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Waste and Resource Recovery Board
GPO Box 44
Hobart TAS 7001

By email to: enquiries@wrr.tas.gov.au

RE: Tasmanian Waste and Resource Recovery Strategy 2022-2025

To the Waste and Resource Recovery Board,

On behalf of the Tasmanian Chapter of the Australian Institute of Architects (the Institute), we thank you for the opportunity to provide feedback on the draft Tasmanian Waste and Resource Recovery Strategy 2022-2025 (the Draft Strategy).

This letter responds to the Waste and Resource Recovery Board's (the Board)'s invitation to provide feedback on the proposed Actions (Waste and Resource Recovery Board Priority Actions) in the table set out on pages 12-14 of the draft strategy paper. Our feedback is provided to those actions which relate to the broad practice of architecture in the built environment sector. This includes those actions in which the Board specifically mentioned "C&D" (construction and demolition).

The relevance of the draft strategy to architecture practice.

An important role of architects is to assist clients with product selections and to give specification to building materials. As such, our members are very concerned about embodied carbon, the potential toxic legacy of some building materials, and sustainable sourcing. They are, therefore, aiming to address the broad environmental implications of building materials and building waste as part of good design.

Architects' work does not cease when construction commences. Architects frequently remain engaged by the client throughout the construction phase of a project to administer the building contract on behalf of the client and supervise the delivery of the project. As such, they remain in a position to influence the handling of waste materials from demolition and the waste generated during construction. They can support the client to consider building contract clauses and setting out these requirements when selecting a contractor. Normal practice in the contract between the client and the builder is that the builder owns the waste (and any reclaimable/saleable demolition products).

Architects across Australia are required to practice in accordance with the National Standard of Competency for Architects (NSCA)¹ which are governed by the Architects Accreditation Council of Australia (AACA). Two of the sixty performance criteria (PC) that make up the standard relate to circular systems and embodied carbon.

PC10 requires that students on graduation at the Master of Architecture degree²

“Understand the whole life carbon implications of procurement methods, materials, components and construction systems.”

At the point of registration and post-registration, a registration candidate and a (registered) architect respectively are required to,

“Demonstrate understanding of the whole life carbon implications of procurement methods, materials, components and construction systems.”

PC35 requires that students at graduation will

“Understand the operational and embodied carbon implications of chosen materials, components and systems.”

PC35 requires registration candidates and architects to,

“Be able to assess operational and embodied carbon implications of materials, components, construction systems and supply chains (including transport) to achieve net zero whole life carbon when developing design concepts. This includes integrating relevant consultant expertise and advising on the impact of chosen materials, components and systems on carbon outcomes.”

We also note that our Institute has also been publishing practice notes for architects for almost sixty years (since 1964). This is a specific member benefit and includes an environment practice note series with more 180 specific environment practice notes. We have specific environment notes that are highly relevant to the Board’s Draft Strategy and some of its actions. Our practice notes are peer-reviewed. Notes are subject to review as well as archiving. Examples³ that may be of interest to the Board include:

- *Design for disassembly – themes and principles* (first published 2005 and reviewed 2018)
- *Ecological waste: rethinking the nature of waste* (first published 2007 and reviewed 2018)
- *Polyvinyl Chloride (PVC) – its use in construction* (published 2012)
- *Timber and wood* (published 2018)

Responses to selected actions.

Identify opportunities to support the most feasible recovery of C&D products and materials (e.g. on-site processing).

An immediate first step should be to investigate how much recyclable construction waste continues to enter landfill in Tasmania. This includes:

¹ <https://aaca.org.au/wp-content/uploads/2021-NSCA.pdf>

² An AQF level 9 or masters’ degree is the general prequalification for undertaking the Architectural Practice Exam and 3,300 hours of logged supervised practice to attain registration with a state/territory architects’ registration board.

³ These resources are accessible online as a member benefit and the Institute would be happy to provide reference copies to assist this consultation on request.

- materials offcuts.
- demolition waste
- films and wrappings used to package or protect new materials (e.g. coloured metal fascias and flashings, door and window units),
- containers and delivery systems for consumables (e.g. paint, caulking and sealants)

The question needs to be raised as to why construction waste skips contain a variety of co-mingled waste and the extent to which this is ending up in landfill.

