A ResourceCo Company

30-56 Encore Avenue
Somerton VIC 3062

Office / +61 8339 3501

sales@tyrecycle.com.au
tyrecycle.com.au

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Productivity Commission
By email: circular.economy@pc.gov.au

Dear Commissioner,

Re; Australia's circular economy: Unlocking the opportunities

Tyrecycle thanks the Productivity Commission (PC) for the opportunity to provide a response to the '**Australia's circular economy: Unlocking the opportunities'** inquiry (the Inquiry).

Tyrecycle is Australia's largest and only national tyre recycler. Tyrecycle is supportive of all initiatives to improve outcomes for end-of-life tyres and to increase the role that tyre recycling plays in the circular economy.

To assist PC efforts to support better tyre management and enable the achievement of a circular economy for waste tyres, Tyrecycle proposes in this submission (in response to Inquiry Information Request 8.1) that the most efficient way to improve the recycling rates of OTR tyres with the least unintended detrimental impact is to ban the disposal of OTR tyres in pit/landfill.

Direct and focused policy of this nature focuses intervention on the biggest market failure within the end-of-life tyre market (the low recovery rate of mining and OTR tyres) in a manner that improves circular outcomes with the least cost and efficiency burden on business.

Additionally, the market pull away from landfilling and resultant increase in supply of feedstock to the highly invested tyre recycling sector will generate jobs, reduce greenhouse gas emissions and support Aboriginal and Torres Strait Islander and other regional and remote communities to prosper while delivering circular benefit to the global economy.

ABOUT TYRECYCLE

Tyrecycle is Australia's largest tyre recycler and part of the highly regarded integrated resource recovery group, ResourceCo.

Tyrecycle has seven dedicated tyre processing plants across Australia and is the only company in the tyre recycling industry to have a processing plant in each state of Australia employing 180 employees in addition to a large number of external contractors nationally.

Tyrecycle has commenced a major capital expansion program throughout Australia, most recently in Port Hedland and Rockingham in WA and Erskine Park in NSW. Both Port Hedland in WA and Newcastle in NSW have been identified as important areas for future investment to capture the OTR recycling market, with the Port Headland investment in OTR Processing equating to $9,824,000.

See Appendix 1 for more details on future investment plans and information on Tyrecycle.

TYRE INDUSTRY BACKGROUND

Australia has developed a vibrant, cost-effective, and innovative Australian industry to commercial tyre management that:

- collects 98% of passenger & truck tyres
- with an 89% (recycled or energy recovery) recovery rate for that material

The existing tyre collection network is a well-established industry which operates across the vast majority of Australia for passenger and truck tyres. All states and territories now licence collection, storage and recycling of used tyres including stipulating in licences, working stockpile limits.

Not all tyre markets are the same

The OTR market is markedly different to the passenger and commercial tyres market as demonstrated in the differing recovery rates. The recovery rates for OTR tyres is around 10% recovery with mining, agriculture and forestry at 1% recovery.

Tyrecycle asserts that the *most efficient way to improve the recovery rate of OTR tyres is to ban the disposal of OTR tyres in pit/landfill*.

This would improve the recovery rate for OTR tyres, enabling Target 3 of the National Waste Policy Action Plan (prepared by Commonwealth, state and territory governments and the Australian Local Government Association in 2019) of an 80% average recovery rate across all waste streams by 2030 (including end-of-life tyres) to be met while not having a detrimental impact on highly performing passenger and commercial tyres markets[i].

Direct and focused policy of this nature focuses intervention on the biggest market failure within the end-of-life tyre market (the low recovery rate of mining and OTR tyres) in a manner that improves circular outcomes with the least cost and efficiency burden on business.

INQUIRY INFORMATION REQUEST

Tyrecycle responds with particular attention to Inquiry Information Request 8.1: *Targeted measures to improve the collection and recovery of off the road (OTR) tyres*[ii].

What are the environmental, economic and social impacts of unrecovered OTR tyres? What are the size of these impacts (including any data, if possible)?

Economic impact

If landfill bans for OTR were introduced in NSW, WA and Qld, analysis indicates that this will equate to the recovery of an additional 112,000 tonnes per annum of OTR tyres.

