

Submission to the Productivity Commission consultation on:

OPPORTUNITIES IN THE CIRCULAR ECONOMY



“Good design creates opportunities for a
circular economy by 2030”

Yitpi Yartapuultiki by Ashely Halliday Architects

AUSTRALIAN INSTITUTE OF ARCHITECTS

1/11/2024

ABOUT THE INSTITUTE

The Australian Institute of Architects (Institute) is the peak body for the architectural profession in Australia. It is an independent, national member organisation with around 14,000 members across Australia and overseas.

The Institute exists to advance the interests of members, their professional standards and contemporary practice, and expand and advocate the value of architects and architecture to the sustainable growth of our communities, economy and culture. The Institute actively works to maintain and improve the quality of our built environment by promoting better, responsible and environmental design.

The Australian Institute of Architects recognises the unceded sovereign lands and rights of Aboriginal and Torres Strait Islander peoples as the First Peoples of these lands and waters. This recognition generates acknowledgement and respect for Aboriginal and Torres Strait Islander Countries, Cultures and Communities, and their ways of being, knowing and doing. Caring for Country practices including architecture and place shaping have existed on this continent since time immemorial. The Institute recognises a professional commitment to engage and act meaningfully through reciprocal partnership and relationships with Aboriginal and Torres Strait Islander peoples. Together we will support and develop the emergence of new possibilities for our shared future.

PURPOSE

- This submission is made by the Australian Institute of Architects (the Institute) to provide input on the Productivity Commission's consultation on 'Opportunities in the circular economy'
- We refer to the Terms of Reference outlined (over page) by the Hon Jim Chalmers MP
- At the time of this submission the National President is Jane Cassidy
- The Chief Executive Officer is Cameron Bruhn

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TERMS OF REFERENCE

The Productivity Commission calls for submissions with the following Terms of Reference:

“The Productivity Commission is to investigate and report on:

The potential scope to lift Australia’s materials productivity and efficiency, and the best metrics to measure this opportunity and improvements made.

Priority circular economy opportunities for Australia, including identification of the sectors, products or supply chain segments:

- where Australia has the greatest potential to improve materials productivity/efficiency in ways that can strengthen economic outcomes, such as productivity, economic growth, economic diversity and capability
- where other countries have made the greatest progress towards circularity, and the risks and opportunities associated with these developments in international markets for Australia
- where cost-efficient emissions reduction could be achieved by improving materials productivity and reducing waste.

Barriers to enhanced materials productivity and prospective approaches to addressing them, including but not limited to:

- place based circular economy activities (e.g. industrial precincts and others enabled by urban planning and development)
- regulatory frameworks, and other mechanisms that influence businesses’ and consumers’ decisions on materials purchasing, use and replacement or the competitiveness of circular economy initiatives
- policy actions that are achievable over the near and medium term
- policy actions that could be progressed by Commonwealth, state and territory, and local governments, including improvements to existing national policy frameworks. “

INTERNATIONAL / NATIONAL POLICY AND FRAMEWORKS

We commend the policy work by the federal government since 2018 when the '*National Waste Policy: Less waste, more resources*'ⁱ was adopted by Federal Environment Ministers, in consultation with the President of the Australian Local Government Associationⁱⁱ. The following year, the National Waste Policy Action Plan highlighted 7 targets to achieve a resilient circular economy and in 2022, Federal Government commitment to accelerate the 'transition to a circular economy by 2030'ⁱⁱⁱ.

Following this work, the government appointed a Circular Economy Ministerial Advisory Group (CEMAG) who were to review opportunities for improvements in productivity within the supply chain.

The CEMAG were asked to review six topics:

1. National policy setting
2. Targets and indicators
3. Economics
4. Net Zero
5. Design and consumption of products
6. Built environment

The interim report from the CEMAG in April 2024, noted 4 'domains of circular economy action' in their response:

1. Regulation
2. Policy
3. Economics & Investment
4. Information & behaviour change^{iv}.

The Institute's response to current consultation expands on the recommendations in the Interim Report, and the role of Architects in driving significant behaviour change across several of the domains to many audiences. We believe the diversity within the architectural services engages with clients from all sectors, homeowners, disaster recovery, financial institutions and government. The profession is also soon to release its Architecture Industry Decarbonisation Plan, which addresses several of the key national targets and indicators recommended by the CEMAG, as a number of these indicators are related to what we validate as 'good design'.

The CEMAG targets and indicators in the actions compliment the types of capabilities that are embedded into the National Standards and Competencies for Architects. It also highlights the amount of existing Institute and member work that could be used if the profession was more widely recognised as a facilitator of design culture change, such as being included in common place Design Review Panels and particularly regulation planning.

The following table compares the CEMAG's Interim Report findings and the capacity of Architects to design with circularity. By the nature of what Architects do, there is an opportunity for government as often the design process is also one of concurrent research, innovation and design.

