AUSTRALIAN COUNCIL OF RECYCLING SUBMISSION: PRODUCTIVITY COMMISSION INQUIRY INTO OPPORTUNITIES IN THE CIRCULAR ECONOMY INTERIM REPORT RESPONSE

17 April 2025

About the Australian Council of Recycling

The Australian Council of Recycling (ACOR) is the peak industry body for the resource recovery, recycling, and remanufacturing sector in Australia. The Australian recycling industry contributes almost $19 billion in economic value, while delivering environmental benefits such as resource efficiency and diversion of material from landfill. Our sector processes close to 50 million tonnes of material annually.

ACOR's membership spans the entire recycling value chain, and includes leading organisations in CDS operations, kerbside recycling, recovered metal, glass, plastic, paper, organic, tyre, textile, oil and e-product reprocessing and remanufacturing, and construction and demolition recovery.

Our mission is to lead the transition to a circular economy through the recycling supply chain.

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SUBMISSION: PRODUCTIVITY COMMISSION INQUIRY INTO OPPORTUNITIES IN THE CIRCULAR ECONOMY INTERIM REPORT RESPONSE

1 Executive summary

The Australian Council of Recycling (ACOR) welcomes the Productivity Commission's interim report on opportunities in the circular economy and supports its recognition of the systemic reforms required to scale circular outcomes in Australia.

Recyclers play a critical role in enabling circular economy outcomes, yet current policy settings in Australia do not adequately support the viability or growth of the recycling sector. For a circular economy to succeed, it must be underpinned by a strong, functioning recycling system that is economically viable, environmentally effective, and capable of operating at scale.

Product stewardship in Australia is currently hindered by weak governance, insufficient industry involvement, inadequate funding, and a lack of enforceable targets. Schemes often prioritise administrative processes over genuine recycling outcomes, and the current Commonwealth accreditation framework confers legitimacy without requiring accountability or consistent measurable results. Strengthening governance, mandating transparent metrics and reporting, and introducing rigorous independent auditing are essential to achieving credible, scalable stewardship.

Equally vital is the development of strong end markets for domestically produced recycled content. Despite policy ambition, demand for Australian-processed recycled materials remains weak—undermined by cheaper imported virgin and recycled alternatives, inconsistent procurement standards, and limited incentives. Strategic government intervention is needed to prioritise locally remanufactured materials and stimulate market growth through procurement, investment, and regulation.

Investment confidence in recycling is further undermined by regulatory uncertainty, insurance barriers, and a lack of both feedstock security and end markets, constraining growth across the recycling supply chain, particularly for emerging streams like batteries, solar PV, organics, and textiles.

Nationally consistent standards, clearer regulatory pathways, and a shared definition of 'end of waste' are also essential to enable circular outcomes and ensure more equitable treatment of recycled materials relative to virgin alternatives.

Circularity must be supported through product design that enables repair, reuse, and recycling—and by expanding access to repair through the removal of intellectual property restrictions, regulatory and contractual barriers. Improved product standards and labelling requirements are also crucial to keeping materials in circulation and reducing reliance on virgin inputs.

Recycling and resource recovery must be recognised as industrial and economic activities, not as extensions of waste management. A nationally coordinated, industry-informed policy framework is needed to reposition recycling at the heart of a future-focused, resilient circular economy.

2 Overarching priorities

The interim report identifies many important themes; however, two priorities must be elevated to enable genuine recycling outcomes:

- product stewardship schemes must be designed to deliver legitimate, scalable results in partnership with recyclers, and
- strong, sustained end markets must be built for domestically recycled materials.

Without these foundations, recycling in Australia will not be economically viable, environmentally effective, or capable of supporting circular outcomes at scale.

2.1 Ensuring scaled, robust and verifiable outcomes from product stewardship

In most of the key areas for action identified in the interim report—such as textiles and clothing; vehicles, including tyres; consumer and emerging electronics, including end-of-use solar PV—product stewardship is identified as a potential solution. However, the outcomes of this approach are not guaranteed.

To ensure that product stewardship delivers scalable, credible and effective circular outcomes, several critical steps must be taken.

As outlined in ACOR's original submission to the Inquiry, the recycling sector strongly supports a greater focus on producers and distributors taking responsibility for the full lifecycle of their products, including at

end of use. Product stewardship schemes can play an important role in reducing waste and increasing recycling—particularly for materials with low recovery rates or little economic value. But these schemes will only succeed if they are designed in genuine partnership with recyclers.

Too often, cost reduction is prioritised over quality recycling outcomes. This not only undermines legitimate recycling operations, but also erodes public confidence in the system when it fails.

Common issues in product stewardship schemes include:

- underfunding recycling
- duplicative schemes creating inefficiency and confusion
- weak end markets for recycled materials
- poor governance, including conflicts of interest, and under-representation across the supply chain
- scheme administration prioritised over recycling outcomes
- lack of appropriate targets or proportional consequences for non-achievement
- poor accountability and transparency

A product stewardship scheme should never be treated as an end in itself. It must be a means to delivering sustainable and economically viable circular outcomes, developed and implemented in collaboration with the entire supply chain. Simply making a voluntary scheme mandatory will not, in itself, transform a poorly designed or performing scheme into an effective one.

Among the solutions for more effective product stewardship are:

- assessing and embedding actual costs of recovery and recycling
- evidence-based targets for recyclability, with targets increasing over time
- robust end markets for Australian recycled content
- supply-chain representation in product stewardship scheme governance
- clearly defined and measurable objectives, rules and targets
- transparent data about objectives, decision-making processes, recovery rates, recycling outcomes and material movement
- ensuring scheme objectives are met with accountability measures

2.1.1 Commonwealth product stewardship scheme accreditation

The effectiveness of product stewardship as a policy tool is currently being undermined by flaws in the Commonwealth's accreditation framework for voluntary schemes under the *Recycling and Waste Reduction Act 2020* (RAWR Act). Rather than ensuring stewardship schemes are accountable, effective, and outcomes-driven, the framework enables schemes to operate under the guise of government endorsement—through Commonwealth branding—without requiring commensurate levels of governance, transparency, or performance.

Accreditation under this framework confers the authority and implied trust of the Commonwealth Government, but lacks the oversight necessary to ensure these schemes deliver meaningful and measurable environmental and circular economy outcomes. Critically, the framework does not impose enforceable targets, require evidence-based reporting, or ensure that conflicts of interest are addressed within scheme governance. There have been no clear consequences for underperformance, and accreditation can proceed even where a scheme fails to deliver against the titular objectives of the RAWR Act—namely, to reduce waste and promote the recovery, reuse, and recycling of products and materials.

This weak accreditation framework has had real-world consequences, nowhere more apparent than in the case of batteries and consumer electronics. Despite sustained advocacy from the recycling sector and repeated warnings about the escalating number of lithium battery fires—now exceeding 10,000 incidents annually across Australia's waste and recycling systems—the Commonwealth has to date chosen not to regulate these products and has signalled no intent to do so in the near term. These fires pose a serious and growing threat to worker safety, destroy expensive infrastructure, and threaten the viability of facilities.

In the absence of federal leadership, the NSW Parliament recently passed the Product Lifecycle Responsibility Bill 2025 in March this year, aimed at tackling this urgent issue through regulated product stewardship for batteries and electronics. However, due to Section 109 of the Constitution—which gives precedence to Commonwealth laws over inconsistent State laws—NSW and other jurisdictions are limited in their ability to implement more robust measures where they overlap with the RAWR Act or its subordinate rules. The Commonwealth's inaction has therefore created a paradox: it has failed to address an urgent national problem, while at the same time impeding State governments' ability to do so themselves.

Given these concerns, the Commonwealth Government is urged to refrain from expanding the scope of existing accreditation schemes or establishing any new schemes under the current framework without a comprehensive review. This review must rigorously assess the effectiveness and accountability of existing schemes in achieving Australia's resource recovery and waste reduction targets, with specific attention to governance, transparency, and overall operational effectiveness.

The Commonwealth accreditation framework must also be significantly tightened to ensure schemes are delivering on the objectives of the Act, particularly the goal of maximising the continued use of products and waste materials.

Specific priorities for reform include:

- Improved governance: Ensuring schemes represent the entire supply chain and offer greater transparency and accountability.
- Clearer performance criteria: Establishing consistent metrics to measure the effectiveness of schemes.
- Independent auditing: Implementing robust third-party audits of schemes, including operational reviews.
- Enforceable targets: Setting targets that increase over time to drive continuous improvement.

These changes are crucial to ensure that Australia's product stewardship schemes contribute meaningfully to circular economy and resource recovery goals, and that the Commonwealth does not impede progress being made by the States.

