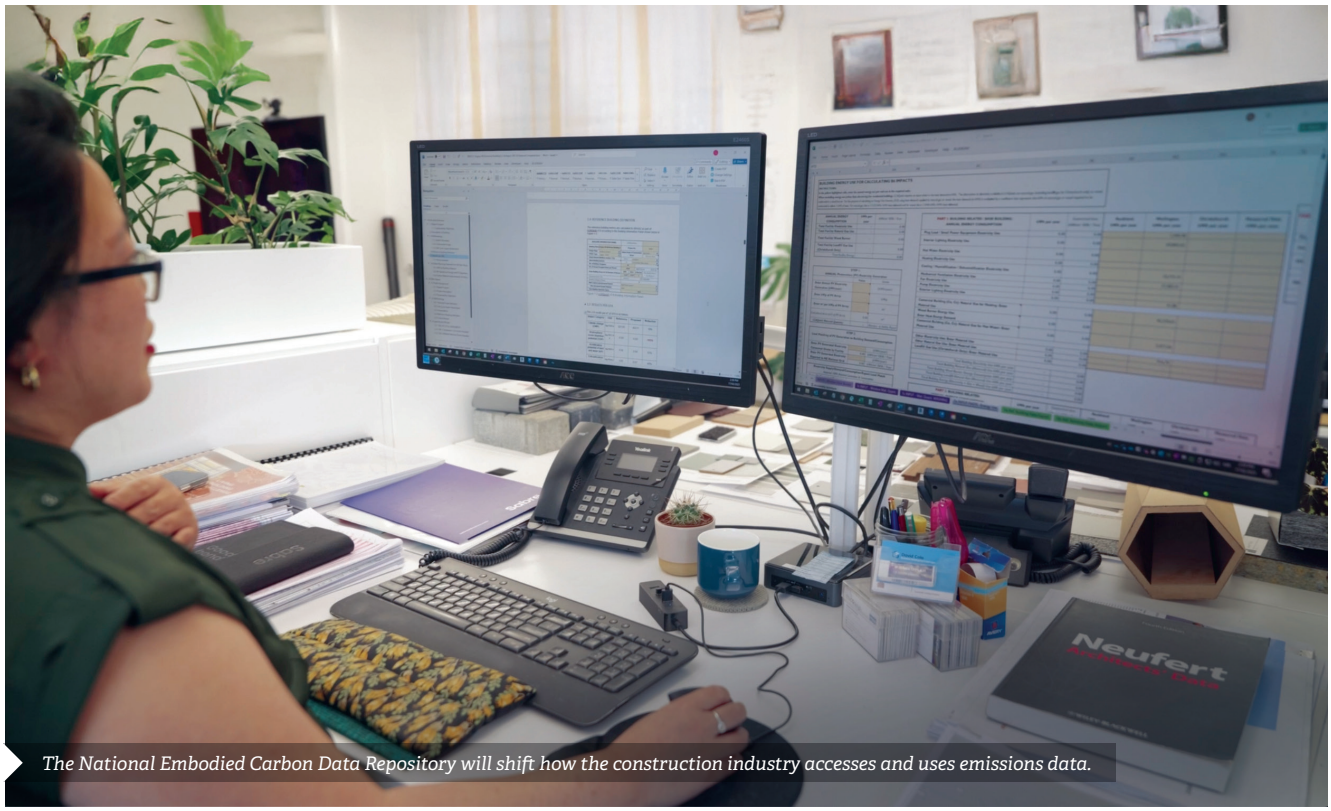
## Major step forward in 2025

The launch of the National Embodied Carbon Data Repository later this year will fundamentally shift how the construction industry accesses and uses emissions data. This centralised, industry-led online resource will provide reliable information on the carbon emissions associated with construction materials and products. Its goal is to help the sector make more informed, environmentally responsible decisions when selecting building materials and designing buildings.

Former BRANZ principal scientist Dr David Dowdell, who led the development of the original dataset and serves as an advisor on the National Embodied Carbon Data Repository project, says it's inspiring to see BRANZ's original research being adopted by the industry for the industry.

'This milestone enhances transparency and accessibility of embodied carbon data and offers a vital resource to help the sector reduce emissions from Aotearoa New Zealand's built environment.'