Figure 1: Table below compares the CEMAG Interim Report April 2024 and existing opportunity within the services of an Architect, and the Australian Institute of Architects as a governing professional association

ARCHITECTURAL PROFESSION PROVIDES MECHANISMS TO ENABLE CIRCULAR ECONOMY

CEMAG Targets, indicators and recommendations	Already existing within the role of an Architect and the Australian Institute of Architects to 2030/2050
Mapping to health and well-being framework(s), <ul style="list-style-type: none"> - Material footprint - Domestic material consumption - Resource productivity 	Architecture responds to behaviours, is designed for well-being as a response to behaviours or promotes new healthy lifestyles. <ul style="list-style-type: none"> - Supporting economic growth through sourcing materials, services, trades and extended community through design strategies for engagement and procurement.
Embed Circular Economy principles into Net Zero sector plans <ul style="list-style-type: none"> - Research circular economy measures that support net zero - Quantify emissions for net zero using circular economy measures 	Utilise net zero frameworks from the Institute, GBCA, NABERS, Living Building Challenge (LBC) etc to quantify 100% electrified buildings by 2025, that seek a 40% reduction in upfront embodied carbon by 2030 and provide societal and equity outcomes. <ul style="list-style-type: none"> - Dematerialisation of the built form, existing or new and ensuring materials meet both the sustainability, circular and ethical requirements in line with the UN's Sustainable Development Goals, GBCA Responsible Materials, Living Building Challenge or similar certifications with EPD.
<ul style="list-style-type: none"> - Develop an assessment on how the circular economy can be adopted to support net zero 	<ul style="list-style-type: none"> - Assessing the most effective way projects can adopt the circular economy and maximise local, valuable resources as part of reaching the Institute's target of 40% embodied carbon reduction targets by 2030. Adoption of these processes subsequently integrated into ESG and Sustainability Action Plans (SAP) for productivity - Auditing packaging and waste reform as part of a contract administration and to certify projects. - Pre-emptive testing for practice and client emission boundaries under ESG, BCorp, ISO or other disclosure standards. This is part of transitioning from a Sustainability Action Plan (SAP), to a Regenerative Action Plan (RegAP) as Practices account for the scope 3 emissions of the projects their produce.

Design and consumption of products

- Develop an Australian Circular Economy Systems Map
- Develop an explicit, and scalable, good design principles for circular design

Use third party product verification through Global Greentag, product passports, NatSpec Keynoting Framework for digital twins, LBC Red List etc. to verify health, circularity and longevity of products and materials.

- Lowering material and project footprints by adapting the existing form or reconfiguring the same volume of material into smaller multiple forms for maximum occupancy potential.

Built environment (sector plan)

- Priorities for refurbishment over demolition, disassembly, reclaimed or recycled content and neutralising landfill
- Policy adoption of concise language about roles and responsibilities for sector actors (Building 4.0 CRC Project)

Validation of what represents ‘good sufficient design’ in awards, against frameworks and to close the loop on education.

- Ongoing step-change of awards criteria in line with advocacy around upfront and whole of life carbon
- Recognition as way of incentivising refurbishment over demolition
- Adopting a balance between embodied and operational carbon to ensure as much existing waste is recycled or re-use upon demolition, prior to designing new. Limiting the need for offsets

- Peer review of finalised plan

Architect/Client relationships are commonly peer reviewed through the process of habitation. Determining lessons to be learnt, or further research to be undertaken.

Sustainable Finance Taxonomy, Green Bonds, Climate Related Financial Disclosures

- Two-pass process for government procurement for circularity and refurbishment
- Jurisdictional consistency in requirement for infrastructure, building and capital works tenders.
- Transferral of consistent methodology to other levels of government

Mapping and developing action for Architects to work directly with clients on their ESG portfolio’s to reduce the need for offsetting and climate risk.

- Adopting ‘good design’ and ‘First Nations’ frameworks as two-pass process for the practice of architecture
- Exceeding jurisdictional regulation and needs to challenge and innovate scalable methodology.

Regulation National Construction Code (NCC), skills and training

- Adopting embodied carbon in NCC

Developing ‘playbooks’ to identify pathways for circular economy capacity building across the three competency profiles within the National Standard of Competency for Architects (2021)¹

¹ [National Standard of Competency for Architects \(2021\) Graduate, Candidate for Registration, Architect post-registration](#)

Architecture globally has been effective in delivering economic decarbonisation, particularly through Europe where in Denmark⁹, strict policies inhibit greenwashing of products/services that generalise sustainability credentials. Instead strict policy is enforced for products claiming to be low-carbon, and which utilise the circular economy to reduce manufacturing with new materials (under a whole-of-life carbon analysis (LCA)). This LCA is also the supported approach from the Institute in line with our *Architecture Industry Decarbonisation Plan*. This is due to the professional services influencing a much broader suite of sustainability objectives for clients beyond the building. Typically services impact the Environmental, Social and Governance (ESG), Climate Related Financial Disclosures, Nature and Urban policy requirements of both clients and larger funding bodies.