Options to ensure that recyclable material does not end up in landfill include:

- waste separation on building sites
- collection centres that separate comingled waste and/or decontaminate (e.g. cement and dirt needs to be removed from plastics prior to recycling)
- carefully regulating fees or charges for co-mingled and heavily contaminated waste

Attention also needs to be paid to onsite processing of materials that generate waste in terms of scurf, saw and concrete dusts and other particulate matter which may constitute a local respiratory or even environmental hazard (e.g. microplastics that are now evident in marine environments).

Develop an ongoing program of working closely with the building industry to divert and reuse C&D products and materials.

Identify the opportunities to support the circular and regenerative design of products within Tasmania that reduces the use of carbon intensive materials and increases recycling.

Develop best practice procurement guidelines (based on circular economy principles).

The total built environment sector includes the development, design and construction industries. These each have their own sub-sectors as well as supply chains. There is a challenge to bring about change.

While skills development (address further below) is important, bringing about any practice change involves many factors in decision making including:

- regulatory compliance with building codes design to ensure building safety and durability (e.g structural soundness, waterproofing, fire resistance and retardation)
- overall feasibility (especially where there are immature markets in terms of both supply chains and end-of-commission re-use/recycling), and
- associated economic analysis of lifecycle costs which are ultimately passed on to clients/consumers and affect other social policy objectives such as housing affordability.

The Institute strongly supports an approach that incorporates the principles of “designing for disassembly” and refers to the above practice note *Design for disassembly – themes and principles* and provides this as an attachment⁴ for the purposes of this consultation.

The *Design for disassembly* practice note draws attention to the need for standardisation and designing components and materials for re-use, either in the same building, or in another building. Facilities are required to store re-usable components.

The Institute recommends that demonstration projects are a good way to promote a major practice change to a sector, as well as provide a case study for research, learning and quality improvement.

⁴ This is normally only available as a paid member resource.

As the State Government is the single largest organisation client procuring buildings in Tasmania, then government building procurement (including re-fitting and upgrades)⁵ presents an important opportunity to conduct demonstration projects across a range of typologies including residential buildings, education and community facilities, health care and office buildings.

The effect within the total market and supply chain if government sets new requirements can then flow into the private sector.

A further opportunity in government building procurement is the re-use of buildings as an important means to reduce embodied carbon. We made a submission to the Tasmanian Department of Premier and Cabinet's (DPC) Future of Local Government Review.

Our submission to DPC recommended that, when designing facilities for new local government services, options are considered such as re-designing existing buildings to be re-purposed for the new services. Furthermore, as communities' needs can change over time design considerations, when procuring new buildings or major additions to an existing building, should include that they are readily adaptable to other purposes after the original commission. This way an approach to reducing waste and embodied carbon commences with strategic project and design decisions about the entire building itself, not just the materials.

The Institute therefore strongly agrees with the development of best practice procurement guidelines (based on circular economy principles). A specific set of guidelines needs to be developed for building procurement (including building fabric upgrades such as flooring).

Importantly, procurement guidelines need to be adopted into use by Tasmanian government departments and statutory authorities. Local government authorities could also be asked to adopt such procurement guidelines into use.

The promotion of any best practice procurement guidelines for the built environment needs to specifically include architects and other designers who specify materials.

Procurement guidelines need to specify low embodied carbon, sustainable and non-toxic material and minimisation of landfill waste during construction at the end of the commissionable life of a building or upgrade. These specifications need to map through to weighted criteria in government procurement tenders and briefs for consultants (e.g. architects, engineers, interior designers) and contractors (builders).

We note the challenges of bringing re-purposed products or products made from recycled materials into the market if they are initially more expensive before scale economies take effect. Options to bring such materials more quickly into use and influence the market include:

- regulation
- subsidies for sustainable products
- levies /taxes for non-sustainable products
- tick or star rating system to facilitate consumer/client-choice
- government-sponsored home shows or trade shows that showcases sustainable/recyclable and recycled materials and their uses
- use of industry publications⁶ to promote best practice
- sponsored competitions

⁵ Office fit-outs commonly have a life cycle of 5-6 years.

