State-of-Play

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Introduction

The built environment sector of Australia is responsible for one-quarter of the country's greenhouse gas emissions. There is an urgent need to address the climate crisis and reduce emissions in the construction sector.

Over the past five years Australian government and industry action has begun to address embodied carbon in infrastructure and buildings. A range of new policies and initiatives have been introduced at both federal and state levels impacting the state-of-play in the country.

This MECLA State-of-Play resource aims to provide a comprehensive overview of current initiatives focused on reducing embodied carbon in construction. It maps out key policies, measurement tools, programs, and resources available across various jurisdictions. MECLA has consolidated this information to provide a first step view of the state-of-play in Australia for engineers, architects, policymakers, investors, suppliers, and anyone else interested in better understanding embodied carbon in the Australian market.

About MECLA

The Materials Embodied Carbon Leaders' Alliance (MECLA) is a collaboration of over 190+ industry, government and research organisations working together to drive embodied carbon emissions reductions in the built environment. MECLA is committed to transforming the building and construction sector in alignment with the Paris Agreement and the principles of a circular economy, and strives to do so through the collaboration of its members.

MECLA is determined to transform the building and construction sector to reach Net-Zero emissions. MECLA recognises the growing demand for lower and zero-carbon materials worldwide and explores how we can work together to move Australia towards a zero-carbon economy and position Australia as a top material supplier through systems innovation.

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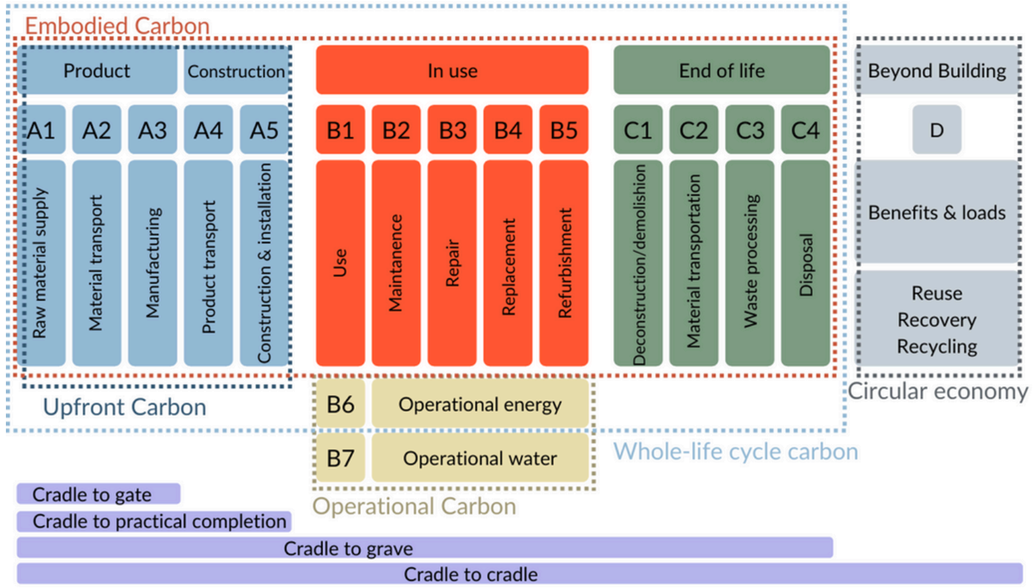
professionals.

What is Embodied Carbon

Embodied carbon is the greenhouse gas emissions associated with materials and construction processes throughout the whole of life cycle of a building or infrastructure project. This includes the carbon cost of manufacturing, transportation and installation for a material. The figure below represents different project lifecycle phases and the language used to describe each of them. MECLA's focus is predominantly in A1-A5, or upfront carbon.



How to navigate this guide

This guide provides two maps on the embodied carbon state-of-play in Australia.

On **Page 5** is the first map of government strategies, represented by jurisdiction. Use this map to better understand the strategic direction that state and federal governments are heading and how embodied carbon is considered. Not all state or federal strategies will directly refer to embodied carbon, but decarbonising energy and supply chains are relevant.

On **Page 7** is the second map providing a list of the different measurement tools & databases, policies, programs, and guidance documents for embodied carbon around the country.

On the pages after each map are brief descriptions of each of the strategies, programs, measurement tools or databases listed. Click on the icon next to the title of a resource to access more information on them.

