

OTR TYRES IN AUSTRALIA

**A CASE FOR CHANGE
TO SUSTAINABLY
MANAGE USED OFF-
THE-ROAD (OTR)
TYRES IN AUSTRALIA**

October 2021



Finding sustainable outcomes for OTR tyres is our opportunity to recover the valuable resources they contain.

Off-the-road (OTR) tyres are used in some of Australia's most important industries: mining, agriculture, construction, manufacturing and aviation.

Around 140,000 tonnes of OTR tyres are sold in Australia every year, however less than 15 per cent are recovered as a resource. The rest are stockpiled or buried onsite or sent to landfill.

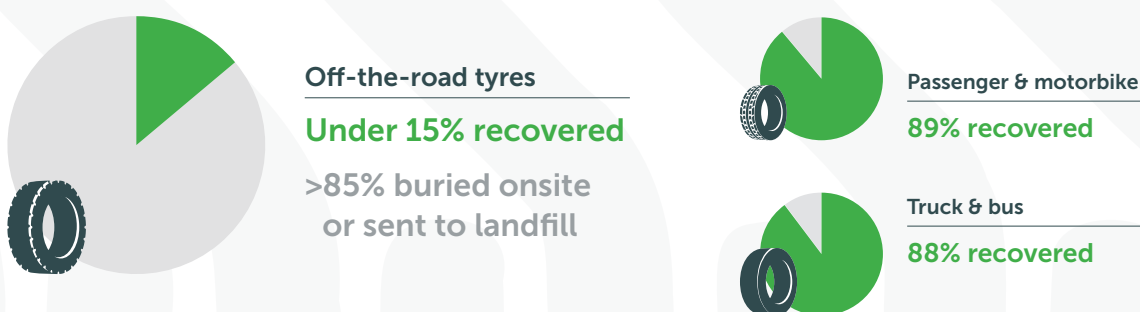


Figure 1. Used tyre recovery rate by tyre type

There is limited availability for viable recycling solutions for OTR tyres. This is due to known barriers, including onsite disposal, their location in regional and remote areas and the challenges associated with their size.

Burying OTR tyres is legal with the appropriate license from each state's Environmental Protection Agency. But while it may be lawful in some jurisdictions, it is delaying the cost of resource recovery and passing it on to future generations.

Every year we aren't finding sustainable outcomes for OTR tyres is a lost opportunity to recover the valuable resources they contain. The social and environmental harm will be felt for generations.

The OTR tyre value chain includes importers and wholesalers, the mining, agriculture, construction, manufacturing and aviation sectors, retailers, collectors and recyclers, government and communities. Tyre Stewardship Australia wants to work with them all to find real-world solutions and create viable, sustainable solutions to the problem of end-of-life OTR tyres in Australia.

Tyre Stewardship Australia's vision is a circular economy for end-of-life tyres which contributes to a sustainable society.

Achieving greater recovery rates within the OTR sector is a shared responsibility.

Real-world solutions needs the entire OTR tyre value chain to work together, to speak openly about the barriers and how they may be overcome.

While some sectors will do the heavy lifting, others will be doing little to contribute – instead benefiting from the solutions created by others.

■ Government

Federal and state governments can all influence better practices that change behaviours and improve OTR tyre recovery rates, particularly state Environmental Protection Authorities that issue licences which includes onsite tyre burial.

■ Mining Sector

The Mining Sector can lead the way by moving away from burying end-of-life OTR tyres, in turn creating the volume that makes resource recovery opportunities viable - especially in regional and remote areas.

■ OTR Tyre importers

Through their paid contribution, OTR Tyre importers can accelerate better management and sustainable outcomes for OTR end-of-life tyres.

■ All OTR Sectors

All OTR Sectors can drive change by choosing OTR tyre brands that are paid contributors to the Scheme.

■ Recyclers and collectors

Recyclers and collectors can think creatively about unlocking the potential from recovering OTR tyres. Creating viable business models, expanding existing markets and thinking outside the box into new market opportunities.

■ Local government and community groups

Local government and community groups can share their knowledge of the specific challenges facing their communities, particularly in regional and remote locations, to ensure that OTR tyre recovery solutions can work.

Australia is at a critical juncture in creating a circular economy for OTR tyres.