Tyrecycle modelling indicates that 112,000 tonnes of OTR tyres being driven away from landfill and dumping equates to the following economic benefit for the recycling sector:

- 27,000 tonnes of steel = $6.75 million.
- 85,000 tonnes of crumb rubber = $56 million.
- $90 million of gate fees for recyclers.

This is a substantial benefit to recyclers that would generate:

- $45 million investment in processing equipment.
- approx. 225 jobs for the local economy.
- and would provide substantial benefit to the environment and the economy.

Environmental impact

Tyrecycle supports the conclusions made by Tyre Stewardship Australia (TSA) in its 'Tipping the Balance' OTR report which states that the recovery of OTR tyres will :

• recapture high-quality materials that would otherwise be lost
• reduce reliance on new materials and the consequent environmental damage in rubber-growing countries
• improve the treatment of environments and landscapes
• reduce exposure to harms such as fire, habitat loss, contamination and potential breeding grounds for vermin
• set an example and lift the accepted standard for managing end-of-life products.
• reduce greenhouse gas emissions from new tyre creation and rubber deforestation

Policy Responses

In Table 1, Tyrecycle has assessed policy options to achieve the objectives of Inquiry.

The Policy Options Analysis identifies that:

- Landfill bans for OTR tyres are the most efficient and effective means to increasing OTR recovery, with the least unintended detrimental impact on business.
- Landfill bans focus policy activity on the biggest market failure in the end-of-life tyre market with little impact on other, highly functioning elements of the market, such as the passenger and truck tyre market.
- There is little to no cost and implementation burden on market participants aside from those that use and dispose of OTR tyres.
- Overt stewardship and extended producer responsibility initiatives can be broad, highly bureaucratic and onerous on multiple stakeholders and inefficient to implement across multiple jurisdictions – should they be state government led.
- From a regulatory perspective, the responsibility to implement landfill bans sits with EPAs that are already set-up to undertake aligned activities. This therefore results in the most efficient implantation means possible.

Table 1: Policy Options Analysis

Inquiry Question	OTR Landfill Ban	Product Stewardship Approaches	
		State Based	National
Which policy actions would be most effective in improving collection and recovery rates? What are the benefits to the community associated with these policies (including any data, if possible)?	The simplest way to improve the recovery rate of OTR tyres is to ban the disposal of OTR tyres in pits. This would improve the recovery rate for OTR tyres while not having a detrimental impact on highly performing passenger and commercial tyres markets.	State based stewardship could be effective in increasing OTR recovery. However, this will create inefficiencies in management for businesses that work nationally and are subject to multiple systems and reporting mechanisms.	National product stewardship could be effective if implemented efficiently. However, efforts to date have failed to get the correct policy settings and national consensus on appropriate frameworks to deliver effective solutions.

What are the costs and benefits of implementing and enforcing these policies (including quantitative analysis, where available)?	OTR Landfill Bans would be relatively simple to implement as OTR users are generally large, centralised businesses making monitoring and management easier for regulators.	State based stewardship would be expensive and inefficient to implement. As evidenced by multiple Container Deposit Schemes for beverage bottles, multiple misaligned systems create burden for national businesses and government.	A national product stewardship scheme could be relatively simple to manage if implemented. However, consensus on the system to be implemented is challenging across multiple jurisdictions with differing circumstances and priorities has resulted in a lack of definitive action nationally to date.
What are the roles for different levels of government in implementing these measures?	State based EPAs would manage and implement OTR landfill bans. This would align well with existing remits and operational requirements.	State based EPAs or equivalent policy departments would lead the implementation. However, with multiple states delivering differing systems, there will be replication and cost inefficiencies for implementors and users.	National product stewardship initiatives would be implemented by DCCEEW. This would require additional staff, resources and skill sets and potentially regulatory change.

What are the ways in which governments can partner with Aboriginal and Torres Strait Islander communities on collection and recovery opportunities?

In all policy scenarios outlined above, Aboriginal and Torres Strait Islander communities would derive social and economic benefit through increased circular based business models in the regional and remote regions where a large proportion of OTR tyres arise. Businesses that service mining communities would have additional markets through the increased activity in regional and remote areas driving regional economic activity and social outcomes for communities.