Architects should be the protagonist in design-led policy reform, allowing better future planning, early design of land division and urban strategies, and to plan the wider reaching influence beyond 'buildings'. The Infrastructure Australia pipeline data (2024) and their current scenario, generally would limit an Architects influence over the asset (building) and it's associated systems of infrastructure, services and community in which it is part of. Limitations arise from outdated or lack of regulation synergy, piecemeal adoption of NCC or lack of as-built accountability. The Institute firmly expresses that narrowing the understanding of where architecture plays a role in behaviour change and specification could significantly hamper the current circular opportunity.

The Institute are seeking cross-discipline capacity training between design professionals (engineers, architects, planners, urban), early design policy (such as Bluefield Housing) and advocating for mandatory LCA in development approvals for design professionals to have the most impact by 2030.

Figure 5: The decarbonisation hierarchy adopted from PAS 2080 (2023)¹⁰

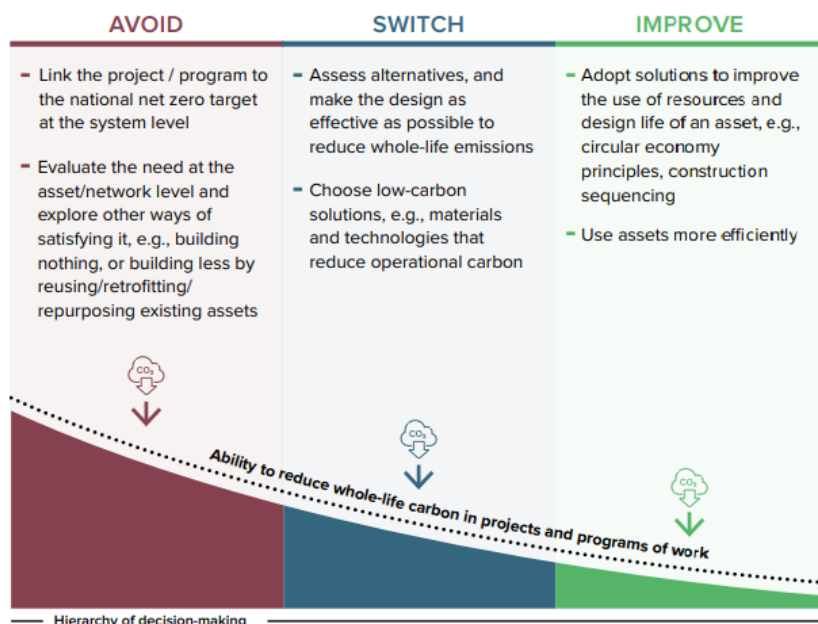


Figure 2:

Infrastructure Australia (2024) Image from the Embodied Carbon Projections for Australian Infrastructure and Buildings Report. Adopting lifecycle, whole-of-life carbon assessment at the 'need' stage of a project, allows design professionals to 'avoid' as much new, carbon intensive materials as possible.

BY 2030, DESIGN PROFESSIONALS DESIGN FOR EFFICIENT USE OF RESOURCES AS PART OF THE EARLY DESIGN/PLANNING PROCESS

Figure 3: Impact in relation to working with Architects adapted from Infrastructure Australia Report:

Direct:

- As part of the scope of the BAU design process

In-Direct:

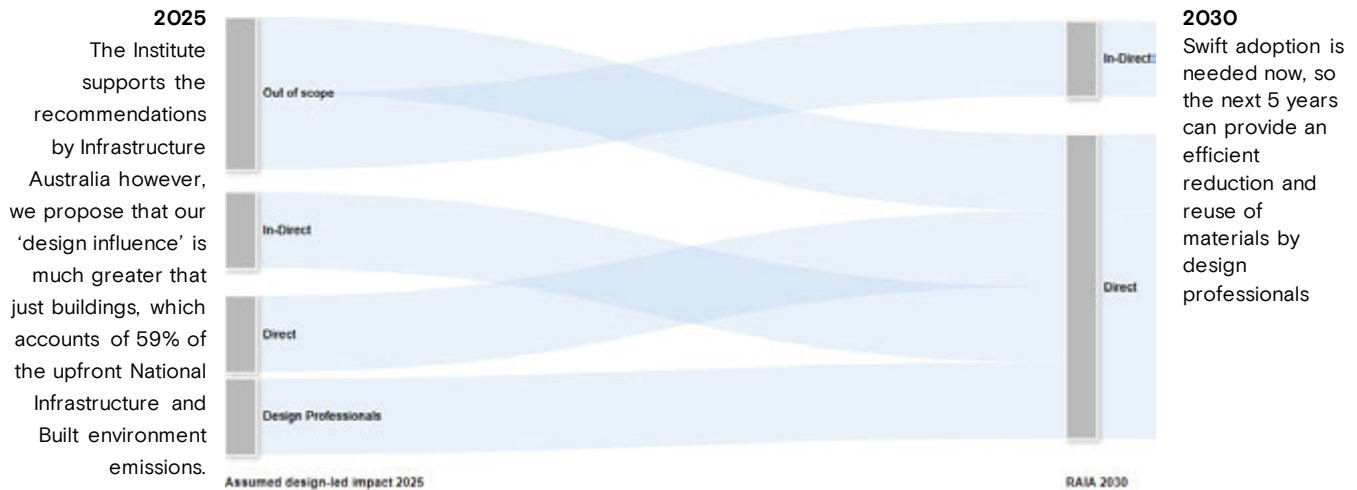
- Design professionals are included in Design Review Panels as part of NCC or development performance solution processes in jurisdictions
- Design professionals are involved in development of procurement briefs and tenders
- Design professionals provide strategy for inner city and middle densification through innovations in scalable planning reform for smaller household sizes and generational change
- Design professionals work with financing and resilience bodies to incorporate thinking in ‘systems’, whereby cities and the regions can mitigate future stranded assets

How could policy and inclusion of design professionals, LCA and early upfront embodied carbon influence economic emissions using waste recovery from the ‘Construction and Demolition’ and ‘Commercial and Industrial’ sectors?

Infrastructure Australia – Pipeline upfront emissions source	Assumed design-led impact 2025	RAIA 2030
Other Emissions	Out of scope	Direct
Enabled Emissions	Out of scope	In-Direct
Operational Emissions	Direct	Direct
Embodied Emissions - Use Phase Emissions	In-Direct	Direct
Embodied Emissions - End of Life Emissions	In-Direct	Direct
Embodied Emissions - Upfront - Buildings - Materials manufacture	Design Professionals	Direct
Embodied Emissions - Upfront - Buildings -Construction	Design Professionals	Direct
Embodied Emissions - Upfront - Buildings - Transport to site	Design Professionals	Direct
Embodied Emissions - Upfront - Transport - Materials manufacture	Out of scope	In-Direct
Embodied Emissions - Upfront - Transport - Construction	Out of scope	In-Direct
Embodied Emissions - Upfront - Transport - Transport to site	Out of scope	Direct
Embodied Emissions - Upfront - Utilities - Materials manufacture	Out of scope	In-Direct
Embodied Emissions - Upfront - Utilities - Construction	Out of scope	In-Direct
Embodied Emissions - Upfront - Utilities -Transport to site	Out of scope	Direct

Figure 4 (over): Diagram showing the scale of policy support needed to influence the ‘Avoid’ stage of the Infrastructure Australia [Embodied Carbon Projections for Australian Infrastructure and Buildings](#) Report.

- Assumed 2025 impact shows ‘design professionals’ which include engineers, architects, planners and urban early design’ influence, with ‘direct’ impact being more focused on traditional architect / architectural services.
- By 2030, the services of design professionals could be increased through early Design Review Panels and could further influence utilities, transport and enabled emissions. Largely, this would be reflected in how ‘good design’ increases walkable neighborhoods (influencing enabled emissions), innovative policy such as densification and diversity of Bluefield Housing infill, and generally designing to reduce upfront embodied carbon of projects and landscapes.



The National Waste Policy Action Plan^{vi} progress summary Report for 2023 notes the key achievements in banning exports on waste plastic, paper, glass and tyres by 2023. More needs to be done towards other targets as DCCEE forecasts by waste stream to 2030, show on average all waste streams increasing. This includes 'construction and demolition' (C&D) increasing significantly, and counteracting reductions in the 'commercial and industrial' (C&I) and 'Municipal solid waste' (MSW) streams.

Circularity alone is not enough to reduce the amount of finite resource(s) being used. Since 2016/2017, waste for 'construction and demolition' (C&D), 'commercial and industrial' (C&I) and 'Municipal solid waste' (MSW) streams have increased per person by 3%, instead of following a path to the National Waste Policy Action Plan target of 10% reduction by 2030¹.

The longer Australia takes to start reducing waste across all areas of the National Waste Policy Action Plan, the faster we need implement firmer policy to reach the 2030 target. Similarly, the slow pace towards Net Zero Carbon targets, will inevitably cause the pace to become steeper, subsequently the less time before the 2050 Paris Agreement commitment. Currently, the alarming delay in achieving better operational energy in residential codes using the NatHERS 7-Star National Construction Code (NCC) 2022 provisions, is likely to increase the stringency of future NCC embodied carbon targets and is one such example where federal intervention is needed. Adoption of embodied carbon and circularity targets in the NCC in 2028 would also improve opportunities for locations such as the Australian tropics to be incentivised for lower embodied carbon due to the difference in construction methodology, in lieu of higher operational performance which might not reflect the buildings occupant outside of regulation mode.