This icon next to each resource description will take you to the webpage where you can read the full resource.

Australian State-of Play

State & Federal Strategies

National Strategies

- Building & Construction Industry Sustainability Goals 2050
- Decarbonizing Infrastructure
- Defining Infrastructure Net Zero
- CCA's 2024 Sector Pathways Review

Northern Territory

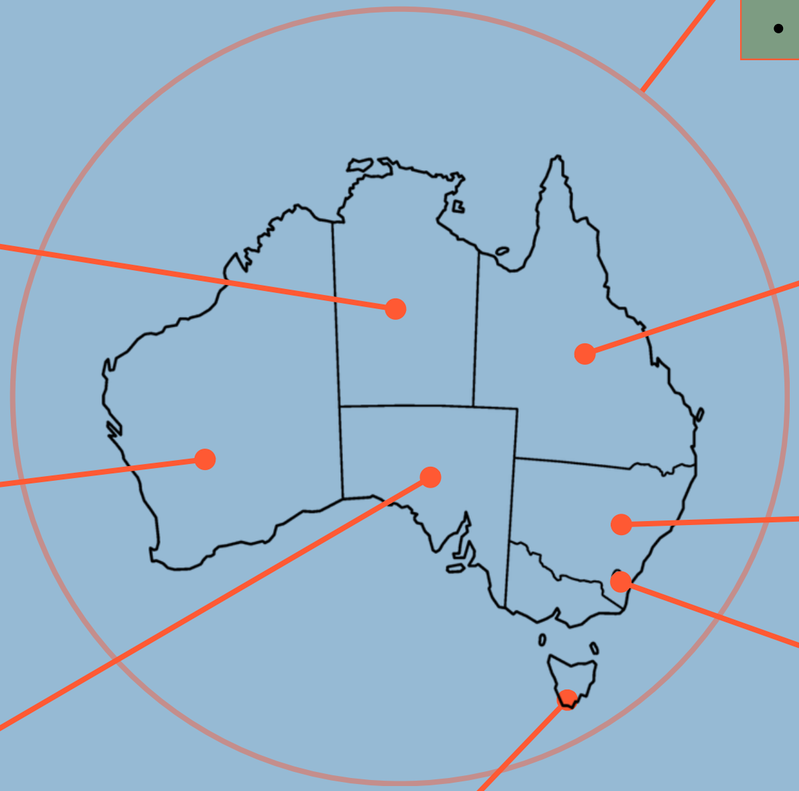
- NT Infrastructure Plan and Pipeline 2023

Western Australia

- Sectoral Emissions Reduction Strategy
- Decarbonising Western Australia and Our Trading Partners
- State Infrastructure Strategy

South Australia

- SA Waste Strategy 2020-2025
- Circular economy in South Australia's built environment – Action Plan



Queensland

- State Infrastructure Plan (SIP)
- Department of Transport and Main Roads (TMR)

New South Wales

- NSW Net Zero Plan
- NSW Net Zero Buildings

ACT

- ACT Sustainable Building Pathway

Tasmania

- State of Play Report- Industrial Processes and Product Use
- The 2021 Update of Tasmania's Emissions Pathway Review
- Critical Decarbonisation Pathways Report

Australia's State-of-Play

State & Federal Strategies

National

The **Building & Construction Industry Sustainability Goals 2050** - aims to minimize the environmental footprint of the building and construction industry through reducing its quantity of waste, adopting best practice recycling programs, and minimizing its water usage.

Defining Infrastructure Net Zero - stresses two main definitions for addressing decarbonization in the infrastructure sector to enable more informed decisions that align with economic, sustainability, and resilience goals.

Climate Change Authority's 2024 Sector Pathways Review - advocates for lifecycle assessments, material efficiency, and circular economy principles to achieve net-zero emissions.

ACT

ACT Sustainable Building Pathway - strategises how Canberra's building and construction sector can move towards international best practices by establishing a national framework for measuring and disclosing embodied carbon, setting minimum standards for new commercial buildings, and developing guidelines for sustainable material use.

New South Wales

NSW Net Zero Plan - includes strategies to tackle embodied carbon in the built environment by promoting the use of low-carbon materials, improving carbon measurement and reporting, and supporting the adoption of sustainable building practices to help the state achieve net-zero emissions by 2050.