Designed for enhanced usability, transparency and consistency, the repository will uphold the principles of open access and scientific integrity. The data will be ▸▸




*The National Embodied Carbon Data Repository will shift how the construction industry accesses and uses emissions data.*

regularly updated and freely available as open data. The initiative is the result of a partnership between BRANZ and Construction Information Limited (CIL), which trades as Masterspec and which is owned by the construction industry, while the New Zealand Institute of Architects and Registered Master Builders are backing the project as shareholders.

In December 2024, the government released its second emissions reduction plan, outlining national targets for the 2026–2030 period. The plan reaffirms the country's commitment to achieving net-zero carbon emissions by 2050.

Key to the plan is the need for consistent, standardised reference data to support informed decision making across the sector. The CIL/BRANZ initiative directly addresses this need and is formally endorsed by the Ministry of Business, Innovation and Employment (MBIE) and supported by the New Zealand Government.

## Key features

- An online platform that allows easy review of data and lets third-party software platforms and calculation tools connect and interact with it.
- Complete visibility of a product's impact on climate change throughout its entire life, supported by physical characteristics, scenario assumptions and verified information.
- Data preference matrix scoring – a framework for assessing data quality, which enables users to evaluate data reliability and may support carbon assessments at the building or project level.
- Live updates that happen as soon as new LCA documentation is available, making them much faster than they are now.
- New Zealand-relevant data – for example, transport data from the Ministry for the Environment clearly visible and open to review. Local data will continue to be a distinguishing feature of the BRANZ dataset.
- Recognition of innovative life-cycle practices such as verified take-back schemes that reduce embodied emissions or enhance circularity.
- End-of-life carbon methodology – a new approach aligned with MBIE's guidelines will separate emissions from

carbon kept or passed on when products are reused or recycled, showing the difference between released and stored carbon.
- Governance and stewardship – resources will be dedicated to overseeing the repository with the aim of continuous improvement in validating new information and assessing ongoing integrity.
- Authoritative and well maintained based on the principle of freely available data and backed by the rigorous and robust early BRANZ research. This is crucial for the repository's success.

## Impacts and opportunities

There are impacts and opportunities for many in the wider construction industry while accelerating the decarbonisation of the built environment.

### For policy makers and regulators

Data from this new national and standardised repository can:
- be incorporated into building performance frameworks such as consenting, green rating systems and public procurement requirements
- support legislation, guidance or incentives that encourage manufacturers to submit verified environmental data and participate in circular practices.

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> *– Dr David Dowdell*

### For product manufacturers and suppliers

Manufacturers and suppliers will:
- be able to differentiate their products by providing carbon performance data and highlight any improvements through an authoritative and nationally consistent method.
- need to submit environmental product declarations (EPDs) and other life cycle assessment studies that meet qualifying criteria, which are being tested and are subject to change (see box).

### For architects, engineers, and designers

They will be able to:
- embed data into early design decisions and models to reduce whole-of-life carbon impacts
- use the data preference matrix scores to inform product and material selection and support evidence-based sustainability claims in client reporting and certifications
- compare products with confidence and make more informed, sustainability-driven selections.

### For data providers, researchers and third-party software developers

The repository presents opportunities to:
- develop tools, such as calculators and building models, that reference a consistent, free and nationally available dataset
- utilise the API to consume high-quality, peer-reviewed data and collaborate with CIL and BRANZ to refine default assumptions as part of an on-going continuous improvement process
- advocate for transparency to build trust in the system.

## Looking ahead

The New Zealand National Embodied Carbon Data Repository represents a critical infrastructure investment to support climate-resilient construction. Its emphasis on open access, rapid updates, innovation recognition and local relevance ensures it will play a pivotal role in shaping a built environment fit for the future.

By working together across sectors, we can use this tool to make meaningful progress toward a low-carbon, circular and sustainable construction industry in Aotearoa.

### Draft qualifying criteria for EPDs and other life-cycle assessment information

- Data to be free and publicly available, without the need to request.
- Manufacturing emissions scope to be up to the boundary with module A4.
- Data relevant to New Zealand.
- Data to have undergone a certified independent third-party review that has found it to be compliant with a named relevant standard. The review should additionally include in-scope relevant named subsidiary standards/ PCRs and (for EPDs) the most recent GPI. The third-party review should comply with ISO 14025.
- Reported emissions not to include offsetting.