2.1.2 Product stewardship metrics

Robust product stewardship schemes must be underpinned by clearly defined, measurable objectives, rules and targets. These metrics are essential to track progress, evaluate effectiveness, and enable ongoing improvement. In particular, well-defined metrics relating to recycling and scheme compliance across the full supply chain are vital to identifying what's working, where adjustments are needed, and where investment should be targeted.

Metrics must align with the specific operations of each product stewardship scheme. While a scheme may address broader goals related to sustainability or the circular economy, it must still account for what happens at end of use. Regardless of the model, performance should be measured against clear, outcome-based goals—particularly in relation to recycling, recovery and the management of end-of-life materials—with credible data that attributes outcomes to specific actions across the supply chain.

Accreditation by the Commonwealth and authorisation by ACCC must be conditional on timely, regular, transparent and public reporting on the following metrics:

1. Material arising: Volume reaching an end of use (arising) as a proportion of placed on market (POM) and end of life (EOL) predictions.

   If the scheme scope is not comprehensive across a product type, the material arising should acknowledge in-scope material arising and total (out-of-scope) material arising. Clear and nationally harmonised definitions of EOL products must be developed (e.g., distinguishing between reusable and end of life).

2. Collected: Volume collected as a proportion of MATERIAL ARISING.

   Subsidiary metrics, such as number and accessibility of collection sites, should be supplementary metrics but should not replace a top line measure of collection against material arising (as per Metric 1). Contamination and collected out of scope material should be tracked and reported separately.

3. Recycling rate: The weight of materials COLLECTED divided by the weight of residuals generated.

   Tracking the recycling rate ensures best-practice recycling and re-use, encourages investment in higher order processing, and guards against dumping, landfilling, stockpiling or waste export. The recycling process and supply chain need to be defined and scoped for each material, in consultation with the recycling sector.

   To establish whether material should be processed onshore or exported, a cascade of principles must be applied:

   a) Australia should meet its commitments under the Basel Convention, ensuring the environmentally sound management of hazardous and other wastes.
   b) Recovered resources should be processed in Australia.
   c) A scheme or recycler seeking to export unprocessed recovered resources must provide the following evidence:
      i. that there is no processing capability onshore, or
      ii. that it can't be processed onshore in an environmentally sustainably manner, or
      iii. that processing onshore is not feasible.

   Decisions must be data driven.

   Downstream outcomes for all domestically processed materials should be reported by weight: this should include materials returned to market through reuse or recycling into secondary raw materials; energy recovery; and residuals to landfill.

   There must be clarity, transparency and credible verification of reuse pathways, recognising its higher priority in the 'zero waste hierarchy' while also ensuring that waste is not exported under the guise of 'reuse' or energy recovery.

   The recycling rate should be a cumulative measure tracked across the recycling supply chain—the process by which materials are processed and returned to market—developed in consultation with recyclers and remanufacturers. For some product types and materials, greater reporting transparency may be required by material type, particularly for multi-material products with lower value components, such as e-waste plastic outputs.

   Some processing extracts maximum value with most of the volume becoming residuals (the 'mining model') or maximises the volume of material recovered but into low-value outputs. Best-practice recyclers strive to deliver the highest value materials for which there are robust and competitive markets. Measuring volume and value allows these factors to be tracked and lifted over time.

4. End markets: A measure of movement in demand for recycled materials in tonnes per annum

   Generating robust end markets for recycled content is the single most important driver of increased recycling. Any metric to track development of end markets for recycled content should be aligned with the nature of the scheme's operations and targets, and must distinguish between recycler and scheme investment.

   Tracking this metric will help to curb the push for low-cost, volume-based approaches that lead to a race to the bottom, rather than encouraging higher-order manufacturing. Local end markets that drive consistent demand for high-quality, high-margin solutions should be prioritised. This metric must be standardised and consistent to enable aggregated reporting across schemes.

Where a scheme seeks to generate new markets for recycled materials by investing in research and development, or enabling testing to increase confidence in recycled products, relevant metrics could include the increased capacity (tonnes per annum) if market demand for new uptake opportunities, specifically attributable to stewardship, were fully realised. Care must be taken in defining testing and market approval.

To be attributed to a scheme, demand for recycled content must be commercial and tangible—other outcomes from investment into R&D, such as papers or reports, should not contribute to this metric. Cooperative Research Centre (CRC) metrics for assessing the 'translation' of academic work into commercial gains could be applicable.

Other metrics determined in consultation with the recycling supply chain could include:

- market growth,
- predicted/current demand,
- processing capacity increase over an agreed period of time,
- recovered material commodity values,
- value in tonnes sold against volume or weight.

5. Governance: Governance KPI to assess comprehensive stakeholder involvement; transparent and timely reporting

Data reporting must correctly attribute outcomes to ensure the correct parts of the value chain are credited. Good governance must encompass the following:

- Where Boards are representative-based, Boards must include relevant supply chain representatives: manufacturers, recyclers, retailers and consumers.
- Where recyclers are not on the Board, and the scheme influences the recycling sector, appropriate Board Reference Groups should be created to enable a dialogue between the recycling industry and the Board in a formal, structured manner.
- The integrity and legality of export outcomes must be verified through recycler accreditation and foreign end market verification.
- Recycler specific audits should be required, including unannounced audits for developing industries.
- Accredited schemes must undergo scheduled reviews which include stakeholder consultation, akin to the scheme reauthorisation process required by the ACCC. Reviews can identify scheme shortfalls and the need for further investment where appropriate.

2.1.3 New and expanded schemes

In many instances, policy and regulatory levers other than a product stewardship scheme may deliver better sustainability, resource recovery and waste reduction results.

Product stewardship schemes are more appropriate and effective when applied to new recycling supply chains or where collection and recycling rates are low—retrofitting stewardship schemes onto mature recycling markets can be inefficient and disruptive.

Ongoing uncertainty about how and when new schemes might be established can deter investment in particular material streams, creating a ripple effect that undermines confidence across the broader recycling sector. There is a need for clarity about where the Australian Government will, and will not, intervene, with a priority of engaging closely with the recycling sector to ensure that domestic investment is not disrupted or undermined.

Section 67 of the RAWR Act establishes the Minister's Priority List, which identifies products for potential regulation under the Act in the coming financial year. In preparing the list, the Minister must consider 'any relevant national waste policies or plans' and may consider:

- whether the item has previously been listed and any actions undertaken
- whether the product stewardship criteria are satisfied (see below)
- information gathered from consultation
- whether current treatments (reuse, recycling etc) pose a 'significant cost' to governments

- consumer willingness to pay for action to reduce the product's impact
- 'whether taking action to reduce that impact will offer business opportunities to make a contribution to the economy'

The RAWR Act sets out 'product stewardship criteria' for when a voluntary arrangement can be accredited or rules made for a co-regulatory or mandatory product stewardship scheme. However, the mechanisms for listing products and defining subsequent actions, timings and consequences, are opaque, which has undermined the effectiveness of the Minister's Priority List.

To address this, the Australian Government should establish a transparent 'Trigger Framework'—developed in consultation with recyclers, brand owners, and sector experts—that clearly defines when a product stewardship scheme is necessary. This framework should be based on factors such as stagnant or declining recovery rates, or changes in market conditions. The *National Waste Policy Action Plan* sets out aspirations, goals, and metrics for the recycling sector, which could serve to inform this framework.

To build market and investment confidence, all supply chain stakeholders—particularly recyclers—must be engaged in the framework's development. Clear, transparent criteria will ensure that schemes are triggered predictably, providing industry with certainty about when action will be taken.

In addition to the framework, metrics for exit conditions should be established with every new scheme. These metrics should outline the economic and environmental conditions, as well as recycling rates, under which a scheme could be wound down. This would help to reposition certain schemes as tools for market rehabilitation rather than an end in themselves.

As established in the criteria for the Minister's Priority List, eligible products would be:

- sold in more than one State or Territory
- hazardous
- and/or where the conservation or recovery of materials can be significantly increased
- and/or where the impact on human health and the environment can be reduced

And, in addition, where:

- COLLECTED rates are below XX% of POM, or
- recycling infrastructure volume can process less than XX% of POM, or
- there are not clear END MARKETS for recycled materials, or
- the value of recycled product does not cover cost of processing materials in Australia (as assessed by the recycling sector), or
- product design raises barriers to recoverability and recyclability that would otherwise maximise value (multi-materials, chemicals of concern), or
- the RECYCLING RATE is less than XX%.

2.2 Markets for domestically processed recycled materials

An overarching priority to support a circular economy in Australia must be to drive demand for *domestically* produced recycled materials. The viability of Australia's recycling system hinges on robust markets for these materials. Imported recycled content not only competes with Australian-produced material—often unevenly—but also undermines progress towards national targets for waste reduction, recycling and sustainability.