It is time for the sector and industry to take responsibility and work with TSA to improve outcomes for end-of-life tyres and tyre products.



Less than 15 per cent of the 140,000 tonnes of OTR tyres consumed in Australia every year are recovered as a resource.

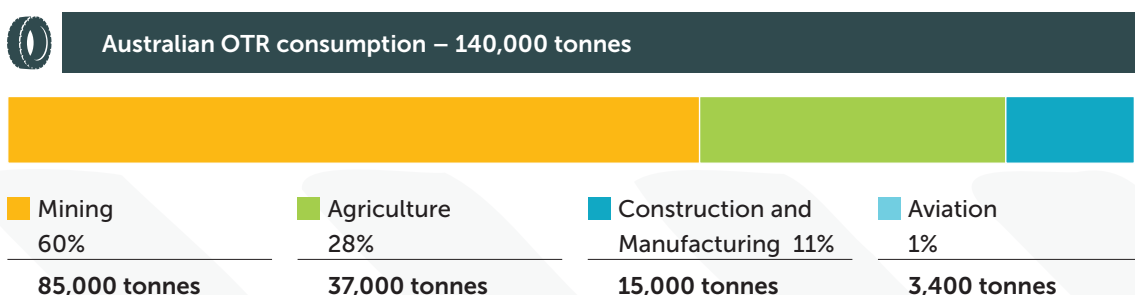


Figure 2. 2018-19 OTR consumption by industry sector

Mining



With almost 400 mines operating across Australia, mining consumes almost 85,000 tonnes of OTR tyres annually - the most of any OTR sector.

Changing on-site mining behaviour away from burying or stockpiling OTR tyres may be the single greatest catalyst to advance resource recovery across all OTR sectors. This, in turn, will encourage investments in processing equipment, technologies and market development.

TSA intends to work with this sector to provide them the necessary support required to advance recovery rates.

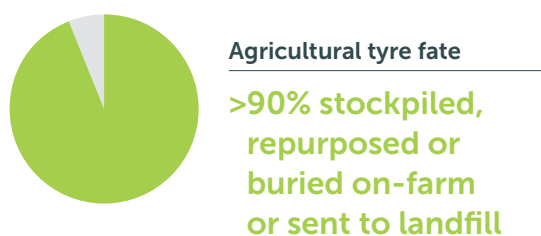
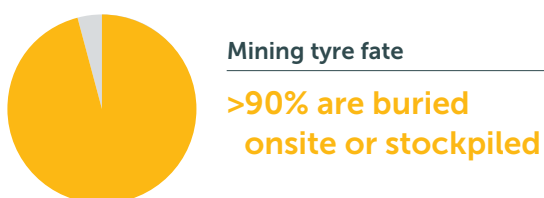
Agriculture



The agriculture sector consumes on average over 37,000 tonnes of tyres, second only to the mining sector.

There are an estimated 85,400 agricultural businesses across Australia, with 371 million hectares of land used for agriculture across the nation.

Replacement tyres are typically fitted on-farm. The cost of back loading and disposing of tyres means that most used tyres stay on-farm and are stored, repurposed, or buried in erosion gullies and similar.





Construction and manufacturing

The construction and manufacturing sectors consume around 15,000 tonnes of OTR tyres each year.

With these industries largely occurring in major cities and close to ports, most end-of-life tyres from the construction and manufacturing industry are exported for processing overseas.

Those end-of-life tyres that remain in Australia are stockpiled or disposed of on site or in landfill. Less than one quarter are recovered for more sustainable outcomes.



Construction and manufacturing tyre fate

~79% exported for processing



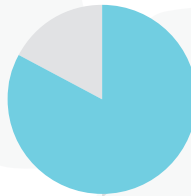
Aviation

Each year, an average 3,400 tonnes of OTR tyres are leased or sold to the aviation sector.

Larger aviation tyres are often leased rather than purchased from the tyre importer. Arrangements include the maintenance of the tyre over its usable life.

Larger aviation tyres are commonly re-treaded up to seven times once a set number of landings have been completed. Speciality overseas facilities provide complete refurbishment of the tyres before being returned to Australia for continued use.

Consequently, the vast majority of end-of-life aviation tyres are exported for processing.