This design-led early intervention will be supported in the research by the Australian Sustainable Built Environment Council (ASBEC- soon to be released), who with Infrastructure Net Zero, analysed the pipeline of infrastructure and building work in Australia. ASBEC demonstrated, 'Design' to be one of the seven decarbonisation dilemmas in lowering upfront embodied carbon^{vii} while Infrastructure Australia^{viii} note that the 'greatest opportunity to avoid or reduce emissions occurs at the 'need' stage in the decarbonisation hierarchy. Lifecycle design (whole-of-life

carbon) intersects from the earliest moments of its conception, planning and all the way to the programming of it's second life upon decommission or deconstruction.

Recommendations for including a design review panel of engineers, architects, planners and urban designers in early design

The Institute makes the following recommendations for national policy and frameworks which provide a benefit to the circular economy and could reduce emissions targets in line with the National Waste Policy Action Plan:

Recommendation 1 →	Increase diversity of cities and regions by including design professionals in urban planning regulation changes, jurisdictional code amendments or exemptions and reward the financing of LCA as part of the design/build process.
Recommendation 2 →	Use Embodied Carbon and Resilience in the NCC in 2028 to allow mandatory reporting of circular materials across all building types. This recognition that the dematerialisation of building envelopes is already slowly occurring, particularly in tropical and Northern Australia in residences. Here, high 'density', or, thermally massive materials are commonly are stripped away by Architects and ESD Consultants as they inhibit the operational performance of a building.
Recommendation 3 →	Fund the CSIRO and NatHERS to reinstate the embodied carbon database and adopt across all NatHERS software using the NABERS cold methodology.
Recommendation 4 →	Establish upfront embodied carbon budgets for new homes, based on residential buildings and visualisation tools within the existing CSIRO Australian Housing Database Portal. Fund the CSIRO to implement across historical data to allow forward and historical of the supply chain impact on embodied carbon and circularity due to the pandemic, government stimulus and climate hazards.
Recommendation 5 →	Update the National waste data viewer This DCCEEW web page needs to be updated. The most recent graph was for 2021 which would be vastly different to now. As embodied carbon becomes more crucial, a link between visualisation of total waste generated in the economy, and the traceability of products, would benefit from additional information to identify what types of recycled or reusable material could be obtained - broken down to states and territories. This should ideally be linked also to the 'Traceability and Digitisation of Building Products ^{ix} ' guide developed through industry collaboration in response to the National Products Assurance Framework ^x and the Building Confidence Report ^{xi} .
Recommendation 6 →	Establish Design Review Panels with Architects for Performance assessments as the 'business-as-usual' approach to design and planning. With incentives for adapting or reconfiguring existing materials or forms to create more amenity and community which may lower infrastructure needs. It considers well-being of place, planet and people as equal.

THE ABILITY TO ‘DESIGN OUT WASTE’ IS IMPACTED BY SUDDEN AND MORE FREQUENT CLIMATE EVENTS

Circularity is highly influenced by sudden and unexpected fluctuations in the economy, and increasingly due to frequency of natural disasters and pandemics^{xii}. This is caused by rapid increases in demand of product manufacturing and lack of diversity in the solutions provided for rebuilding. This concurrently creates a bottleneck within the supply chain. With increased climate change it is expected there will be an impact to waste and ability to forecast circular economy reductions as spontaneous GHG energy intensive ‘recycling’ becomes momentarily prioritised over ‘re-use’. An example of which occurred during the COVID pandemic^{xiii} and construction stimulus packages in Australia during the lockdown period:

- rapid use of renewable construction materials overshooting (shortfall) the capacity of nature to regenerate, such as timber milling,
- the shortfall, instead filled with high carbon intensive material(s) which results in a higher overall volatility of energy, mining, manufacturing, building sectors.

In 2024, the Australian Government Department of Industry, Science and Resources’ Expert Advisory Group recommended to Australia’s Chief Scientist^{xiv}, that the construction sector is one of five industries that had significant opportunity to advance circularity however skills and training, particularly around engineering, digital twins, design and early planning with reused resources is a gap that needs addressing. It further recommended a ‘skills passport’ and intensive training to upskill existing workforce and seeking skilled immigration to the sector.

Digital twins are particularly useful in overlaying climate hazard mapping to determine specific interventions in construction types suited to floods and storms, cyclones, and bushfires. Complexity remains around reducing pandemic waste, particularly in public places where additional fit-out requirements resulted in sudden accumulation of waste.