While Australia is a net importer of finished goods, all such products ultimately enter our nation's waste streams. Export restrictions on certain recovered materials—such as plastics and tyres—mandate that they must be reprocessed domestically, while also effectively limiting the export of processed materials through licensing restrictions and delays. However, due to higher local production costs, domestically recycled content struggles to compete with cheaper virgin and imported recycled alternatives. This makes the development of robust markets for domestically produced recycled material all the more critical.

Imported recycled content should not be treated as equivalent to locally recycled content—it adds to Australia's waste burden without supporting the use of recovered resources generated here. To meet our circular economy goals, policy *must* drive demand for recycled content made from materials recovered in Australia—not just any product with recycled inputs regardless of origin.

The consequences of failing to create meaningful drivers for the uptake of domestically processed recycled content cannot be overstated. Even in Europe—where recycling and waste reduction frameworks are highly developed—the absence of effective incentives to prioritise European recycled content over cheaper imported alternatives is contributing to the closure of plastic recycling facilities. In California, plastic recyclers are now pursuing anti-dumping actions against imported recycled content. This challenge is emerging across all developed economies, and Australia is not immune.

The commercial viability of the recycling sector depends on the availability of strong, sustained end markets for domestically recycled content. A failure to ensure these markets through regulatory means is already resulting in lost investment in local recycling infrastructure. Without viable economic conditions, recycling operations become unsustainable—and in time, imported recycled content will also end up in landfill due to the absence of a functioning domestic sector capable of sorting and reprocessing it at end of use. This is not a problem that will correct itself; it requires targeted, specific regulatory intervention.

For further information, see ACOR's original submission to the Inquiry.

3 Information request responses

3.1 Information request 4.1: Enabling fit-for-purpose use of recycled materials in public projects

3.1.1 Prescriptive versus performance-based standards

Prescriptive standards often impede the use of recycled content by focussing on specific material origins rather than desired performance outcomes. This approach frequently leads to the rejection of recovered resources that demonstrably meet technical requirements. As outlined in ACOR's original submission to the Inquiry, several examples in the following case study illustrate this counterproductive trend.

Case Study 1. Prescriptive specifications that exclude recycled materials

- APA Group—bedding material: Gas pipeline infrastructure owner APA Group requires that bedding sand must be a virgin resource. Recycled products are able to meet technical properties, however, the specification states the bedding sand needs to be yellow to white, and from an approved source—criteria that recycled materials may not always satisfy, even when they are otherwise fit for purpose.
- CitiPower/Powercor—embedment and backfill sand: Although recovered resource products meet the technical properties of the required specification, CitiPower's specification explicitly states the sand must be natural sand (such as river sand). Powercor's lack of response to inquiries about using recovered resources further demonstrates a reluctance to consider sustainable alternatives.
- Melbourne Retail Water Agencies/Yarra Valley Water: Although some recycled materials are permitted for use with YVW and other water authorities, they are restricted to embedment applications and/or trench backfill for sewer projects only, not potable nor non-potable water systems. Despite some limited acceptance, there has been a significant lack of progress in adopting further recovered resources within the industry.
- Standards Australia: The recently released draft standard AS 2008:2024 'Bitumen for pavements' explicitly prohibits the inclusion of 'waste nor recycled petroleum-derived materials' in bitumen meeting specific table requirements. This directly contradicts Standards Australia's stated prioritisation of performance-based standards and circular economy objectives.

Australian governments should support greater uptake of domestically recycled materials by ensuring the adoption of nationally harmonised performance-based standards, rather than relying on fragmented and prescriptive specifications.

National bodies such as AustRoads should also be required to prioritise performance-based standards in their guidance and specifications. Roads are a key area where there is scope to harmonise standards and specifications across States or Territories and increase the use of recycled materials. A 2023 report by Standards Australia and ACOR, 'Standards to facilitate the use of recycled material in road construction', found that inconsistency in local and state specifications, the need for nationally harmonised performance-based standards, and a lack of guidance and awareness in the use of recycled materials and enabling standards were significant barriers preventing the triple-bottom line benefits of greater uptake of recycled content in roads.

The power of standards and specifications to both hinder and enable circularity and innovation has been most recently highlighted by the final report of the Australian Government's Circular Economy Ministerial Advisory Committee (CEMAG), which recommended 'a new governance model to modernise and harmonise regulations, standards and specifications related to the circular economy, resource recovery and waste that will accelerate productivity and support industry to innovate and scale'. The CEMAG concluded that 'moving from input-based to performance-based specifications would enable unrestricted use of recycled content, if it meets performance criteria, thereby supporting greater adoption of circular materials in construction'.

3.1.2 Harmonisation of standards: Australian Resource Recovery Code Board

As outlined in ACOR's original submission to the Inquiry, there is a strong need for an Australian Resource Recovery Code Board (ARRCB), based on the model of the Australian Building Codes Board (ABCB), to deliver a nationally harmonised framework for resource recovery and recycling. This framework should sit under a portfolio for industry and economic development, rather than environmental protection, because resource recovery and recycling are industrial activities that contribute to domestic manufacturing, materials security, and economic resilience—not merely waste management or environmental concerns. Positioning this in an industry portfolio would shift the policy focus from managing environmental risk to enabling innovation, investment, and growth in Australia's circular economy.

The proposed ARRCB's work should be underpinned by a nationally consistent definition of 'end of waste', providing clarity on when a material transitions from waste to resource. Similar to the ABCB, the ARRCB must prioritise the development of performance-based standards, rather than prescriptive ones.

For further discussion of the need for an ARRCB, see section 3.11.2 'The benefits of an institutional body to oversee harmonisation efforts'.

3.2 Information request 4.2: Coordination mechanisms to enhance the benefits of sustainable procurement policies

Government-led coordination initiatives to support public procurement policies, such as Victoria's ecologiQ program, are critical to systematically addressing persistent barriers to the greater uptake of recycled content and moving beyond a business-as-usual approach.

The Commonwealth Government should lead a nationally coordinated approach to procurement policies and support every jurisdiction in implementing a delivery partner under the ecologiQ model. Currently, public procurement policies have struggled to gain traction due to a lack of targets, incentives, thresholds, or a delivery mechanism to systematically address barriers to sustainable procurement.

As discussed above at section 2.2 'Markets for domestically processed recycled materials', the viability of Australia's recycling system hinges on robust markets for domestically processed recycled materials. Victoria's 'Recycled First' policy has proven to be a more effective enabler for procurement of recycled content for infrastructure projects, compared to the 'If not, why not' policy in NSW. This success can largely be attributed to the requirement for all tenderers on major transport projects in Victorian to demonstrate 'how they will optimise the use of recycled and reused materials at the levels allowed under current standards and specifications' rather than a focus on explaining why sustainable procurement did not occur, as is the case with NSW's 'If not, why not' approach.

However, Victoria's ecologiQ program, which facilitates engagement between recyclers and infrastructure projects, has also been critical to building capability and confidence in procurement of sustainable and recycled materials. This model works by methodically changing the behaviour of key decision makers. By sharing perceived risk across organisations, decision-makers can take first steps together. Ultimately, this program can help to inform mandatory targets for procurement of recycled material, as evidence is gathered in a voluntary context.

Case Study 2. ecologiQ

A barrier to the uptake of recovered resources in the built environment is 'fitness of purpose' and procurement standards contracts.

ecologiQ is a program designed to connect big infrastructure projects with those producing recycled material, as a delivery mechanism for Victoria's Recycled First policy. The program facilitates communication between industry and departments, challenging why recycled materials can't be used.

ecologiQ supports innovative procurement methods that might otherwise be perceived as entailing risk, acting as a matchmaker, working to understand concerns from procurement managers about using recycled resources, and soliciting data and testing from industry to demonstrate how materials comply.

In verifying recycled products by enabling these tests and demonstrating results, ecologiQ is building confidence with government procurers, which will flow on to industry.

Persistent barriers to greater uptake of recycled content in building and infrastructure, as outlined in ACOR's original submission to the Inquiry, include:

- prescriptive specifications,
- lack of cost parity
- risk aversion
- under-resourced procurement divisions
- lack of technical expertise in procurement staff
- lack of KPIs and transparency on progress
- tokenistic recycled content requirements in green building and infrastructure rating tools

Additional barriers are storage limits and the absence of regulated end-of-waste criteria.

Regulatory constraints on storage often hinder the ability of recycling businesses to scale. These constraints create dependency on a continuous flow of materials within the recycling system. Without reliable access to strong and diverse markets, recyclable resources are at risk of being landfilled. ACOR has published a report on how these challenges affect plastic recycling, titled 'Plastic recycling and regulations in Australia'.