NSW Net Zero Buildings - will include NABERS to drive new non-residential buildings towards high-energy performance and reduce emissions in existing buildings.

Queensland

State Infrastructure Plan (SIP) - is working to reduce carbon emissions from the built environment by requiring sustainability assessments for all capital works programs over $100 million.

The Department of Transport and Main Roads (TMR) - is developing a net-zero emissions transport roadmap.

South Australia

SA Waste Strategy 2020-2025 - addresses construction and demolition waste. This strategy highlights opportunities and a number of priority actions, such as encouraging adaptive reuse and the adoption of sustainable building materials.

Circular economy in South Australia's built environment – Action Plan - identifies opportunities and presents recommendations to move towards a circular built environment in SA, released in June 2023.

Tasmania

State of Play Report- Industrial Processes and Product Use - addresses the reduction of Scope 3 emissions in construction by considering the embodied carbon of materials like cement and steel, which are produced outside Tasmania but used in the state, and highlights the potential for using low-emission products, such as wood.

2021 Update of Tasmania's Emissions Pathway Review - identified four emissions reduction opportunities for the sector.

Northern Territory

NT Infrastructure Plan and Pipeline 2023 - One of the emissions reduction actions in this plan is to reduce embodied carbon within the Northern Territory's infrastructure sector.

Western Australia

Sectoral emissions reduction strategy - outlines the foundations for delivering the State's commitment to net zero greenhouse gas emissions by 2050, highlighting the decarbonisation of industry, buildings, and waste.

Decarbonising Western Australia and Our Trading Partners - provides holistic insight on how the WA Government and industry are transitiong the state and their trading partners towards net zero, including decarbonsing the steel value chain.

State Infrastructure Strategy - Recommendation #10 is to implement the WA Government's policy for net zero emissions by 2050.

Australia's State-of-Play
Measurements, Programs, Policies, and Guidance

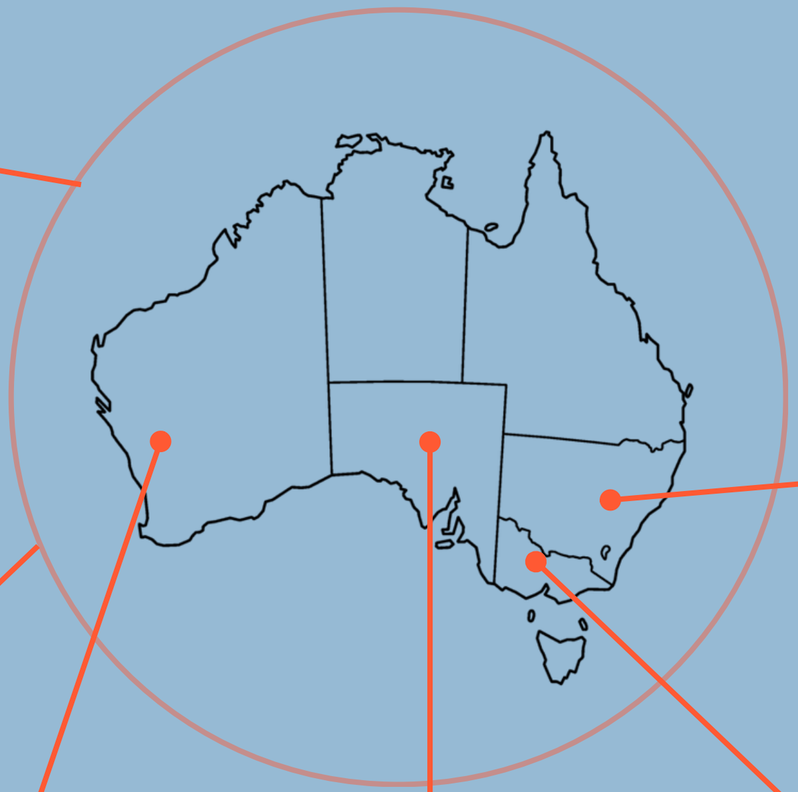
- Embodied Carbon Measurement Tools and Databases
- Programs
- Policies Related to Embodied Carbon
- Guidance

MECLA Resources

Low Carbon Aluminium Specification Guide
MECLA International Best Practice Policy and Programs
Upfront Carbon in the Built Environment
Guide to Low Carbon Concrete in Australia