Aviation tyre fate

~83% are exported for retreading and reuse

The problem of end-of-life OTR tyre recovery exists on a global scale. **Australian tyre importers and the OTR sectors will be world leaders with their innovative and sustainable management of used OTR tyres.**



The case for change: Why we need to focus on OTR tyre recovery

The Federal Government's National Waste Policy Action Plan sets the goal of 80 per cent average recovery rate from all waste streams by 2030.

The associated *Recycling and Waste Reduction Bill 2020* – and reforms to the regulation of product stewardship – aim to encourage companies to take greater responsibility for the waste they generate.

The Federal Government has also made clear that where voluntary product stewardship schemes are not effective, it now has tools through which it can intervene and regulate.

TSA's National Tyre Product Stewardship Scheme is voluntary, but TSA believes all tyre importers – big, small and parallel – should contribute and play a part in finding viable solutions.

TSA believes that a further shift in legislation, such as a ban on whole tyres in landfill or more stringent licence conditions in some states, could further help to expedite solutions to current practices.

Community expectations are shifting, and TSA is working with the OTR tyre value chain to find alternatives to burying and stockpiling end-of-life tyres.

The Australian mining, agriculture, construction, manufacturing and aviation sectors now have the opportunity to work constructively with TSA to drive solutions and assist Australia to become global leaders when it comes to recovery of OTR tyres and related products.

Creating sustainable solutions requires engagement from everyone in the OTR tyre sector.

Investments in processing equipment, technologies and markets are necessary if we are to advance greater recovery rates.

There is no quick fix to the challenges of recovering the valuable resources in end-of-life OTR tyres for re-use.

But change makes good business sense, improves environmental outcomes, and meets community expectations. It also helps create new industries and employment opportunities while reducing the environmental harm caused by the onsite dumping of end-of-life tyres.

OTR tyre importers who have agreed to contribute financially have read community sentiment and acknowledge onsite stockpiling or burial of end-of-life OTR tyres is increasingly unacceptable – and unsustainable.

It's less about the value of the contribution; it's how we use it that will really make a difference.

Our vision for the OTR sectors is for real accountability and a commitment to change.

Through its work in the OTR sector, TSA aims to position Australia as the world leader - and leading innovator - in OTR tyre resource recovery.

Those who are partnering with TSA are helping to drive solutions and lead change to ensure the sustainable management, recycling and productive use of end-of-life tyres. These leaders are taking responsibility for their environmental impact and demonstrating real accountability and commitment to change.

An industry-led solution to the challenge of OTR tyre resource recovery will instil public confidence.

Behaviours will change:

OTR tyres will no longer be buried unsustainably or stockpiled because TSA and its partners have helped to create an alternative practice.

Instead, resources from end-of-life OTR tyres will be used and reused through recycling, resource recovery and/or repurposing, ultimately boosting new industries and reducing tyres from the waste stream.

Importantly, innovation, entrepreneurship and market development activities will lead to new OTR tyre-derived products, new markets and new jobs – just as it has done in the passenger, truck and bus sectors.

OUR GOALS

- **Improved resource recovery rates for the OTR sector**
- Expand the Scheme to include all rubber related products such as conveyor belts and rubber tracks
- **Deliver a roadmap to the federal government about how to improve resource recovery in the OTR sector**
- All OTR tyre and related product importers and manufacturers contribute to Scheme
- **Sectors consuming OTR tyres and related products - mining, agriculture, aviation, construction and manufacturing organisations - participate in the Scheme**
- Increased use of Australian tyre-derived products
- **Strengthened collaboration between TSA and the mining industry to explore sustainable solutions for used OTR tyres**
- Agreements with government, private and public procurement policies to support those organisations contributing to the Scheme and increasing productive use of end-of-life tyres
- **State Environmental Protection Authorities consider details in their licences that makes OTR tyre burial less attractive and steers behaviour towards more sustainable outcomes**
- Further commercialisation of TSA's market development projects
- **Further the model for the sector that reflects the true cost of recycling within Australia, encouraging investment and creating local jobs**

How an OTR-sourced levy will stimulate and create the drive for change.

TSA will commit the OTR-sourced levy directly into relevant research and market development programs to address the known barriers to resource recovery and re-use.

TSA will fund projects that will give new life to old tyres, help expand existing markets and create long-term, sustainable new ones.