Additionally, tyre management requirements for OTRs will ensure mining waste is minimised at the completion of mining tenures. This will improve environmental outcomes for Aboriginal and Torres Strait Islander communities by reducing the negative impact of mining activities once tenures are completed creating a better transition back to indigenous management post-mining tenure completions.

What are the current levels of demand for products that can be produced from OTR tyres (including any data, if possible)? Are there any technical or regulatory barriers inhibiting their production or use?

Current levels of demand for products that can be produced from OTR tyres

Global Tyre Derived Fuel markets

The largest current and foreseeable end market for waste tyres globally is for use in tyre derived fuel markets (TDF). TDF has greenhouse gas benefits relative to coal. As such, the implementation of land fill bans for OTR tyres will act as a means to decarbonise energy commodity markets, contributing to global circular economy outcomes.

Industries such as cement manufacturing, pulp and paper mills, and power plants are the primary consumers of TDF, utilising it as a cost-effective and energy-efficient alternative to traditional fossil fuels. The high energy content of TDF makes it particularly attractive for these energy-intensive industries.

Processed used tyres are predominately utilised as an ingredient in cement manufacturing co-processed into the cement itself - *"Since all the components of the tyres are either destroyed, combined into the clinker or captured in the air pollution control device, there is no ash to dispose[1]."*

Cement manufacture is an energy intensive process and to date largely dependent on coal for heat. The TDF replaces this fossil fuel for heat, reducing greenhouse emissions, according to the latest Australian National Greenhouse and Energy Reporting (NGER) data by between 30-40%.

Markets for TDF are consistent and ongoing. It is there foreseen that TDF end markets will be a legitimate consumer of end-of-life OTR tyres. This will support local recycling and efforts to decarbonise global energy markets.

New and Emerging markets

Innovative markets for OTR tyres are emerging via technologies such as pyrolysis[2], micronized rubber particle and devulcanization[3].

Tyrecycle support endeavours to develop new and emerging technologies and markets. However, Tyrecycle reiterates the assessment of tyre pyrolysis published by TSA in its Pyrolysis Products and Market Review which states that:

> *Within Australia, and overseas, there is a wide range of approaches to EOL tyre pyrolysis for materials recovery. Many of these approaches are at the early demonstration or commercialisation stages. As the technologies are still under development and scale-up, it is not clear which approach will dominate the sector in the future.*

With pyrolysis being the most developed alternative recycling technology on the market, this statement is applicable to all emerging processing technology types.

In the meantime, Tyrecycle processes 180,000 tonnes of tyres via conventional processing means to support global circular economy outcomes.

Are there any technical or regulatory barriers inhibiting their production or use?

Specifications and government procurement

Specifications and government procurement are a major driver to end market demand for tyre derived material. However, much more can be done to increase demand via these means.

An example of successful government specifications to drive demand is VicRoads standard specification **Section 408 - Sprayed Bituminous Surfacings**, which sets the parameters for how crumb rubber is used in most rural and regional Victorian roads. According to Technical Note 107, the crumb rubber content by mass of binder varies with the sprayed seal type:VicRoadsVicRoads

[1] (https://www.sciencedirect.com/science/article/abs/pii/S0958946505000521)
[2] Pyrolysis is the reaction in the absence or near absence of air (or oxygen), with temperatures typically from 400 to 600°C, to thermally decompose the material.
[3] Tyre devulcanisation is a **process that reverses the vulcanisation of rubber**, which is the chemical process used to harden rubber during tyre manufacturing. Vulcanisation creates strong sulfur cross-links between rubber polymer chains, making tyres durable and elastic. Devulcanisation breaks these sulfur bonds, allowing the rubber to become soft and reusable again—**without destroying the polymer backbone**.

- **Unmodified Seals**: up to 5% crumb rubberVicRoads
- **Initial Seal & High Stress Seal**: 9% crumb rubber
- **Extreme Stress Seal**: not less than 15% crumb rubberVicRoads

By requiring crumb rubber to be used in roads to this degree, Vicroads is driving the consumption of around 750,000 tyres in Victorian roads. Many more states can implement such policies to drive consumption nationally.