National Initiatives

Environmentally Sustainable Procurement (ESP) Policy and Reporting Framework
Commonwealth Safeguard Mechanism
National Construction Code 2025 & 2028
Decarbonising construction: Putting carbon in the business case
NABERS
GreenStar
ISC Rating Scheme
AusLCI
Low Carbon Materials Hub
GBCA's Practical Guide to Upfront Carbon
IPA's Decarbonising Infrastructure Report
ASBEC's Embodied Carbon Emissions Issues Paper
APCC Pathway to Green Construction Procurement
Australia's Circular Economy Framework - DCCEEW



New South Wales

Low Emissions Building Materials Program
Decarbonising Infrastructure Delivery
Sustainable Buildings SEPP
Embodied Carbon Measurement for Infrastructure: Technical Guidance
DCCEEW NSW Low Carbon Concrete Requirement Guidance

Victoria

Ecologiq
EPiC Database and Resource Hub
Opportunities to Reduce Greenhouse Gas Emissions of Infrastructure

South Australia

Sustainable Procurement Policy

Western Australia

City of Vincent

Australia’s State-of-Play

National

NABERS

NABERS (National Australian Built Environment Rating System) is a national rating system that measures the environmental performance of buildings and tenancies. NABERS offers a tool to measure and compare the upfront embodied carbon of new buildings and major refurbishments. This tool allows the industry to assess the carbon footprint of building materials and construction processes. It's a key resource for disclosure, benchmarking, and driving down embodied carbon in the built environment. NABERS will be featured in the 2025 National Construction Code to become the nationally consistent way of measuring and reporting embodied carbon in construction.

GreenStar

Green Star, by the Green Building Council of Australia, is a leading sustainability rating system for buildings. Green Star sets benchmarks for reducing upfront carbon emissions from materials and construction processes. Since 2020, new buildings seeking Green Star ratings must demonstrate a 10% reduction in embodied carbon compared to standard practice. This requirement will become more stringent, reaching a 40% reduction by 2030. Green Star provides a framework for the industry to design, construct, and operate buildings with lower carbon footprints. By meeting Green Star's criteria, projects can showcase their commitment to sustainability, gain a competitive edge, and contribute to a more sustainable built environment.

ISC Rating Scheme

The Infrastructure Sustainability Council (ISCA) offers a comprehensive rating scheme for infrastructure projects in Australia. By achieving an ISCA rating, projects demonstrate their commitment to sustainability and contribute to a more resilient and low-carbon future. The ISCA's rating scheme:

- Measures and rewards projects that minimize embodied carbon through material selection, design optimization, and waste reduction.
- Provides guidance on measuring and reporting embodied carbon, enabling project teams to track and improve performance.
- Helps scope whole-of-life sustainability risks, enabling project teams to track and improve performance that reduce risks and costs.

AusLCI

The Australian National Life Cycle Inventory Database (AusLCI) aims to provide and maintain a national, publicly accessible database with easy access to authoritative, comprehensive and transparent environmental information on a wide range of Australian products and services over their entire life cycle.

Low Carbon Materials Hub

The Low Carbon Materials Hub is an interactive digital hub for Environmental Product Declarations (EPDs). The database contains 5,000+ new EPDs, advanced benchmarking tools, and improved project management features for smarter, sustainable material use in the built environment sector.

Environmentally Sustainable Procurement (ESP) Policy and Reporting Framework

Mandatory for all federal agencies, this policy requires that government projects valued over $7.5 million prioritise sustainability. This includes:

- Demonstrating commitment to minimizing embodied carbon, particularly in construction, through reporting and adherence to standards like Green Star ratings or NABERS.
- Suppliers must develop and implement Supplier Environmental Sustainability Plans (SESPs) outlining their strategies to reduce environmental impact and embrace circular economy principles.
- Government agencies are responsible for monitoring supplier compliance and driving continuous improvement in sustainable procurement practices.

Safeguard Mechanism

The Safeguard Mechanism sets limits on greenhouse gas emissions for 215 of the country's biggest polluters, requiring them to gradually reduce their emissions over time. Facilities exceeding their limits must take corrective action, such as purchasing carbon credits or facing penalties. This incentivises companies to adopt cleaner technologies and invest in emissions reduction measures, contributing to Australia's national climate targets. The mechanism is overseen by the Clean Energy Regulator, which monitors compliance and facilitates the trading of carbon credits.