Through its work supporting and funding OTR tyre collection, processing and enhancing end markets, TSA will support local communities and businesses to create economic and job opportunities that are much needed in the regions where high volumes of OTR tyres reach end of life.

The Scheme levy is based on \$0.25 per equivalent passenger unit, aggregating the levy across the OTR tyres from \$0.75 for a small agriculture tyre to \$50 for a large earth moving mining tyre – making the levy contribution one of the lowest in the world.

From January 2022 TSA will be working with OTR tyre importers who have agreed to contribute to the Scheme and help improve end-of-life OTR resource recovery in Australia.

These importers who have agreed to contribute financially have read community

sentiment and acknowledge that we need to increase OTR tyre resource recovery and create real-world outcomes for this valuable resource.

The Scheme is authorised by the Australian Competition and Consumer Commission (ACCC).

TSA has ACCC authorisation to use the funds from the levy to:

- Understand the existing risks and barriers to improve recycling and how these can be overcome
- Build upon research to develop an industry strategy for mining tyre recovery
- Explore market opportunities for OTR tyre and related rubber products in order to entice greater collection, recycling and investment
- Run pilots and demonstrations to better roadmap possible solutions
- Investigate and identify regional areas with needs for additional recovery infrastructure, to support industry to make funding applications to governments

Innovation, entrepreneurship and market development activities will lead to new OTR tyre-derived products.

New markets and new jobs will be created just as it has done in the passenger, truck and bus sectors.



TSA's mission is to ensure the sustainable management, recovery and productive use of end-of-life tyres.

This includes investing, supporting innovation and increasing demand for tyre-derived products made from used tyres and reduce environmental and social harm caused by the illegal dumping, stockpiling and mismanagement of end-of-life tyres.

TSA collaborates with representatives from across the tyre value chain – including tyre importers, retailers, manufacturers, recyclers and collectors – to drive greater sustainable outcomes and create new products, markets and jobs.

Since its inception in 2013, TSA has worked to improve recovery rates and outcomes for tyres in the passenger, bus and truck tyre sector. The results have been remarkable.

Before TSA's inception less than 50 per cent of the 450,000 tonnes of end-of-life tyres generated in Australia each year were being recovered.

Today, around 90 per cent of all end-of-life passenger, bus and truck tyres are recovered for productive outcomes.

TSA and its 1700 participants continually strive for best practice and to remain accountable against the the Tyre Product Stewardship Scheme guidelines through an established audit and compliance program.

"Product stewardship: the process of taking responsibility for the lifecycle impacts, flows and fates of products or materials. This may involve business, governments and consumers sharing responsibility."

National Waste Policy Action Plan, p35

TSA Market Development

\$7M in funding

- TSA have invested \$7M in 50 major projects

1:4 investment

- For every \$1 million TSA contributes, industry invests \$4 million.

\$16M CR market

- Annual \$16 million market for crumb rubber in roads

This includes the Foreign End Markets program, with a focus on TSA verification for foreign destinations that receive Australian end-of-life tyres.

TSA is focussed on delivering a scheme that aligns with the Federal Government's waste export ban, where Australians take responsibility for their own waste. The ban comes into effect on 1 December 2021.

TSA's strategy is as simple as it is transformational: to play a lead role as an enabling organisation to help industry sectors deliver the best solutions to better manage end-of-life tyres and drive demand for tyre-derived products.

TSA provides funds to enable industry to do what they do best: innovate and find sustainable solutions for end-of-life tyres.

TSA's Market Development Program is committed to real life outcomes for end-of-life tyres.

Market Development underpins TSA's success in lifting recovery rates to 90% in the passenger, bus and truck sector.

TSA's market development fund enables promising local market and product development initiatives that drive value in tyre-derived products – both creating new and building on existing end markets.

TSA supports initiatives that bring together strong partnerships across the value chain, crossing research institutions and industry partners, to demonstrate the technical, environmental and financial viability of products containing tyre derived material.

The big challenge is to create economically viable products and markets that use enough tyre-derived products to consume the amount of used tyres Australia generates annually.

While TSA's market development acts as a catalyst, it's the collaboration, support and participation of many others that transform initiatives into tangible results.

To date, our market development fund has committed more than \$7 million to study and develop innovations to manage the millions of tyres that reach their end of life each year.