Furthermore, a circular economy cannot advance if recovered resources are enduringly defined and managed as waste: regulation prescribing an end-of-waste is essential to enabling a circular economy. The 'once waste, forever waste' outlook is a relic of a linear economy approach. Waste must not be indefinitely controlled as a pollutant, but rather facilitated as a resource from which social, economic, and environmental benefits can be derived. In particular, treating recycled materials as waste when they are indistinguishable from virgin products and have a market and a value creates an uneven playing field between producers of virgin and recycled materials and impedes circular economy outcomes. Buyers can be unwilling to procure recycled materials when doing so creates additional regulatory burdens.

3.3 Information request 5.3: Reforming regulations to support the recovery of value from organic waste

Food and organic composting is a critical measure to reduce methane emissions from landfill, increase resource recovery and produce valuable compost. Halving the amount of organic waste sent to landfill by 2030 is also a key target of the National Waste Policy Action Plan.

However, organic recovery rates are threatened by contamination in organic waste streams: not only from material that is unsuitable for organic processing, but also from pollutants such as PFAS and asbestos. The traditional approach of managing contamination at 'end of pipe', through the waste management and recycling sectors, is a fundamental impediment to the Australian Government's policy objectives for a circular economy. Regulation placed solely on recycling creates an unequal playing field between virgin/raw and recovered resources.

A much greater focus on controlling these contaminants at their source is required to support the recovery of value from organic waste. PFAS and other categories of chemicals of concern must be strictly regulated; in non-essential consumer products they should be banned.

There is a significant cost benefit in regulating unnecessary and harmful chemicals at the source rather than relying on remediation. For example, it can cost roughly $150 to produce a kilogram of PFAS, but removing the same amount once it enters waste streams, waterways and the environment—through consumer

goods and packaging, among other sources—can cost tens of millions of dollars. This stark contrast underscores the financial advantages of source control over costly clean-up efforts.

There should be:

- a National Contaminants Strategy to manage these chemicals at source
- mandatory labelling and disclosure requirements for PFAS
- funding for research and innovation

Another persistent regulatory challenge is inconsistency in how State EPA officers interpret and apply waste classification codes and related licensing conditions. For instance, street sweepings which contain a mix of inert and organic materials are classified inconsistently, leading to prolonged engagement cycles to gain clarity on permitted activities. This uncertainty increases compliance costs, delays project delivery, and creates risk for infrastructure investment. It also results in an uneven playing field, where operators may classify a waste to suit their process and undercut legitimate licenced processes that carry additional costs.

3.3.1 Examples of projects not proceeding because of restrictive regulations or regulatory inconsistencies

Despite some efforts from State environmental regulators to move to performance-based licensing systems, operators still encounter rigid processes that do not reflect the realities of modern organics processing. Projects involving innovation—such as anaerobic digestion, pasteurisation of new streams, or co-located recovery infrastructure—are often delayed by years due to unclear or slow regulatory pathways, which stifles investment in new technology and diverts material from beneficial recovery pathways. Slow decision making by EPA permissioning teams further contributes to delays.

3.3.2 Opportunities for reducing these barriers without compromising objectives such as protecting human health, the natural environment or local amenity (e.g. odour), including examples of best practice

Resource recovery testing thresholds and requirements must be harmonised so that no jurisdiction is unfairly burdened with compliance. The Australian economy is a common market, yet each State has different requirements for product testing and compliance. This lack of consistency creates an uneven playing field within the circular economy.

National harmonisation of compost and soil product regulation is required to remove inconsistencies and unlock end-market confidence. Even where material is fully stabilised and has undergone independent validation, pathways to an end-of-waste designation remain unclear or overly restrictive. The lack of a nationally consistent compost standard and clear alignment with licensing—for example, misalignment between the Australian Standard for composts, soil conditioners and mulches (AS 4454) and NSW resource recovery orders and exemptions—creates confusion and undermines market confidence in compost products, hampering end-market development, particularly in land rehabilitation and broadacre agriculture.

To ensure the safe application of all resources, testing and monitoring requirements for harmful chemicals must be applied uniformly to both virgin/raw materials and recovered resources. This is especially critical for materials applied to land, given the likelihood that chemicals of concern—such as PFAS—are present across the board, including in 'new' products like chemical fertilisers, pesticides, and herbicides. A consistent regulatory approach is essential to protect human and environmental health, and to avoid unfairly disadvantaging recovered materials by subjecting them to stricter regulatory standards than virgin products.

There must be greater clarity around roles and responsibilities relating to monitoring and treating PFAS contamination. In particular, Government must take the lead in measuring background levels of PFAS in the environment and ensure that the costs associated with managing contamination are fairly distributed across supply chains—particularly among those responsible for its presence—rather than falling solely on water services, waste management and the recycling sector.

3.4 Information request 6.2: Product labelling for textiles and clothing

Designing for recycling can take the form of using mono materials, excluding harmful contaminants, clear labelling that identifies materials and instructions for disposal, and maximising the value of recoverable materials.

The European Recycling Industries' Confederation (EuRIC) has called for clear rules requiring manufacturers 'to disclose the origin of recycled materials contained in a garment (whether from post-consumer textile waste or from other types of waste) to prevent greenwashing and help consumers make more informed choices'. EuRIC has also called for the European Union to narrowly define recycled content 'to exclude open-loop recycled content from i.e. PET bottles', to ensure that textile producers are held accountable for managing materials generated by their own supply chains.

3.5 Information request 6.3: Textiles and clothing product stewardship schemes

As identified in section 2.1 '

Ensuring scaled, robust and verifiable outcomes from product stewardship', product stewardship approaches can be counterproductive if consumers and brands mistakenly believe that schemes support genuine waste reduction in Australia, while in reality they maintain existing unsustainable practices.

The design of the clothing product stewardship scheme, Seamless, launched in June 2023, outlines a proposal to reduce textile consumption and waste by introducing a levy of four cents per garment, with a reduced 'ecomodulated' levy of three cents for more sustainable items.

While the levy is intended to fund education, administration, and research and development, it insufficiently accounts for the actual costs of recycling. The proposal lacks clarity on how the funding will cover the full expenses of collection, sorting, and reprocessing textiles. Crucially, the Scheme's Board lacks representation from the recycling sector, which is essential for designing and implementing effective recycling strategies in Australia.

The scheme design risks perpetuating the status quo in the fashion industry by potentially restricting trade, limiting access to feedstock, and allocating insufficient remuneration for recyclers. Recycling in Australia is neither free nor cheap and the per-tonne cost of genuine domestic reprocessing has been estimated by our sector to far exceed the Scheme's allocated budget. Without adequate funding, the Scheme will undermine the viability of textile recycling in Australia.

Furthermore, the Scheme design fails to address the economic and regulatory mechanisms necessary to drive resource recovery. There are no identified end markets for recycled products generated by the Scheme and no firm work plans to develop these markets; no restrictions on the export of textile waste; no landfill bans (noting that some participants are entitled to a waste levy exemption); and insufficient funding for higher-order recycling.

In order to prevent the export of unwearable textile waste under the guise of 'reuse', there must be an agreed definition of 'unwearable' (or 'unusable' for stained or torn sheets or towels) to define clothing that is no longer fit for reuse. Textiles must be sorted in Australia and unwearable/unusable textiles recycled domestically, with stronger and more proactive enforcement required to ensure alignment with Australia's Basel Convention obligations.

Currently, over 100,000 tonnes per annum of clothing textiles are exported from Australia for resale through second-hand markets—though much ultimately ends up as waste in developing nations, a practice described as 'waste colonialism'. The integrity and legality of export outcomes must be verified through foreign end market verification systems.

Under its current design, Seamless will likely raise revenue from consumers while increasing export revenue from used clothing (including textile waste), without increasing Australian recycling rates. Consequently, this initiative risks creating the illusion of addressing waste reduction and resource recovery while avoiding effective, impactful action.

The following measures must be addressed to ensure that any clothing product stewardship scheme delivers genuine recycling outcomes:

- Include recyclers in the Scheme's governance structure to ensure effective and credible recycling practices, in alignment with the provisions in the Scheme's Constitution.
- Ban the export of unwearable clothing to ensure that textile waste is processed domestically.
- Ensure that the Scheme's budget can cover the true cost of domestic recycling.
- Develop end markets for recycled materials produced in Australia.

By way of contrast, see the case study on an extended producer responsibility scheme for textiles in The Netherlands below.

See 2.1.2 'Product stewardship metrics' for discussion of the clearly defined objectives, rules and targets that should be required to track progress, evaluate the effectiveness of the Scheme, and make necessary adjustments over time. Commonwealth accreditation and ACCC authorisation of such schemes must be conditional on timely, regular, transparent and public reporting on such metrics.