⁶ E.g. Our Institute's Architecture AU Selector publication: <https://architectureau.com/product-selector/>

A further option would be to establish a more wholesale scheme for certification of buildings for embodied carbon emissions in a similar way to certification of operational energy efficiency (which translate to saved carbon emissions). This could be a made mandatory disclosure requirement at sale. The ACT already has a disclosure scheme for the operational energy efficiency of new buildings.⁷

Certificate schemes could also extend into trading where buildings of a specific scale and typology are certified for their avoided carbon emissions against a comparable benchmark building. The certificate might be used in conjunction with fiscal measures to amortise the benefit as a reduction in council rates or saving on State Government land taxes or stamp duty at the purchase of the property.

We note that a range of innovations in relation to more sustainably sourced materials including

- hemp used in masonry⁸
- (mycelium) mushrooms for packaging⁹
- bio-plastics¹⁰

Plastics

We note that one of the actions in the draft strategy is to support the phasing out of problematic single-use plastics throughout Tasmania. While this is understood to pertain to items such as food packaging and utensils, it does raise the issue of plastics more generally.

Plastics are used widely in construction. One particular plastic is polyvinyl chloride (PVC). PVC is a plastic that warrants further investigation in terms of current demolition, waste and recycling practices.

The Institute's practice note accompanies this letter (Attachment 1). This note was prepared in 2012. It draws attention to the use of PVC not only in cabling insulation, pipes and conduits, but also for floor coverings and some door and window frames.

The Green Building Council of Australia released its own 'Literature Review and Best Practice Guidelines for PVC' in 2013¹¹ and quotes earlier research dating back to 2003 that In Australia, over 75% of all PVC products are used in the built environment, primarily in base building applications. Of this, later data from 2009 showed that 73% is used in "conduit pipes and fittings" (ibid).

There is a need to regularly review the evidence about all plastics including those used in construction through rigorous scientific appraisal taking into account matters of building science, environmental and health impacts.

The building science aspect is important as these materials also have particular characteristics and qualities relating to their durability, handling and constructability, water resistance, electrical

⁷https://www.planning.act.gov.au/__data/assets/pdf_file/0007/891880/Statutory_Declaration_as_to_a_Nominal_Energy_Efficiency_Rating_New_Buildings_for_Sale_of_Residential_Premises.pdf

⁸ <https://www.yourhome.gov.au/materials/hemp-masonry#:~:text=Hemp%20masonry%20is%20made%20of,and%20improves%20internal%20air%20quality.>

⁹ E.g. <https://www.fungisolutions.com.au/materials>

¹⁰ E.g. <https://www.sciencedirect.com/science/article/abs/pii/S0959652617318899>

¹¹ <https://new.gbca.org.au/pvc/>

resistance and fire retardation or resistance which make them difficult to cost-effectively replace in the short to medium term.

The Institute's practice note acknowledges the utility of PVC and that for its uses such as for piping it is challenging to find replacement products when full life cycle cost analyses are considered, which includes the manufacture and transport of alternatives such as concrete pipe.

There is evidence of a recycling economy with PVC¹² and we note that the Vinyl Council has operated a PVC Stewardship Program for two decades.¹³ The Vinyl Council also published a list of recyclers on its website¹⁴ but notably, none of these appear to be located in Tasmania.

There are also industry proponents of PVC alternatives for some uses. This includes the use of high-density polyethylene (HDPE),¹⁵

Broad economic understanding is also required in relation to the supply chain, especially for the reasonable availability and supply of alternatives, and end-of-life options for recycling and safest disposal.

It is critical that Tasmania has easily accessible facilities and services to accept, handle, and ideally to process plastic wastes including PVC from buildings.

Timber

While timber overall is regarded favourably as the growing of timber sequesters carbon, some end-of-life issues need to be considered such as timber combined with resin glues in particle board plywood and cross-laminated timber.

Paint

Paint presents a further consideration in the realm of construction and demolition waste. It is also a material that is frequently applied as part of cyclical maintenance and more generally across domestic settings, used by householders who undertake their own painting projects.

Establish a Circular Economy Innovation Network to build a network of commercial and community innovators in circular process solutions.

The Institute supports this action and notes this specific example of an app for non-commercial (free) exchange of materials: <https://revivalprojects.com.au/Cooperative>. We recently promoted this in our national newsletter. Government could also host, or sponsor community groups and organisations to host similar sites.