The increase in climate change and frequency of events amplifies the ongoing biodiversity loss. Good Architecture is responsible for protecting species through maintaining wildlife corridors, reinstatement of Country and that provides safe transition from climate events such as bushfires. It centres Country in design^{xv} and provides circular economy opportunities throughout its designed operation and next life.

Yitpi Yartapuultiki by Ashely Halliday Architects is a [Registered Green Star V1.0 Project](#). Rupert Lindon, Senior Associate at Ashley Halliday Architects noted:

“While Yitpi Yartapuultiku will provide a place for people to heal, the site itself is also healing as it recovers from a range of contamination issues. Regeneration of natural systems is one of the three principles of a circular economy and Rupert says the Custodian group’s approach to the contamination is “a demonstration of healing country in action”.

A study in Finland noted that the linear economy of resource extraction and pollution were the root cause of biodiversity loss however their research was able to prove that having a circular economy could ‘halt global biodiversity loss. It mentions four sectors with major impacts: Food and Agriculture, Fibres and Textiles, Buildings and Construction and Forests. For the Building and Construction sector, ‘14 million hectares are spared from urban area development’ when urban density increases by 51%, and finding efficiency in timber construction is reduced by 50%^{xvi}’.

Recommendations for designing out climate hazard related waste

The Institute makes the following recommendations based on international / national policy and frameworks which provide a benefit to the circular economy and could reduce emissions targets in line with the National Waste Policy Action Plan:

Recommendation 7 →	Climate Resilient design should be embedded into minimum National Construction Code Standards from 2028 for all buildings, with sufficiency and thermal comfort being the objective. Include objectives in the NCC for deconstruction and handling of end-of-life or circularity principles.
Recommendation 8 →	Effective measures between overconsumption of resources and climate risk could be measured using a LCA's and the Resilient Building Councils Multi-Hazard tool to balance operational carbon and embodied carbon.
Recommendation 9 →	Require evidence of circular economy regenerating biodiversity on all new builds being established in future climate risk areas, instead of flattening forests and neighbourhoods for rubber stamped homes.

ARCHITECTS POSTIVELY INFLUENCE THE PRODUCTIVITY OF THE CIRCULAR ECONOMY

The Institute is actively engaging across many industry working groups relating to the circular economy as we mobilise the capability of the membership to 'design out' upfront embodied carbon from 40% in 2028 to near zero by 2040^{*xvii}.

As an interested party, our Institute is a major active policy player in sustainability. Much of our focus is on designing buildings to reduce operational carbon as well as embodied carbon. This is by no means the only focus of the profession or our Institute on sustainability. Other matters include overall environmental degradation resulting from building in-situ as well as the impacts of obtaining and processing primary resources to produce building materials and the packaging that they arrive in.

Much of the circular economy 'waste' stream is given a 'commodity value' in relation to the sector it influences. For the Architectural profession, waste and resource recovery is largely related to the ability to design less, with less, and through dematerialisation which pairs back layers of additional resources not necessary for function.

As more architects embrace nature positive projects, there is a concurrent opportunity with the use of materials such as structural Cross Laminated Timber (CLT). It is commonly used for clients seeking to lower their portfolio GHG emissions and achieve high Green Star as-built ratings. With the increase in national manufacturing of timber based structural elements, the by-products of the manufacturing process should also be supported to find it's place in the circular economy. Such as woodfibre pulp, which as a by-product of CLT manufacturing can be transformed into woodfibre insulation which thermally performs better in buildings experiencing heat^{xviii} than traditional glasswool batts and support modern methods of construction.



CLT was used by Warren and Maloney Architects in Northcote Swimming Centre Redevelopment in 2023 and achieved a 6-star Green Star rating.¹

The Institute supports the transition to ‘renewable’ natural products and their role in the ‘circular bioeconomy’ and highlight this transition must be coupled with dematerialisation so that there’s less opportunity for overconsumption¹.

Figure 5: [Warren and Maloney Architects- Website](#)

In 2024, the RAI adopted significant advocacy carbon targets for embodied carbon reduction through ‘good design’. The need for ‘good design’ in circularity needs to be supported by improvements in federal or jurisdictional policy, product traceability^{xix}, visualisation as designers need to be able to retrieve up-to-date information on resources available in abundance, the relative cost and return on investment, how it can impact their client’s GHG emissions reporting, particularly for procurement, finance and large corporations under the Climate Related Financial Disclosures under the Australian Sustainability Reporting Standards^{xx}.

We have deep policy interests in bringing about a circular economy in the built environment, including:

- design decisions about building,
- adaptive-reuse of buildings,
- dematerialisation of buildings,
- handling of demolition waste and the end-life cycle of building components and materials including re-furbishing / re-use and recycling (reprocessing and re-manufacture).