Case Study 3. Dutch Extended Producer Responsibility Textiles Decree

An extended producer responsibility scheme for textiles came into effect in The Netherlands on 1 July 2023. It establishes the following targets for reuse and recycling, which will ratchet up over time:

- By 2025, 50% of the previous year's total weight sold must be recovered for reuse or recycling.
- Of this percentage, at least 20% must be reused, with at least half reused in the Netherlands.
- By 2030, it increases to 75% of the previous year's total weight sold, with at least 25% reused of which 15% must be reused in the Netherlands.
- By 2025, 25% of all textile fibres of discarded textile products must be used in materials for new products (fibre-to-fibre recycling).
- By 2030, this must be 33% of all textile fibres.
- Producers will have to submit an annual report setting out the details of their compliance with the decree, and are financially responsible for setting up a suitable collection and processing system for discarded textile products.
- Non-compliance may be punishable with criminal law sanctions.

3.6 Information request 8.1: Targeted measures to improve collection and recovery of off-the-road tyres

Off-the-road (OTR) tyres should be subject to the same state-based regulations that have so effectively improved recovery outcomes for end of life (EOL) passenger and commercial tyres across Australia. Over the past decade, every State has substantially reformed regulation of the storage, transportation, fire safety, end-of-use disposal and other environmental management aspects of end of life passenger and commercial tyres. Together, these regulatory changes provided an impactful disincentive to stockpiling EOL passenger and commercial tyres, and fostered increased recycling investment and activity. All States and Territories now significantly limit stockpiling of EOL passenger and commercial tyres, ban dumping and track waste movements to ensure against illegal disposal.

These measures have led to an EOL passenger and commercial tyre collection rate of 96–97 per cent, with recovery rates of 88 per cent and 85 per cent respectively through recycling or energy recovery, and 8–10 per cent legally disposed to landfill.

By comparison, the Australian Tyre Recyclers Association (ATRA)—which represents the interests of the legal and sustainable used tyre collection and recovery sector in Australia—has identified a clear market failure in the EOL outcomes for OTR tyres, with a very poor collection rate of 13 per cent. Along with OTR tyres, there are also opportunities to increase the recovery and recycling of significant volumes of rubber conveyor belt materials that are also currently largely buried at mine sites.

ACOR supports ATRA's position on the benefits of increasing the collection and recycling of OTR tyres, including:

- reducing environmental harm caused by burying OTR tyres
- capturing the value of more rubberised material for recycling and returning to the market as a secondary raw material, including into micronised rubber for use in new tyres
- industry development and economic outcomes arising from gate fees paid to collectors for collection and recovery
- economic opportunities for Aboriginal communities to engage in collection and recovery businesses, operating in traditional lands under lease from the custodians
- supporting more thorough rehabilitation of Country

Case Study 4. Mining tyre recycling

In November 2024, TyreCycle opened a dedicated mining tyre recycling facility, capable of processing 30,000 tonnes of end-of-life mining OTR tyres per annum, with the option to expand to a second line within months. The Port Hedland plant is well-sited to access the 50,000 tonnes per annum of used off-the-road (OTR) mining tyres generated in the Pilbara—at the moment, less than 1 per cent of mining tyres are collected, with most buried on site.

Most processed rubber from the Port Hedland plant will be transported to TyreCycle's East Rockingham facility to be processed into crumb rubber, rubber granules or other tyre-derived-products, including as a coal replacement fuel. Any overflow will be exported to a joint venture partner in India for processing into micronised rubber to replace virgin rubber in the manufacture of new tyres.

3.7 Information request 8.2: Establish the foundations of a robust end-of-life electric vehicle battery industry

3.7.1 Are there technological or regulatory barriers inhibiting reuse, repurpose and recycle activities?

One barrier inhibiting reuse and recycling of end-of-life (EOL) batteries is lack of cost parity with landfilling and exporting. The material value recovered from recycling—or the value from resale for reuse—does not cover costs accrued in recycling or repurposing.

EOL batteries also fall into regulatory grey areas across all jurisdictions—caught between being treated as waste requiring proper handling and disposal, or a product that can exported for reuse. Several States are yet to ban the disposal of batteries to landfill, further compounding the regulatory inconsistency.

There are no technological barriers to recycling or reusing batteries in Australia. For both pathways, capital expenditure is the most significant barrier. While there is clear potential to invest in higher-order recycling and reuse capacity in Australia, current low volumes do not yet justify the required investment. This is expected to shift over time as more efficient processing technologies—currently at pilot or demonstration phase—enter the market, and as the volume of EOL batteries increases.

EOL batteries are currently being diverted away from circular end of life outcomes in Australia—ending up in landfill, exported, or stockpiled. Operators handling large format EOL batteries, such as energy storage installers, EV mechanics and grid scale battery facilities, are often disincentivised from pursuing circular solutions due to the high costs of collection and processing, limited understanding of the regulatory requirements, and the absence of obligations on internationally based original equipment manufacturers (OEMs) to take responsibility for the safe disposal and end of life management of their products in Australia.

The storage of returned, damaged and EOL batteries poses a significant fire risk, as highlighted by the fire at a battery wholesaler in Cheltenham in January 2025. The costs of continuing with a business-as-usual approach cannot be overstated: from the risks to human health and the environment posed by toxic fire events, to the multi-million-dollar clean-up costs borne by environmental regulators, the strain on emergency services, extensive damage to surrounding businesses, and the permanent loss of facilities.

In addition to fires caused by the improper storage of EOL batteries, recyclers are also increasingly impacted by consumer batteries that have been incorrectly disposed of in conventional bins. These incidents are responsible for an estimated 10,000 to 12,000 fires annually across Australia's waste and recycling systems. Beyond the significant loss of infrastructure, these fires pose serious risk to the safety and lives of workers in recycling and waste sectors.

Much more stringent regulation of EOL batteries and processors is urgently needed. All recipients of EOL batteries must be required to send them to reputable, licensed recycling facilities. Waste tracking should be mandatory for all EOL batteries across all jurisdictions. In addition, brand owners must be compelled—through comprehensive extended producer responsibility (either though individual arrangements or through a scheme)—to properly fund the costs of safe disposal, collection and processing in Australia.

3.7.2 What are current levels of market demand for second-life EV battery products in Australia (including any supporting data)? Are there barriers to connecting supply of these products with demand?

The EOL battery recycling and reuse sector is relatively new in Australia, alongside relatively new battery technologies. While some battery reuse operations exist—and battery recyclers can offer reuse where requested—interest from brand owners remains limited. Currently, it is understood that most batteries are reaching end of life due to physical damage or faults with the battery or battery management system, rather than declining performance, which places a stronger emphasis on recycling rather than reuse. Battery manufacturers are primarily concerned with minimising risk, and therefore prefer safe disposal pathways for EOL batteries, with recycling often serving as a beneficial secondary outcome.

In more mature international markets with greater feedstock availability, reuse is more common—particularly where batteries are retired due to diminished performance. Similar demand for reuse is likely to grow in Australia as volumes and market maturity increase.

3.7.3 What costs would the measures place on businesses and consumers, and (for regulation) on government implementation and enforcement (including quantitative analysis, where available)?

For market-leading battery recyclers—those that have invested in infrastructure and safety to establish the minimum acceptable standards for battery processing in Australia—more stringent regulation would not impose additional costs. However, bringing some facilities up to this standard can require $3–$5 million in capital expenditure per site, to install essential fire bays, fire detection equipment and suppression systems.

Despite the risks, in most states, battery recyclers processing less than 500 tonnes per annum are not required to hold an environmental operating license. Given that only 3,500 tonnes of batteries are expected to reach end-of-life annually—and approximately half may not be recovered for recycling—only around 1,800 tonnes will be processed nationally. All battery recyclers should be required by environmental regulators to obtain an operating license to ensure safe disposal and promote circular outcomes wherever possible.

There must also be accreditation of recyclers to ensure businesses have the information needed to choose reputable recyclers, rather than low-cost operations. For further information on accreditation for recyclers, see section 3.12.2 ‘Australian Recyclers Accreditation Program’.

3.7.4 What activities could be undertaken by state, territory and local governments to support any overarching scheme implemented by the Australian Government?

Any overarching scheme set by the Australian Government must be implemented and enforced by State and Territory regulators—regulation must be tightened, harmonised and enforced at the State level. Currently, only a few jurisdictions in Australia have implemented waste tracking requirements for batteries, highlighting another area where the fragmented regulatory environment persists.

Local governments influence EOL battery management through planning permissions and fire controls—mechanisms that can be strengthened to help prevent stockpiling.

Both State-level SafeWork authorities and environmental regulators have roles in preventing harm to human health from battery fires, with powers to inspect facilities and assess control measures for EOL battery storage. However, retailers and installers handling EOL batteries are largely operating below the radar of these agencies.

3.7.5 What additional measures are needed to address environmental and safety concerns related to EV battery handling and processing?

As previously mentioned, the handling and recycling of EOL batteries is a relatively new space, and awareness of the associated risks is still developing. In most cases, there is no reliable way to assess the risk profile of an EOL battery, unless it shows obvious physical damage. For this reason, battery recycling must be carried out at licensed, best-practice facilities.