National Construction Code 2025 & 2028

Australian State and Commonwealth Building Ministers have agreed that the 2025 National Construction Code will introduce a voluntary pathway for commercial buildings to measure and report embodied carbon emissions using the NABERS tool.

IPA’s Decarbonising construction: Putting carbon in the business case

Putting Carbon in the Business Case is a policy that calls for the adoption of a mandatory embedded (or embodied) carbon 'base case' to be included in all business cases for significant infrastructure projects (IPA, 2024). It specifically targets infrastructure projects and programs with capital costs exceeding $100 million.

GBCA’s Practical Guide to Upfront Carbon

Practical Guide to Upfront Carbon provides a framework for reducing embodied carbon emissions in the building and construction industry. It outlines strategies for stakeholders to assess and minimise upfront carbon, including using low-carbon materials, reusing components, and adopting Life Cycle Assessment (LCA) methods. The guide also supports Green Star certification and encourages corporations to align with green financing opportunities, such as Green Bonds. As investors and governments increasingly prioritize decarbonisation, the guide helps businesses meet sustainability goals, comply with regulations like the NSW Sustainable Buildings SEPP, and respond to market demand for decarbonized assets.

Australia's State-of-Play

National (continued)

IPA's Decarbonising Infrastructure Report
Decarbonising Infrastructure lays out the policy actions all governments and industry need to take to decarbonise Australia's infrastructure sector. The report provides a decarbonisation action plan for the energy and transport sectors and sets out the steps needed to reduce emissions embedded through construction, operation, and waste.

ASBEC's Embodied Carbon Emissions Issues Paper
ASBEC's Issues Paper lays out how the built environment contributes to Australia's carbon emissions and why we need to focus on upfront embodied carbon now. The paper targets seven key areas of decarbonisation across buildings and infrastructure and includes measurable targets for reducing embodied carbon.

APCC Pathway to Green Construction Procurement
Provides guidance for government officials to prioritise sustainability throughout infrastructure project lifecycles.

Australia's Circular Economy Framework - DCCEEW
The current blueprint for Australia's circular economy transition including clear guidance, priorities and real work examples.

MECLA

Low Carbon Aluminium Specification Guide
Low carbon aluminium refers to aluminium with a carbon intensity less than the 'global average'. This document provides guidance on how to specify low carbon aluminium in projects.

MECLA International Best Practice Policy and Programs
This project is a comprehensive review of international examples of effective policy developements that promote that use of low and zero carbon construction materials, which are essential for reducing embodied carbon. Each state and territory can utilise the findings and recommendations to develop localised policies aimed at promoting these materials. Construction and building industry stakeholders can also apply the insights from the document to align with best practices in reducing embodied carbon.

Upfront Carbon in the Built Environment
This discussion paper that documented the state-of-play on upfront embodied carbon standards, measurement, benchmarking and resources for construction materials, buildings and infrastructure. This paper summarises the research findings of MECLA's Working Group 2 and is a mechanism to seek feedback from industry stakeholders to inform future work directions.

Guide to Low Carbon Concrete in Australia
Low carbon concrete is designed to reduce its carbon footprint and environmental impact compared to traditional concrete. Achieving emission reduction from concrete requires a holistic approach, considering every aspect of the concrete life cycle, including but not limited to material selection, transportation, production, design, procurement, and construction. This guide will help you ask the right questions when specifying low carbon concrete.

New South Wales

Embodied Carbon Measurement for Infrastructure: Technical Guidance
The National Embodied Carbon Measurement for Infrastructure Technical Guide establishes a standardised framework for consistent measurement and reporting of embodied carbon in Australian infrastructure projects. Developed for use by agencies, advisors, and tool vendors across all jurisdictions, this Guide harmonises methodologies, assumptions, and data reporting, providing a robust foundation for assessing embodied carbon. Designed to adapt to evolving best practices, the Guide incorporates jurisdiction-specific requirements and is supplemented by supporting tools and resources.