As custodian(s) of ‘good design’, Architects can elevate the value of what is designed for re-use, a key aspect to improving productivity in the circular economy. This means that built environments can be designed with existing materials, for less retrofit / fit-out, improved quality of construction and better generational social outcomes. A growing consideration in the National Competency Standards for Architects^{xxi} (Australia) is reductions in entire material lifecycle, from upfront carbon to its end-of-life.

Hassell Studios in Melbourne undertook a research project with the Property Council of Australia, whereby they proposed significant refurbishment of Melbourne offices for housing. They identified that the design process required much operational change to occur simultaneously to the project itself and the effectiveness of those strategies needed to be reflected in the contractual arrangements with the clients. The research titled [‘From Office to Home: new research explores the case for ‘Radical Re-use’](#) is on a larger adaptive re-use scale compared to Bluefield Housing³. Both however are specifically addressing community proximity and targeting established neighbourhoods. The three themes identified in the Hassell Report are consistent with the Bluefield Housing:

³ Madigan, D (2024) [Bluefield Housing as Alternative Infill for the Suburbs](#)

What challenges need to be overcome?

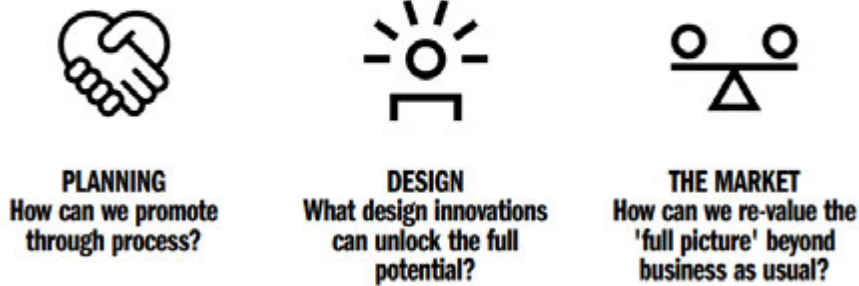
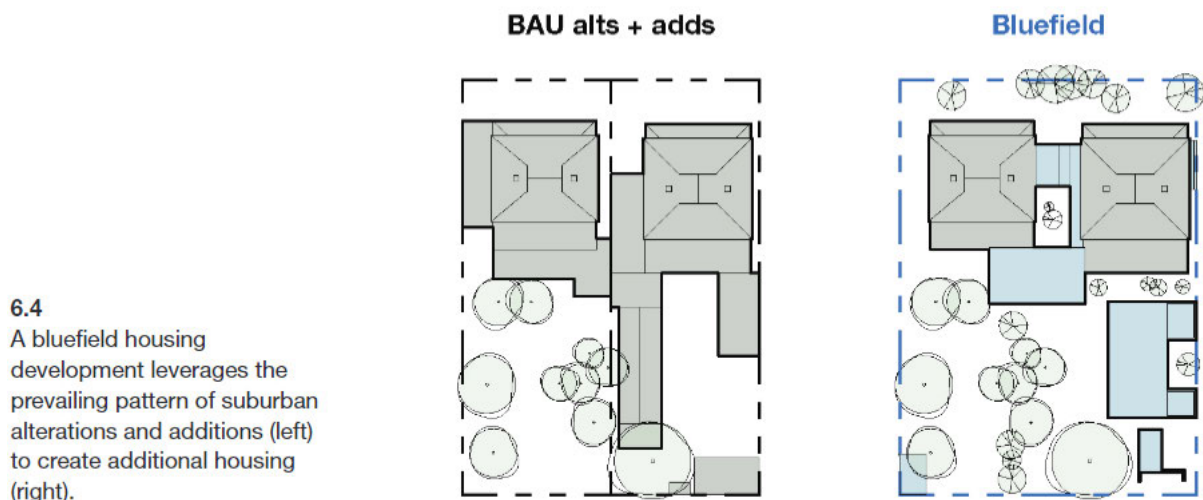


Figure 6: Hassell Architects findings in [“From Office to Home: new research explores the case for ‘Radical Re-use’”](#)

Bluefield Housing adopts 7 principles which provide opportunity for design-led performance assessment of the building site, the notion of ‘resilience, sustainability and inclusivity where it is needed’ also includes the opportunity to design smaller for the decreasing occupant per household average in Australia.

Figure 7: example from the Bluefield Housing - Future Living Code Amendment in South Australia as part of a design-led, circular approach to the lifespan of the current established neighbourhood. Using the existing form of the building as a basis to reconfigure into more occupancy, with possibly less or responsible use of materials.