Support award programs that encourage environmentally sustainable product and materials management (based on circular economy principles).

The Institute notes that there is an opportunity to do this through the established and well-recognised awards programs of industry or practitioner/professional membership associations. The Australian Institute of Architects have run awards¹⁶ for close to 100 years. In recent years, this

¹² https://www.plasticrecyclinghub.com.au/?gclid=EAlaQobChMI16-nooiW_QIVJZ_CChOIkqfxEAAYASAAEgKhmvD_BwE

¹³ <https://vinyl.org.au/item/209-pvc-stewardship-program-continues-to-drive-industry-standards-20-years-on>

¹⁴ <https://www.vinyl.org.au/find-a-recycler>

¹⁵ see: [https://www.advancedpiping.com.au/blog/why-poly-pipes-more-environmentally-friendly-pvc/#:~:text=High%20Density%20Polyethylene%20\(HDPE\)%20pipes,polyvinyl%20chloride%20\(PVC\)%20pipes](https://www.advancedpiping.com.au/blog/why-poly-pipes-more-environmentally-friendly-pvc/#:~:text=High%20Density%20Polyethylene%20(HDPE)%20pipes,polyvinyl%20chloride%20(PVC)%20pipes)

¹⁶ See: <https://www.architecture.com.au/awards>

has included awards and prizes for sustainable design. A bespoke sponsored award such as a *Waste and Resource Recovery Board Award for Design in a Circular Economy* could be delivered as part of our Tasmanian Chapter Awards.

Identify appropriate skills development programs that embed circular systems within government, industry and community.

The Institute supports this proposed action. Industry and professional associations often deliver continuing professional development, education, refresher, or other accredited and non-accredited training for members.

The Institute recommends that the Tasmanian Government, working through the Waste and Resource Recovery Board, considers the delivery of skills development programs in partnership with industry and professional associations. This should include a program of funding application rounds to support the design and delivery of the programs.

Keystone Tasmania¹⁷ (formerly the Tasmanian Building and Construction Industry Training Board) has defined functions under the Building and Construction Industry Training Fund Act 1990, in respect of training and professional development in the building and construction sector. This may be an important body for the Waste and Resource Recovery Board to engage with. We re-iterate, as at the outset of this submission, that it is important to keep design in scope when considering building and construction as a whole. We recommend that the terms of any discussion should more broadly scope the “design and construction” sector or professions.

Partnerships with industry and professions through their professional associations can also be used to develop the skills development material. Through the Institute for example, it is possible to make contact with interested members who already have developed knowledge and skill including some members who may also work or teach sustainability to students in the university architecture programs.

Furthermore, partnering with industry and professions, through their member associations, provides ready access to target audiences. Using associations to target a particular industry, practitioner or professional group provides the best opportunity to focus and optimise learning and other knowledge material.

Additionally, many associations will have their own established teams and units to deliver training, professional development or other learning events. The Institute has a major program of professional development delivered by a dedicated team. Program delivery by industry, practitioner and professional association can provide a saving to government or the Board who do not need to provide such capacity in-house.

A further opportunity is for the Tasmanian Government or the Board to partner with the universities and TAFE organisations who deliver pre-registration courses to embed circular economy thinking and skills in upcoming practitioners.

As discussed above, there are relevant professional competency standards for architects (the NSCA¹⁸) that learning outcomes would map to. The pre-qualification of architecture masters programs delivered by various universities, including the University of Tasmania, are also accredited every five years for delivery of learning against the NSCA. Furthermore, there are

¹⁷ <https://keystone.com.au/>

¹⁸ National Standard of Competency for Architects

opportunities to work with universities to deliver post-graduate qualifications or micro-certificate programs as part of an architect's continuing professional development requirement.

Closing remarks

Again, we thank you for the opportunity to provide feedback on the draft strategy. Please feel to contact the Tasmanian Chapter Office via the details on the first page if you would like to discuss any aspect of this submission.

Yours sincerely,



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The Australian Institute of Architects (Institute) is the peak body for the architectural profession in Australia. It is an independent, national member organisation with over 13,000 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. To learn more about the Institute, log on to www.architecture.com.au.