Decarbonising Infrastructure Delivery
The NSW Decarbonising Infrastructure Delivery Policy, effective April 2025, mandates upfront carbon management for all NSW government infrastructure projects exceeding $50 million (buildings) or $100 million (other infrastructure). It requires agencies to assess and report embodied carbon, prioritize carbon reduction strategies, and develop Carbon Management Plans. This policy promotes integrating carbon considerations into early planning phases, consistent measurement, informed decision-making, and ultimately, a lower-carbon infrastructure sector in NSW. The policy is accompanied by embodied carbon measurement guidance that provides a standardized methodology for all agencies.

Sustainable Buildings SEPP
The NSW Sustainable Buildings SEPP, in effect since October 2023, is a pioneering policy framework for sustainable construction across New South Wales. It mandates embodied carbon measurement and reporting for all building types, using the Building Sustainability Index (BASIX) for residential projects and requiring emissions disclosures for non-residential developments. This data collection informs future benchmarks and promotes early design decisions that minimise embodied carbon. The SEPP also provides technical guidance and resources to support industry in adopting sustainable practices, positioning NSW as a national leader in green building policy.

DCCEEW NSW Low Carbon Concrete Requirement Guidance
This document provides a framework for reducing the carbon footprint of concrete used in construction projects across New South Wales. It outlines requirements for incorporating low-carbon concrete options, including guidelines for sourcing and specifying materials with reduced embodied carbon. The guidance encourages the use of alternative binders, recycled aggregates, and carbon capture technologies to lower the environmental impact of concrete production.

Low Emissions Building Materials Program
The Low Emissions Building Materials Program (LEBM Program) aimed to grow the demand for low emissions building materials in the construction and infrastructure sectors by driving the modification, adoption and use of voluntary standards. The program operated over 18 months, from January 2021 to June 2022. The program's evaluation is an excellent resource that can inform the next stage of planning of strategies to reduce embodied carbon emissions, and ultimately achieve net zero emissions by 2050.

Australia’s State-of-Play

Victoria

Ecologiq

Victoria's Ecologiq program is driving a circular economy in construction. By mandating the use of recycled and reused materials in major road and rail projects, it's significantly reducing embodied carbon. Ecologiq provides resources and support to suppliers, helping them incorporate recycled materials into infrastructure projects and ensuring that these materials meet required standards. This innovative approach is diverting millions of tonnes of waste from landfill, showcasing the potential for sustainable construction practices across Australia. Ecologiq also actively supports the development and commercialisation of innovative recycled products by facilitating research, funding opportunities, and providing technical support.

EPiC Database and Resource Hub

The EPiC Database and Resource Hub offer a variety of tools and resources to support the environmental design of construction projects. The EPiC Database is an open-access Life Cycle Inventory that includes over 1,000 data points on embodied emissions, energy usage, and water consumption, providing valuable information for assessing the environmental impact of construction materials.

Opportunities to Reduce Greenhouse Gas Emissions of Infrastructure

This report by Infrastructure Victoria offers strategic recommendations to reduce emissions throughout the lifecycle of infrastructure projects. Key suggestions include aligning carbon measurement with New South Wales’ methodology, using open-source tools and standardised emissions data for more consistent reporting. The report highlights the need for updated procurement policies to encourage low-carbon materials and addresses the significant impact of "offshore" emissions, recommending policies to mitigate emissions from imported materials. It also advocates for carbon management requirements for government contractors and the adoption of digital tools to assess embodied carbon in material choices.

South Australia

Sustainable Procurement Policy

The South Australian government’s Sustainable Procurement Policy, effective from mid-2024, mandates that suppliers tendering for projects exceeding $50 million must demonstrate a commitment to emissions reduction. Suppliers must provide evidence of SMART (Specific, Measurable, Achievable, Relevant, Time-bound) targets for Scope 1, 2, and at least one Scope 3 emission source. These targets will be publicly available, reinforcing transparency and accountability. By requiring Scope 3 emissions reporting, the policy compels contractors to assess and mitigate embodied carbon throughout their supply chains, influencing material selection and construction methodologies.

Western Australia

City of Vincent

The City of Vincent has adopted Environmentally Sustainable Design (ESD) measures to reduce environmental impacts across its building developments, integrating these into its Built Form Policy, which applies to all developments within its jurisdiction. This innovative approach helps residents and developers understand and reduce the carbon footprint of their projects, setting a leading example for sustainable construction in Australia. The City has shown notable success in reducing embodied carbon through this new planning approval process.