The seven principles of Bluefield Housing are;

1. Facilitate sharing
2. Ignore lot size and yield, and co-locate to avoid land division
3. Retain and adapt the lot’s original housing
4. Leverage the prevailing pattern of alterations and additions
5. Create housing in a flat hierarchy
6. Arrange housing around shared landscape in a unified design
7. Design for social, financial, and environmental sustainability^{xxii}

We strongly advocate for the following design objectives as part of our own journey to near zero upfront embodied carbon by 2040, and extend opportunities for collaboration across the six Net Zero Plan sectors^{xxiii}:

As part of our commitment, the Institute previously partnered with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) in 2024 to release the Embodied Carbon Curriculum - a cross disciplinary, open source course for the fundamental in designing out embodied carbon for design professionals. It also educates on resources have a higher lifetime value in the circular economy if they are nature based or can be regenerative^{xxiv} for the environment.

Objectives of a forward-thinking circular economy policy

There are four objectives we see can assist an effective transition to the circular economy utilising the design professions to increase construction, commercial and industrial waste as a commodity.

Objective 1 →	Architects innovate design-led solutions that change consumption behaviour of building and infrastructure users. These innovations are also supported by government incentives to enable bespoke case studies from which others can work towards to show global leadership.
Objective 2 →	The Institute partners with Government to increase cross-disciplinary design review panels with engineers, planners, architects and procurement sectors. This includes procurement of government capital works, infrastructure and buildings which Architects can influence beyond the scope of 2024 data.
Objective 3 →	Cross discipline early design education is delivered as a micro-credential shared open source and increases shared language and understanding about what is in or out-of-scope of the design practitioner, consistent disclosure of the same parameters of measurement and reporting, including the percentage of upfront carbon reduction according to the same reporting baseline.
Objective 4 →	<p><i>Sufficiency</i> becomes a measurement in the built environment for designing with 're-use' and 'refuse' rather than 'recycle' under the Circular Economies principles^{xxv}.</p> <p>Less new materials and products make their way into manufacturing of products before 2030, with the Government embodied carbon mandates, deconstruction and end-of-life provisions within the NCC incentivising the Built Environment to re-use existing steel, cement, aluminium and plastics.</p>

REFERENCES

- ⁱ 2018 Department of the Environment and Energy. [2018 National Waste Policy: Less waste, more resources.](#)
- ⁱⁱ 2019 Department of the Environment and Energy & Australian Local Government Association. [The National Waste Policy Action Plan](#)
- ⁱⁱⁱ 2022 Australian Government: Productivity Commission: [Opportunities in a circular economy- consultation](#)
- ^{iv} 2024 Circular Economy Ministerial Advisory Group: [Interim Report – April 2024](#)
- ^v Forbrugerombudsmanden – Danish Consumer Ombudsman (2021) [Quick Guide on environmental claims.](#)
- ^{vi} 2023 Department of Climate Change, Energy, the Environment and Water (DCCEEW) [National Waste Policy Action Plan](#)
- ^{vii} Australian Sustainable Built Environment Council – ASBEC (2024) [ASBEC- ZP103756_Embodied_carbon_emission_issues_paper_v1.2.pdf](#)
- ^{viii} Infrastructure Australia with DCCEEW (2024) [Embodied Carbon Projections for Australian Infrastructure and Buildings](#)
- ^{ix} National Building Products Coalition (2024) [Traceability | Building Products Co](#)
- ^x Australian Building Codes Board (2021) [National Building Products Assurance Framework](#)
- ^{xi} Shergold & Weir (2018) [Building Confidence Report](#)
- ^{xii} Department of the Prime Minister and Cabinet (2024) [COVID-19 Response Inquiry Report | PM&C](#)
- ^{xiii} Griffiths University (2022) [Evaluating the COVID-19 impacts on the construction and demolition waste management and resource recovery industry: experience from the Australian built environment sector.](#)
- ^{xiv} 2024 CSIRO: [Australia’s comparative and competitive advantages in transitioning to a circular economy: A report to the Office of the Chief Scientist.](#)
- ^{xv} Government Architect of New South Wales (2023) [Connecting with Country](#)
- ^{xvi} Forslund (Sitra), Gorst, Briggs, Azevedo, Smale (Vivid Economics) (2022) Tackling Root Causes: Halting biodiversity loss through the circular economy.
- ^{xvii} *upfront embodied carbon targets are based on reductions against the Infrastructure Australia Pipeline Emissions reporting for economy wide pipeline emissions.
- ^{xviii} Steico [Heat protection](#)
- ^{xix} National Building Products Coalition (2024) [Implementation Guide to Traceability and Digitisation of Building Product Information.](#) The Institute is an active member of the National Building Products Coalition.
- ^{xx} 2024 Australian Accounting Standards Board: KPMG summary of [Treasury Laws Amendment\(Financial Market Infrastructure and Other Measures\) Act 2024, Schedule 4; Australian Sustainability Reporting Standards](#) – Voluntary General Requirements for Disclosure of Sustainability-related Financial Information [AASB S1](#) and mandatory Climate-related Disclosures [AASB S2](#)
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