Much stronger enforcement is required to prevent the illegal export of EOL batteries. Although permits are required to export these batteries, publicly available information is limited, enabling international OEMs to plausibly deny knowledge of Australia’s export controls. Enforcement is also lacking—illegal exports are

rarely pursued and there are minimal consequences when non-compliant shipments are intercepted and turned back.

3.7.6 What are the costs and benefits (including estimates, where possible) of developing further processing capability of black mass in Australia?

With current technologies, investment in black mass processing is dependent on economies of scale. Traditional hydrometallurgical plants typically require around 10,000 tonnes per annum to be viable. In contrast, Australia's largest black mass processor, Envirostream, produced only 500 tonnes last year. While current volumes are insufficient to justify investment in conventional processes, projections suggest that EOL battery volumes may reach viable levels by the mid-2030s. In the interim, there are also novel technologies in development that would enable lower cost and modular refining of black mass sooner.

3.8 Information request 9.1: Barriers to greater reuse and repair

Product repair is a consumer right and environmental necessity. For repair to be supported at scale, it must be realistically framed within the context of available skills, infrastructure, and product design. While 'right to repair' legislation is essential to ensure fair access to repair opportunities, success will depend on broader support for skills development and the creation of necessary infrastructure.

Repair opportunities can range from the micro—such as council-run repair cafes, where consumers learn to repair goods—to the macro, such as processes for disinfecting and reusing medical equipment at scale.

Evidence of unmet demand for repair services may be found in the popularity of Repair Cafes, which attract strong interest. Repair can be motivated by sentimental or cultural reasons, as well as financial or environmental. The lower running costs at Repair Cafes also help address the cost disparity where goods may be cheaper to replace than to repair.

Barriers to repair services include practices such as exclusive service contracts at point-of-sale, or proprietary repair software and tools. Such barriers can be addressed with policies that encourage competitive markets in repair and secondary parts. Restrictions around intellectual property—such as reducing or denying access to software and data—can also limit opportunities for repair, not only for small electrical and electronic equipment, but also for automobile and agricultural equipment.

In 2022, the Motor Vehicle Information Scheme came into effect, which requires motor vehicle service and repair information to be made available to repairers at a fair price—similar requirements are required economy-wide, particularly in the medical and agricultural sector.

Finally, repair is often hindered by poor product design and manufacturing choices. Products designed for planned obsolescence or manufactured using methods that prevent disassembly—such as gluing or riveting—are typically not repairable. The use of proprietary tools can also restrict access. In addition, opportunities for repair or reuse can be constrained by unclear standards, restrictive specifications, or uncertainty around liability, particularly when it comes to reconditioned products.

Government policy can lift rates of reuse and repair through product standards, consumer education, and extended producer responsibility, which can help address the issue of poor-quality products. Consumer labelling and information on a product's expected longevity, repairability and durability should also be required. Tax deductibility of repair would incentivise repair, such as in Sweden. Clarity is needed around whether repairers with a test and tagging accreditation are entitled to do electronic repairs, or only certified electricians. Repair skills can be supported through TAFE courses.

3.9 Information request 9.2: Product stewardship for small electronics, including embedded lithium-ion batteries

3.9.1 Barriers limiting collection and recycling

Multiple barriers continue to limit the collection and recycling of waste electronic and electrical equipment (WEEE), including batteries and battery-containing WEEE. There are currently no extended producer responsibility requirements for the majority of small electronic and electrical equipment placed on the market. Approximately one-third of WEEE material is plastics, which have low or negative market value. In

addition, investment in product stewardship by brand owners remains insufficient to drive meaningful resource recovery and recycling outcomes.

In short, none of the drivers of scaled resource recovery are in place for WEEE in Australia.

The primary barrier to further collection is cost, while the primary barrier to further processing is the presence of batteries, which dramatically drives up the risk, and therefore cost, of collection and processing.

3.9.2 Environmental, economic and social benefits of WEEE extended producer responsibility

There would be significant and broad benefits to including WEEE in a fit-for-purpose extended producer responsibility scheme.

The first considerable benefit would be to address battery-related fires across the waste and recycling sector. As noted above, there were between 10,000 and 12,000 fires in the last year across Australia's waste and recycling sectors. Alongside significant infrastructure losses, recycling workers' safety and lives are at risk.

Ensuring brand owner liability for the cost of end-of-life management of WEEE should also encourage better design for circularity, ensuring that contaminants are avoided and the value of materials is maintained.

Another considerable benefit of improving WEEE management is the diversion of material from landfill or from export to developing economies, where it often results in poor social and environmental outcomes. In many of these contexts, WEEE is processed through informal practices: valuable metals are recovered manually under unsafe working conditions, or by burning off the plastics, which make up the bulk of small electronic devices, releasing harmful pollutants into the environment.

An additional benefit to responsibly processing Australia's WEEE in Australia would be to increase the supply of WEEE to legitimate domestic e-waste processors, who are struggling to secure consistent volumes due to export, landfilling and scrap metal trade. A more reliable supply would support investment in WEEE plastic recycling solutions, which are currently unviable under existing market conditions.

3.9.3 Costs of expanding existing product stewardship schemes

Neither the NTCRS nor B-cycle offer a viable solution for establishing extended producer responsibility for WEEE in their current form. Expanding the scope of either scheme to include WEEE under existing conditions would be counterproductive and potentially amount to greenwash. For a detailed outline of requirements for effective product stewardship, refer to section '2.1

Ensuring scaled, robust and verifiable outcomes from product stewardship'.

A national EPR scheme for WEEE must prioritise messaging around safe disposal, rather than focussing on recycling, to avoid breaching ACCC guidelines on environmental claims. Products can only be recycled if there are established markets for secondary materials; most consumer electronics have minimal material value. The primary, and substantial, benefit of a EPR scheme for all WEEE would be ensuring the safe collection and processing of items, particularly those likely to contain batteries.

Nationally harmonised, mandatory extended producer responsibility for WEEE and batteries is urgently required, but neither NTCRS nor B-cycle can be simply expanded to fulfil this role without significant reform.

For example, after three years of operation, B-cycle is collecting around 15% of in-scope loose batteries, through a retail collection network that has very limited ability to collect the full range of WEEE and embedded batteries placed on market. It is therefore unclear how this scheme could deliver the solution to the fire crisis caused by embedded batteries.

And expanding the scope of NTCRS would only exacerbate existing misalignments and shortfalls within the scheme which are already threatening market stability and restricting investment in Australia's e-waste recycling sector. The operation of the NTCRS—where multiple co-regulators compete for liable parties (original equipment manufacturers), often by offering the lowest fees—has led to a 'race to the bottom' that undermines best-practice recycling and environmental outcomes. This drive towards low-cost

solutions has resulted in some co-regulators reducing accessibility, limiting collected volumes or compromising on material recovery rates. Recycling fees offered by co-regulators for the 2024 financial year have dropped to around 30 cents per kilogram, down from $1 per kilogram in previous years. These pressures have increased the risk of market failure in the e-waste recycling sector.

ACOR has worked closely with a broad range of e-waste recyclers operating across Australia, to identify recommendations to improve federal e-product stewardship, which were presented to the Department of Climate Change, Energy, the Environment and Water in September 2024. The paper included recommendations for improvements over the short term, which could be made immediately within the existing Recycling and Waste Reduction (Product Stewardship—Televisions and Computers) Rules 2021 (the Rules); over the medium term, which would require amendments to the Rules; and, in the long term, the priority of comprehensive e-stewardship. So far, the Department has not formally responded.

3.9.4 Costs of a staged approach

High rates of contamination across various material streams in recycling collections highlight the lack of community engagement and understanding of recycling practices. Incorrectly disposed batteries, for example, causes daily fires in collection trucks and recycling facilities, threatening workers lives, and damaging critical infrastructure. Material recovery facilities are contending with contamination rates as high as 30 per cent, underscoring the challenges of large-scale recycling efforts in a community that may be disengaged or unaware of proper disposal practices.

Even when consumers go to the effort to deliver WEEE to away-from-home collection networks, it can be nearly impossible for even the most engaged members of the public to determine which items are covered by various product stewardship schemes, which often have inconsistent inclusions and exclusions. As a result, deliveries to recyclers of NTCRS WEEE can be half comprised of products that are actually out of scope of the Scheme, and therefore not funded by the NTCRS for recycling. This confusion persists despite councils' best efforts to educate ratepayers on what is in and out of scope for the NTCRS and other schemes, and to establish well-run collection systems.