Access to global markets

Of all the tyres collected and processed in Australia, 76% are required to be consumed in international end markets[4] given a shortfall in local market demand (8.6 million EPU or 69,000 tonnes[5]) relative to the number of tyres recovered annually (40 million EPU 320,000 tonnes). These numbers establish that:

- export markets are essential in ensuring the substantial volumes of tyres Australians generate annually are managed in a sustainable, safe and cost effectively manner on behalf of government, business and the community.
- fair and reasonable access to export markets is essential for the tyre recycling sector to service the Australian community effectively and efficiently.

To help government and PC efforts to support better tyre management and enable a thriving global circular economy, Tyrecycle requests policy makers ensure that recyclers are provided the same 'level playing field' as all exporters of processed products via fair and equitable access to competitive global markets. In particular, Tyrecycle would request the PC ensure that business is not unfairly burdened with cost and unnecessary bureaucracy through inefficient implementation of positive policy interventions, such as the waste export ban.

Concluding remarks

Tyrecycle is supportive of PC initiatives to improve outcomes for end-of-life tyres and to increase the role that tyre recycling plays in the circular economy.

Tyrecycle supports direct and focused policy intervention that improves circular outcomes with the least cost and efficiency burden on business via land fill bans for OTR tyres.

We welcome the opportunity to submit our position and extend our availability to participate if further engagement opportunities with the Inquiry.

Yours sincerely,

Jim Fairweather
CEO, Tyrecycle

[4] www.tyrestewardship.org.au/wp-content/uploads/2023/11/Australian-Tyre-Consumption-2022-23.pdf

[5] https://www.tyrestewardship.org.au/wp-content/uploads/2021/06/2021031.pdf

Appendix 1: About Tyrecycle

Tyrecycle is the only producer of tyre derived products nationally that can guarantee a full chain of custody from cradle-to-grave for domestic and off-shore customers; ensuring that all manufactured products are utilised in an environmentally sound way.

Tyrecycle plants are equipped with advanced rubber re-manufacturing capabilities processing in the order of 20 million tyres per annum with a recycling rate of 99%, producing high quality repurposed material for the local and global market.

Tyres are recycled at secure facilities across our footprint into products including rubber chips, granules and powders that can be used in a variety of innovative applications. Tyrecycle's aim is to discover new applications for scrap tyres, avoiding tyres being sent to landfill.

As part of Tyrecycle's national operations, over the past five years hawse have invested heavily ($38,000,000) in a number of significant upgrade and capital improvement projects. There are also a number of new facilities in the pipeline that will further expand our footprint and benefit the industry.

Committed/completed/projects to be commenced.

New South Wales: Erskine Park/ Newcastle - 1.5 inch / Steel Cleaning / OTR Processing -$8,222,000

South Australia: 2in Chipper CM - clean cut chip - $2,710,000

Western Australia

- Port Headland Australia OTR Processing - $9,824,000
- Perth crumbing plant - $15,648,000

Tasmania: 2 in Chipper CM - clean cut chip - $2,533,000

Tyrecycle holds the necessary environmental regulator licences and permits as well as advanced management systems comprising inspection and auditing, training and competencies, risk and hazard management and other legal requirements. Tyrecycle is certified across the 45001:2018 Health and Safety), ISO 14001 (Environmental Management) systems and ISO 9001 (Quality Management).

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[i] Passenger, truck and bus tyres have consistently accounted for between 70-75% of total end of life tyres generated over recent years, with recovery rates sitting at around 90%.

OTR tyres, which make up the remaining third of tyres, have a recovery rate consistently around 10%.

Collectively, this amounts to between 60 and 70% recovery rate across all types of end-of-life tyre

Even with 100% recovery of automotive tyres, when added to the 10% recovery of OTR tyres, equates to a combined recovery rate below the 80% National Waste Policy target.

This means that without increasing the contribution from the OTR sector, Australia will not achieve the 80% recovery target set in the National Waste Policy Action Plan.

Assuming recovery for automotive tyres stay constant, recovery of 60,000 – 80,000 tonnes of end-of-life OTR tyres is required to achieve the 80% recovery rate - an OTR tyre recovery rate of 55 to 60%.