Sustainable Tyre Disposal: Developing a Circular Economy Model for Regional Victoria

Tyre Stewardship Australia

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Improve our understanding of end-of-life tyres (EOLTs) in regional Victoria

TSA data 20/21 FY: Tyres in Regional Victoria	
Collections	1,694
Known tyres	4,449 tonnes
Contractor collecting the most tyres	Tyre Crumb
Contractor travelling the most	Tyrecycle Vic (Somerton)
Suburb with most tonnes collected	Shepparton
Collection point with the most tonnes collected	Bridgestone Service Centre Shepparton
Region with the most tonnes	• Hume with 23.07% • Loddon Mallee with 23.05%

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Develop circular economy solutions for EOLTs in regional Victoria

Trials workshopped
Mildura
Engaging local processors
Collection and processing at a Council Waste Management Facility
Warrnambool
Engaging a local processor
Collection and processing at a Council Waste Management Facility

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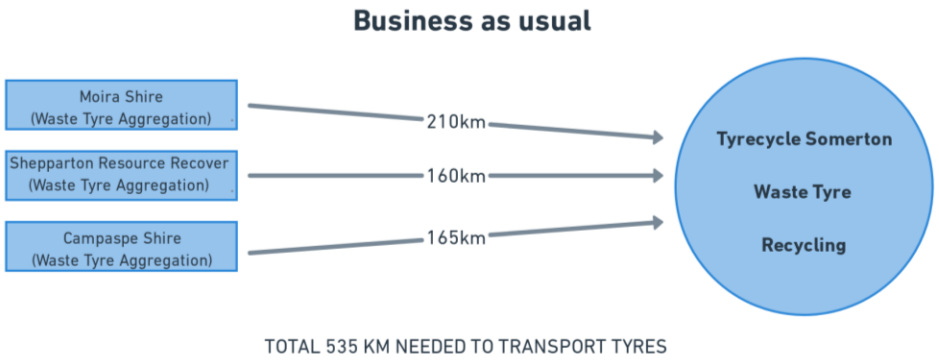
Develop circular economy solutions for EOLTs in regional Victoria

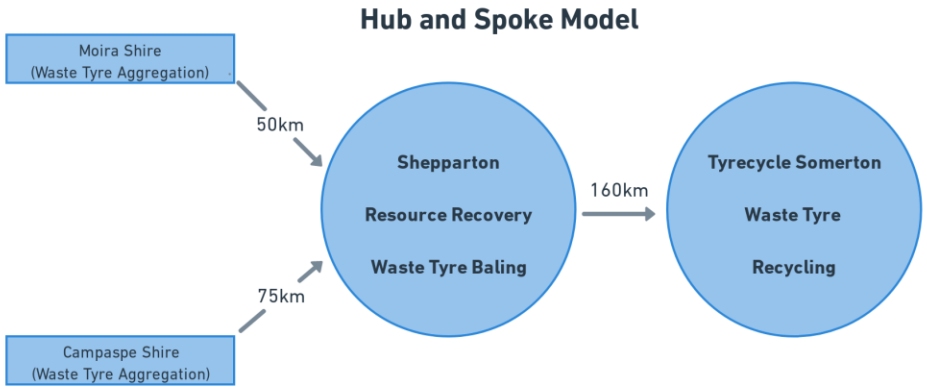
Shepparton trial

Business as usual



TOTAL 535 KM NEEDED TO TRANSPORT TYRES

Test Trial



TOTAL 285 KM NEEDED TO TRANSPORT TYRES

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Reduce costs to sustainably manage EOLTs in regional Victoria

Reduction in transport as well as costs linked to it:

- Baling would reduce travel by nearly 5 times
- Shredding would reduce travel by about half

Increase on-site and/or regional uptake of producing recycled products

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Reduce costs to sustainably manage EOLTs in regional Victoria

Trial transport compared to BAU for Costing and KM			
	Total Costs to transport and process 341 EPUs	Total KM Driven	Total GHG emissons
Unit	$	KM	kg CO2e
BAU (pick up from each council and individually drop off at there current recycler)	$2,566.50	636.00	884.41
Trial (Hub and Spoke model) ($/invoices)	$7,493.12	285.00	396.32
Total Change	$4,926.62	-351.00	-488.09
Total Change (%)	192%	-55%	-55%

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Reduce costs to sustainably manage EOLTs in regional Victoria

1 hour trial (de-baling) compared to BAU (unloading truck) for processing tyres at Tyre Cycle		
	EPUs processed in a hour	Processing Cost per 100 EPU in an hour *
Unit	No. Tyres	$
BAU (unloading tyres from truck into tyre pile)	1000	$6.60
Trial (unloading tyres from truck, de-baling, stacking tyres then moving to tyre pile)	445	$14.82
Total Change	-555	$8.22
Total Change (%)	-55%	125%
*Forklift was not considered		

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Understand opportunities to leverage other product stewardship program logistics

This is not applicable for tyres given the nature of the product as well as regulatory requirements (e.g. EPA waste tracker).

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Increase recycling of tyres from regional Victoria by reducing landfilling and stockpiling

Optimising transport allows for a reduction in:

- Number of trips needed to transport tyres
  - 80% with baling
  - 50% with shredding
- Reduce freight km and overall costs of transport
- Reduce greenhouse emissions

Increased access to be able to recycle tyres = reduction in landfilling and stockpiling

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Project highlights and failures

Highlights	Failures
• Understanding how major barriers • Understand tyres in regional Victoria • Understanding current technologies and industrial capacities • Informal conversations • Workshopping trial ideas • Positive baling reactions • Increased contacts in the region • Increased understanding of operations • Emerging processes and technology • Reduction in manual handling	• External barriers • Gaps in data • Failed trials • Foundering communication • Hesitancy • Staff shortages • Transportation • Delivering on the full range of tyres • Find and engage suitable project partners • Logistics confusion • Increase in process costings for recyclers

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Environmental benefit to the region for sustainably managing EOLT

Increase opportunities for EOLT	Reduce issues with EOLT
Responsibly deal with the product	Dumping
Accessible pathways	Stockpiling
Quality of tyres at EOL	Tyres going to landfills
Circular economy	Carbon impact
Life of the product	Hurt or killed animals
Safety	Transport

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Lessons learned

- **Lesson one:** Workshopped ideas in the future need to consider barriers found via this project
- **Lesson two:** Understanding of where tyres are, how far they are travelling, as well and who are the main recyclers
- **Lesson three:** There is now further understanding of why it is so difficult to deal with EOLT in regional Victoria
- **Lesson four:** Practices need to change, in line with changes to recycling practices in the industry and in Australia
- **Lesson five:** Difficulties associated with finding a suitable transporter
- **Lesson Six:** Consideration needs to be put in to factor the increase in processing costs to the recycler if de-baling is done on-site

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Recommendations

- **On-site collection systems:** To store tyres more efficiently and safely on site
- **Collection site transport efficiency:** rather than removing tyres from the cage, swapping a full cage with an empty one
- **Backloads:** Using trucks that are returning empty into Metropolitan Melbourne
- **On-site processing:** Such as, mobile shredding on-site to increase truckload efficiencies

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