For these reasons, staging is not recommended. The only effective mechanism to prevent battery-related fires, support scaled collection and recycling of WEEE for improved resource recovery, and ensure more socially and environmentally responsible management of Australia's e-waste is a collection system driven by financial incentives for consumers. This should be managed by a single scheme administrator as proposed in DCCEEW's *Wired for Change* discussion paper in 2023.

3.9.5 Drawbacks in setting a minimum value threshold for WEEE included in a scheme

There should be no minimum value threshold for any battery-containing device included in a product stewardship scheme. The potential risk to recycling workers and facilities from battery-related fires far outweighs any consideration of the value or cost of WEEE. Excluding smaller WEEE from a levy-based scheme would unfairly advantage low-cost and low-quality electronics, which often lead to environmental harm, without holding brands accountable for the end-of-life management of their products.

Furthermore, the difficulties in managing uncontaminated collection of in-scope material, as outlined above, highlight that excluding products from schemes based on a minimum value threshold is impractical.

3.9.6 Necessary compliance and enforcement arrangements

The systemic problems with the NTCRS show that the solution must be a comprehensive, mandated extended producer responsibility scheme managed by a single scheme administrator as proposed in DCCEEW's 2023 *Wired for Change* discussion paper.

Compliance and delivery of a national scheme should be supported and enforced by State and Territory environmental regulators, following the same implementation and enforcement model demonstrated for single-use plastic bans.

3.9.7 Designing for circularity

Designing for circularity is fundamental to recyclability, as well as repair and reuse. Designing consumer electronics for circularity should involve mandatory labelling about the presence and chemistry of any

batteries, incentivising the use of lighter and white plastics—which can more easily be sorted at scale using sensors—over dark and black plastics, and ensuring ease of disassembly to facilitate repair and recycling.

3.9.8 Incentives

Education campaigns alone will not provide sufficient motivation to the larger proportion of the population to dispose of WEEE correctly. Container deposit schemes are the only consumer level product stewardship schemes, whether voluntary or mandatory, which have achieved reasonable collection rates, typically averaging in the mid 60 per cent range in Australia. There is significant evidence globally showing a clear correlation between higher refund amounts and higher return rates in container deposit schemes.

The only way to ensure security for the recycling sector, given the threat to worker's lives, is through incentive-driven collection such as the CDS model. Without strong compliance measures or incentives, there is no evidence to suggest that sufficient WEEE will be diverted from inappropriate disposal pathways—where combustible embedded batteries pose risks to workers' lives and infrastructure—towards appropriate facilities, where these items can be safely processed.

3.9.9 Comprehensive collection networks

Comprehensive collection networks are required to enable comprehensive collection of WEEE and batteries. While education about identifying and safely disposing of embedded batteries will be required, without clear and positive paths for disposal there will be no change.

Recycle Mate is a free community education program that helps Australians easily find the correct recycling or disposal method for various items based on their location, using a comprehensive database of local council and away-from-home disposal information.

Using this data, Recycle Mate has worked with the Queensland Government to map collection networks for hazardous materials against population, revealing gaps in collection infrastructure for hazardous materials, such as vapes, which can then be targeted. With appropriate resources, Recycle Mate also has the data to build interactive 'heat maps' against population density to illustrate community access to safe disposal and recycling options for items either unsuitable for kerbside collection or which have more positive away from home recovery options. The mapped data identifies gaps in community access to recovery options to help inform future federal and state policy and legislative actions.

3.9.10 Funding for collection and processing and end markets for recycled materials

Too often, cost reduction is prioritised over quality recycling outcomes in schemes. Not only does this undermine legitimate recycling operations, but it also erodes community confidence in recycling when the system fails. Product stewardship and extended producer responsibility must assess and address the actual cost of recycling in Australia, or risk greenwashing and undermining the recycling sector in Australia.

Likewise, the single most important driver of recycling is end markets for recycled materials—true stewardship for circularity should ensure there are end markets for recycled materials.

For further discussion of priorities for effective product stewardship, see section 2.1 '

Ensuring scaled, robust and verifiable outcomes from product stewardship'.

3.10 Information request 9.3: Product stewardship for small-scale PV systems

E-waste recyclers are investing in technologies to recycle end-of-use solar panels in Australia, however, too often end-of-use or faulty PV panels are being exported to developing economies, where the waste is unlikely to be well-managed, resulting in environmental harm. Regulation of the local PV panel recycling market to address this is essential.

Stewardship must consider the value and market for materials at end of use. PV panels contain valuable fractions such as aluminium, and critical minerals including silver and silicon. An effective and robust regulatory framework for recycling end-of-use PV panels will boost confidence in investment in the recovery and re-introduction of these valuable raw materials to the Australian economy.

3.10.1 Including large-format batteries in the solar PV scheme

Electricity pricing changes—such as the reduction of solar feed-in tariffs, or even conversion into charges—are driving the strong adoption of large-format batteries in solar farms to maintain commercial viability, and the end-of-life management for these batteries should be secured now through their inclusion in the solar PV scheme.

3.10.2 Incentivising collection for reuse

Incentivising the careful collection of used solar panels is recommended to support the development of a reuse market, which should also be backed by a robust and certified reuse testing regime for panel reuse.

3.10.3 Collection network for PV waste

Business-to-business collection at EOL can be more straightforward than broadscale community collection, given the smaller pool of operators, established networks, and available compliance and enforcement mechanisms. However, caution is needed before relying on NTCRS collection networks, given the concerns outlined above.

3.10.4 End markets for recycled PV materials

End markets for large quantities of high-quality clean glass from recycled solar panels include construction and building materials (such as benchtops and non-slip surfaces). Recycled solar panels would also produce a clean and consistent source of aluminium alloy 6063, which could support opportunities for domestic remanufacturing of aluminium materials.

3.10.5 Designing for circularity for the solar PV systems

Reuse opportunities for solar panels must be underpinned by a nationally consistent government-certified testing regime for used panels, with clear parameters for professional testing of panels beyond visual inspection to determine suitability for reuse. Only panels certified for reuse should be eligible for export or resale.

3.11 Information request 10.1: Governance arrangements to harmonise regulations that pose barriers to circularity

3.11.1 Options for harmonising inconsistent regulations through existing intergovernmental coordination mechanisms

Australia's Environment Ministers' Meeting should bind itself through a formal intergovernmental agreement, similar to the one underpinning the Building Code of Australia.

3.11.2 The benefits of an institutional body to oversee harmonisation efforts

Commonwealth, State and Territory Governments are united in their commitment to move towards a circular economy, yet this commitment is hindered by the reality of State environmental regulations. For example, while there is broad agreement across governments that plastic recycling is a priority, an ACOR report on the regulation of plastic recycling highlights a range of issues within the regulatory framework. These issues undermine the productivity and viability of plastic recycling, affecting investor confidence and limiting recyclers' ability to access the capital needed for growth, scale, and to achieve a sufficient return on investment.

As noted in ACOR's original submission to the Inquiry, the solution is the establishment of an Australian Resource Recovery Code Board (ARRCB), based on the model of the Australian Building Codes Board (ABCB), to deliver a nationally harmonised framework for resource recovery and recycling, underpinned by a nationally applied definition of 'end of waste'. This would offer clarity on when a material transitions from waste to a resource, ensuring consistency and certainty across jurisdictions.

An institutional body to oversee harmonisation efforts would also deliver an aligned and consistent approach to product stewardship. There are serious concerns that weak Commonwealth product stewardship laws, under the RAWR Act 2020 (see section 2.1.1 'Commonwealth product stewardship scheme accreditation'), could limit the ability of States and Territories to implement stronger, more robust

measures. This is due to Section 109 of the Constitution, which establishes that Commonwealth laws prevail over state laws.

3.11.3 Inconsistent regulations that present barriers to circular opportunities

ACOR supports the proposed preliminary set of State and Territory regulations for consideration for intergovernmental coordination, namely waste classifications, specifications for using recycled materials in infrastructure projects, and lithium-ion battery waste management regulations.

3.12 Information request 10.2: Supporting coordination, facilitation or brokering services

State governments are encouraged to partner with relevant peak bodies to deliver reports and analysis that develop a more robust basis for the value of recycled material, similar to the joint report by the NSW EPA and Charitable Reuse Australia on the benefits of reuse.

Two mechanisms that would support broad and efficient engagement with the circular economy are defining a regulatory 'end of waste' and implementing recycler accreditation.

3.12.1 End of waste

A significant way for businesses to aid the circular economy is through procurement of recycled content, but when recycled materials are indefinitely defined as waste, businesses attempting to engage in the recycling value chain become caught up in waste regulation. To procure recycled product feedstock, some businesses are required to change their licenses, sometimes even to install weighbridges. To address this, the broader economy needs to be incentivised and supported to engage with waste regulation and associated licensing conditions, or there must be a clearly defined end-of-waste classification.