This commitment spans more than 50 major projects in manufacturing and mining, rail, research, civil infrastructure and roads.

The commitment TSA has made to the roads sector directly correlates to the demand this sector has for tyre derived material. Finding new and emerging markets for TDP across a wide range of sectors remains a focus for TSA.

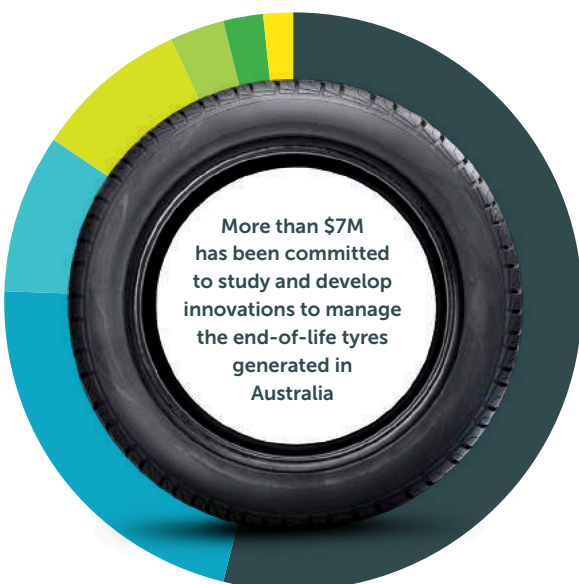


Figure 3. 2020-21 Market Development Funding

- Roads ~\$3.7M
- Civil Infrastructure ~\$1.5M
- Advanced Manufacturing ~\$600,000
- General Research \$600,000
- Explosives \$198,000
- Rail Infrastructure \$160,000
- Mining \$100,000

Case Studies



BLAST PROTECTIVE CONCRETE

Protectiflex is an ingenious product using recycled rubber passenger tyres to produce a spray-on concrete that is blast, ballistic and fire-resistant.

Through funding, TSA supports Flexiroc Australia in its research and development of this ground-breaking product.

Flexiroc managing director Gary Bullock says Protectiflex is a game changer: a one-stop solution that can be sprayed on buildings and structures to strengthen and protect them – and the people within them – from explosions, weapons and ballistics attacks, forced entry and fire.



WASTE TYRE PERMEABLE PAVEMENT

Made from more than 50 per cent recycled material, Porous Lane's product has transformed the sturdiness, elasticity and reliability of the humble passenger tyre into innovative permeable paving.

By including high levels of rubber granules into its formulation, Porous Lane produces a water permeable pavement suitable for lightly

trafficked urban surfaces such as footpaths, bike paths, tree protection zones, driveways, residential and commercial developments and parking lots.

TSA CEO Lina Goodman believes the product has the potential to use around 300,000 end-of-life passenger tyres a year in local government infrastructure.



CRUMB RUBBER IN ROADS

Rubberised road products not only provide quieter, more durable roads, but will also help solve the challenge of dealing with the equivalent of 56 million passenger tyres that reach end of life each year.

TSA has partnered with governments and agencies across Australia to increase the use of tyre-derived products in their road infrastructure with environmental benefit.

TSA market development initiatives continue to create a strong demand for Australian produced crumb rubber in the

roads sector.

In 2020, TSA together with Australian Road Research Board and the Victorian Department of Transport won the Sustainable Transport Infrastructure Award for a road demonstration project in Victoria that used 1600 end of life tyres.

In Tasmania, more than 1240 end-of-life truck tyres have been diverted from landfill, turned into crumb rubber, and used to repair roads across six Tasmanian municipalities in a partnership between Fulton Hogan and Tyre Stewardship Australia.



TyreStewardship
AUSTRALIA



For more information on the Case for Change in Australia's used OTR Tyre recovery, visit :
<https://www.tyrestewardship.org.au/otr>



**Australian
Government
Accredited
Product
Stewardship
Scheme**

Tyre Stewardship Australia's National Tyre Product Stewardship Scheme has been recognised as best practice product stewardship by the Federal government. The accreditation, under the government's new Recycling and Waste Reduction legislation, provides independent verification of the Scheme's positive environmental and human health outcomes and will help TSA expedite the markets, funding and solutions associated with end-of-life tyres.