A circular economy cannot advance if recovered resources are enduringly defined and managed as waste. In particular, treating recycled materials as waste when they are indistinguishable from virgin products and have a market and a value creates an uneven playing field between producers of virgin and recycled materials and impedes circular economy outcomes.

Once a business has invested in developing and manufacturing a recovered resource that has found acceptance with consumers, the safety of that recycled product should be regulated by general consumer and product liability law, along with relevant industry standards and other legislation. The category of waste should be applied as a last resort in a circular economy context, after all other resource recovery avenues have been exhausted, rather than as an initial and enduring classification. In particular, materials that have undergone processing should be given the same designation as manufacturing outputs. Recyclers must be able to produce recycled products efficiently. If the sector can't store and process material without overwhelming compliance costs, scaled production will not be practically feasible or economically viable.

3.12.2 Australian Recyclers Accreditation Program

As outlined in ACOR's original submission to the Inquiry, as recyclers evolve and transition to a more circular economy, there is a need to support better practice across industry and improve confidence in recycling outcomes. An accreditation program for recyclers will deliver value to industry, government, and the community by providing confidence to stakeholders that accredited recyclers are operating legitimately; are at, or moving towards, best practice; and are proactively meeting appropriate quality outcomes suitable for the recycling sector.

Therefore, a key priority for the recycling sector is the delivery of an Australian Recyclers Accreditation Program (ARAP), a national accreditation program available to all recyclers. The ARAP will establish an objective, consistent and efficient process for assessing a recycling operator's performance, providing assurance around the legitimacy of recycling operations. In 2021, the Australian Government supported a feasibility study into the establishment of the ARAP, which identified that the implementation phase should be federally funded, after which it would be self-sustained through a user-pays approach. This development to date means the ARAP could be implemented within a short timeframe of 6–12 months.

3.13 Information request 10.3: Supporting greater adoption and diffusion of circular innovations

Cooperative Research Centres and Trailblazers offer project models for effective industry and research collaborations, such as the Solving Plastic Waste CRC.

3.14 Information request 10.4: Improving investor confidence in the circular economy

3.14.1 Further initiatives to improve investor confidence

As outlined in ACOR's original submission to the Inquiry, grant programs have often proven problematic for investing in the circular economy. These programs often involve multiple stakeholders, departments, and agencies, and coordinating their efforts and aligning schedules can be challenging. Delays in delivering funds or resources to recipients lead to devalued funding and increased project constraints, while time frames can be unrealistic and unworkable, especially given long lead times for equipment.

The uncertainty and administrative burden this creates can discourage potential recipients from investing the time and effort required to apply—contributing to the brain drain of valuable expertise and innovation interstate or overseas, or resulting in innovations failing to come to market at all.

Case Study 5. Recycling Modernisation Fund grants

Company A considered investing in a recycled PET processing, with funding from Victoria's Circular Economy Recycling Modernisation Fund Round 4, Stream 2, which closed in August 2023.

The grant timeline was as follows:

1. Submissions close August 2023.

2. Project installation and/or construction must not have taken place prior to signing a funding agreement with Sustainability Victoria, expected in early 2024.

3. Projects must be commissioned and operational by 31 May 2025.

The lead time for Company A's proposed equipment to be delivered from Germany to an Australian port would have been 13 months, with a further 2 months to be delivered to the proposed facility location. Once there, installation and commissioning would have required another one and a half months, at the very least. In short, from ordering equipment to becoming operational would have taken a minimum of 16.5 months, barring unforeseen delays.

Operating on the assumption that confirmation was received in early January 2024—which is a soft deadline in the grant timeline—Company A could have had a funding agreement in place by February 2024, ready to place the order. Equipment would have left the manufacturer in March 2024, and given the timeline above, the very earliest the equipment could have been operational would have been mid-June 2025. The grant terms were for equipment to be operational by 31 May 2025.

European machinery cannot be purchased, made, shipped and installed in the typical grant timeframes. Company A elected not to apply for a grant given the unworkable timeframe.

Case Study 6. Remanufacture NSW grants

In early 2022, Remanufacture NSW announced Stream 1 Infrastructure Grants. Company B applied for $2.4 million for fibre optic sorting to respond to the regulation of the export of plastic, tyres and paper and cardboard under the Recycling and Waste Reduction Act 2020. Applications closed in March 2022, and applicants were told they would be advised within two to three months.

Company B wrote to the department on three separate occasions, requesting progress updates. Ultimately, applicants were not advised of outcomes until more than a year later, after the NSW state election, in March 2023.

Alternative funding arrangements could take the following forms:

- customised financial solutions
- expert guidance
- market viability assessments
- consistent and reliable funding over time
- risk-sharing mechanisms

3.14.2 Insurance

In many instances, recyclers are becoming uninsurable, with consequences for operations, financing and growth. There is a clear need for governments to explore mechanisms that improve insurance availability for the sector, including direct support where appropriate.

In a large part, skyrocketing insurance premiums—or an inability to secure insurance at all—are due to the increasing incidence of fires caused by incorrectly disposed batteries and battery-containing devices in waste and recycling facilities and trucks. ACOR and WCRA's research has revealed that over twelve months, insurance costs increased by $114,200 on average per business, which excluded step change increases in insurance premiums in previous years.

Difficulty securing reasonably priced insurance is also a consequence of the regulation of recyclers as waste operators: the categorisation of recyclers as 'waste' operators automatically (and sometimes exponentially) increases insurance premiums. It is important to distinguish waste management from recycling. While historically, waste companies integrated recycling as a waste treatment method, these processes are distinct: waste management is a logistical enterprise, whereas the recycling value chain is production, comprising aggregation and sorting, reprocessing and remanufacturing. Recycling processes are often dependent on effective logistics provided by the waste management sector, which transports and disposes of waste and unwanted materials. But, fundamentally, waste entails pollution and risk, whereas recycling entails resource efficiency, value creation, economic opportunity and circular outcomes.

Recycling is distinguished from waste management by returning a product to market in direct competition with virgin materials. When insurance frameworks conflate recycling with higher-risk waste activities, they compound the challenge recyclers face in competing on price.

This conflation reflects a limited understanding of the wide range of circular economy activities associated with recycling and end-of-use materials. By treating all waste and recycling operations as equally high-risk, the insurance sector applies elevated premiums across the board. A more nuanced approach is needed—one that recognises the differing risk profiles of various materials and recovery processes and adjusts insurance models accordingly.

3.15 Information request 10.5: Government support for place-based circular initiatives

3.15.1 Material recovery facilities infrastructure

Many material recovery facilities (MRFs) are located in metropolitan areas, where the ability to grow/ or expand operations is severely limited due to licensing, boundary and planning restrictions. This also applies to other recycling operations. Limiting the ability to grow, innovate and expand also then limits the attractiveness of the investment in a particular site.

ACOR and APCO collaborated on a MRF infrastructure report in 2023 which outlines some of the challenges for MRF operators.

3.15.2 Land use planning

Residential encroachment into industrial-zoned areas and poor land use planning have created challenges for the ongoing operation of existing recycling infrastructure operations and have delayed or led to the abandonment of plans for new facilities.

3.16 Information request 10.6: Expanding the set of circular economy indicators

3.16.1 Existing data sets to track circular economy indicators

- **National Waste and Resource Recovery Report, prepared by Blue Environment for DCCEEW:** Historically, the report has conflated waste and recycling infrastructure, and had limited understanding of recycling infrastructure in Australia. For example, in the past the report and database counted municipal solid waste (MSW) material recovery facilities (MRFs) with commercial and industrial MRFs and transfer stations, leading to the conclusion that there were over 150 MRFs across Australia, whereas a report commissioned by APCO and ACOR highlighted that there were fewer than 60 MSW MRFs in operation across Australia.
- **Protection of the Environment Plan (PEP) Sustainable Construction, NSW EPA:** The NSW EPA is consulting on a Protection of the Environment Plan (PEP) Sustainable Construction, which proposes to require NSW government agency infrastructure and building projects over a certain threshold to report on the procurement of recycled content. This should give good understanding of current and future potential end markets for recycled content. To build on this, thresholds or targets should be added, as well as requirements for the origin of recycled material, whether domestic or international, to be

reported, without which end markets for domestically processed recycled content will be fundamentally undermined.

- **Commonwealth Sustainable Procurement Advocacy and Resource Centre (CSPARC):** CSPARC supports Australian Government entities in adopting environmentally sustainable procurement practices, in line with the Commonwealth Environmentally Sustainable Procurement Policy. It provides guidance, tools, and resources to help integrate sustainability into procurement processes, ensuring decisions consider environmental, social, and economic impacts, and collects data relating to Government sustainable procurement.
- **Product stewardship metrics:** See section 2.1.2 'Product stewardship metrics' for discussion of the ways much more stringent reporting on metrics is required to track product stewardship effectiveness and progress.