Building sustainable roads - recycled materials

Roads Australia Webinar: How collaboration is expanding the circular economy

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The Department of Transport and Main Roads acknowledges the traditional owners and custodians of this land and waterways.

We also acknowledge their ancestors and Elders both past and present.

The Department of Transport and Main Roads is committed to reconciliation among all Australians.

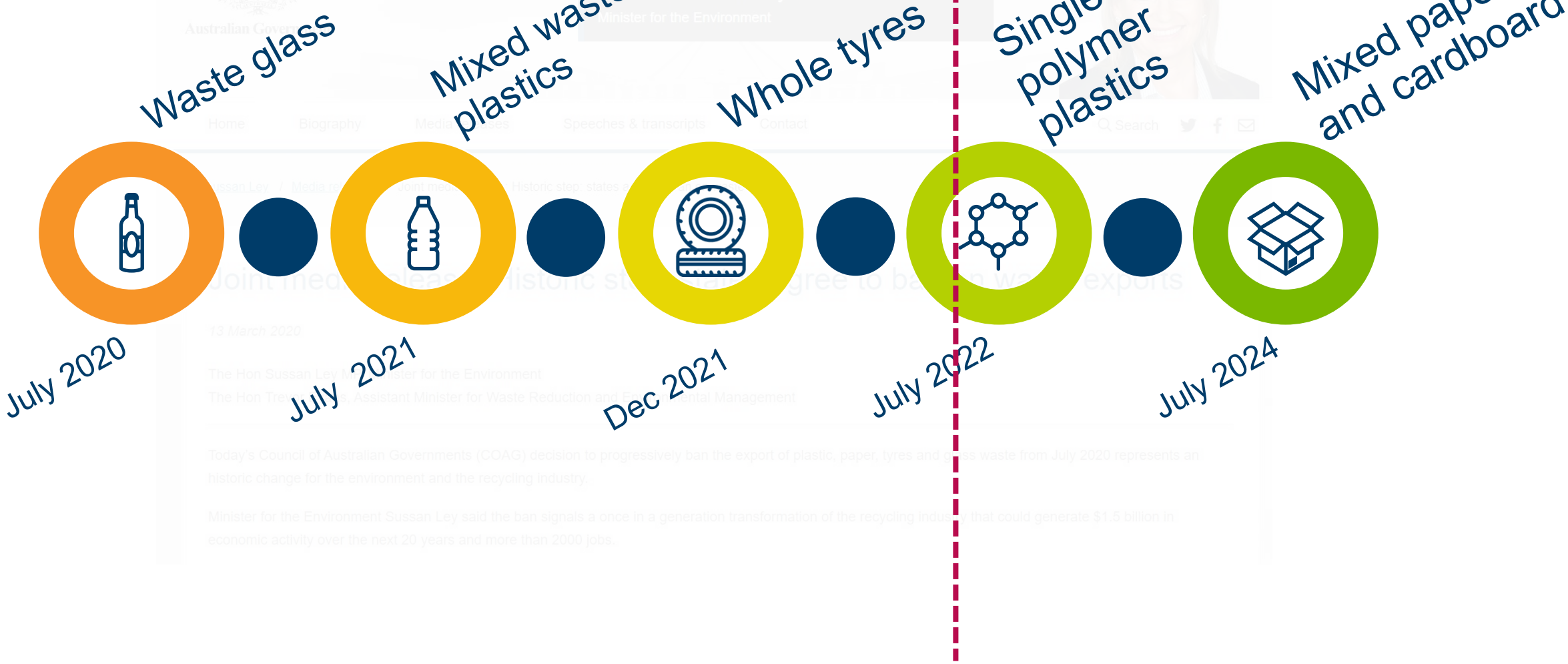
About us

Drivers for change

Images: Various government plans and policies. Sources: Australian and Queensland government webpages.

Image: Brisbane 2032 news article. Source: Climate Change Council webpage.

Waste export ban



Our principles for using recycled materials

The end result provides as good, if not better, performance than conventional materials.

They do not harm the environment, the community or workers.

They do not cause operational issues in the longer term (such as contaminated land).

They are ‘re-recyclable’ at the end of life.

So what can we recycle (on TMR projects)?

Application	Recycled material								TMR Specification
	Crushed concrete	Crushed brick	Crushed glass	RAP	Crumb rubber	Fly Ash and Slag	Insitu material	Recycled plastic	
Unbound pavements	✓	✓	✓	✓	-	-	-	-	MRTS05, MRTS36
Sprayed sealing	-	-	-	-	✓	-	-	R	MRTS11, MRTS18,
Asphalt	-	-	✓	✓	R/D	✓ (As filler)	-	R	MRTS30, MRTS32, MRTS36, MRTS101, MRTS102, MRTS103, MRTS18, PSTS112
Concrete	R	-	R	-	-	✓	-	✓ (As fibre)	MRTS70*
Concrete Pavements	-	-	-	-	-	✓	-	-	MRTS39, MRTS40
Stabilisation	✓	✓	✓	✓	-	✓	✓	-	MRTS07B, MRTS07C, MRTS08, MRTS09, MRTS10
Earthworks, drainage and backfill	R	R	✓	R	-	-	✓	-	MRTS03, MRTS04
Geosynthetics	-	-	-	-	-	-	-	✓ R	MRTS27 MRTS58 MRTS100 MRTS104
Crack & Seat/Rubblisation (Concrete pavements)	-	-	-	-	-	-	R/D	-	
Other (including road furniture)	-	-	-	-	-	-	-	R	

✓ = currently permitted within specified limits/uses R = Research underway D = Demonstration projects underway

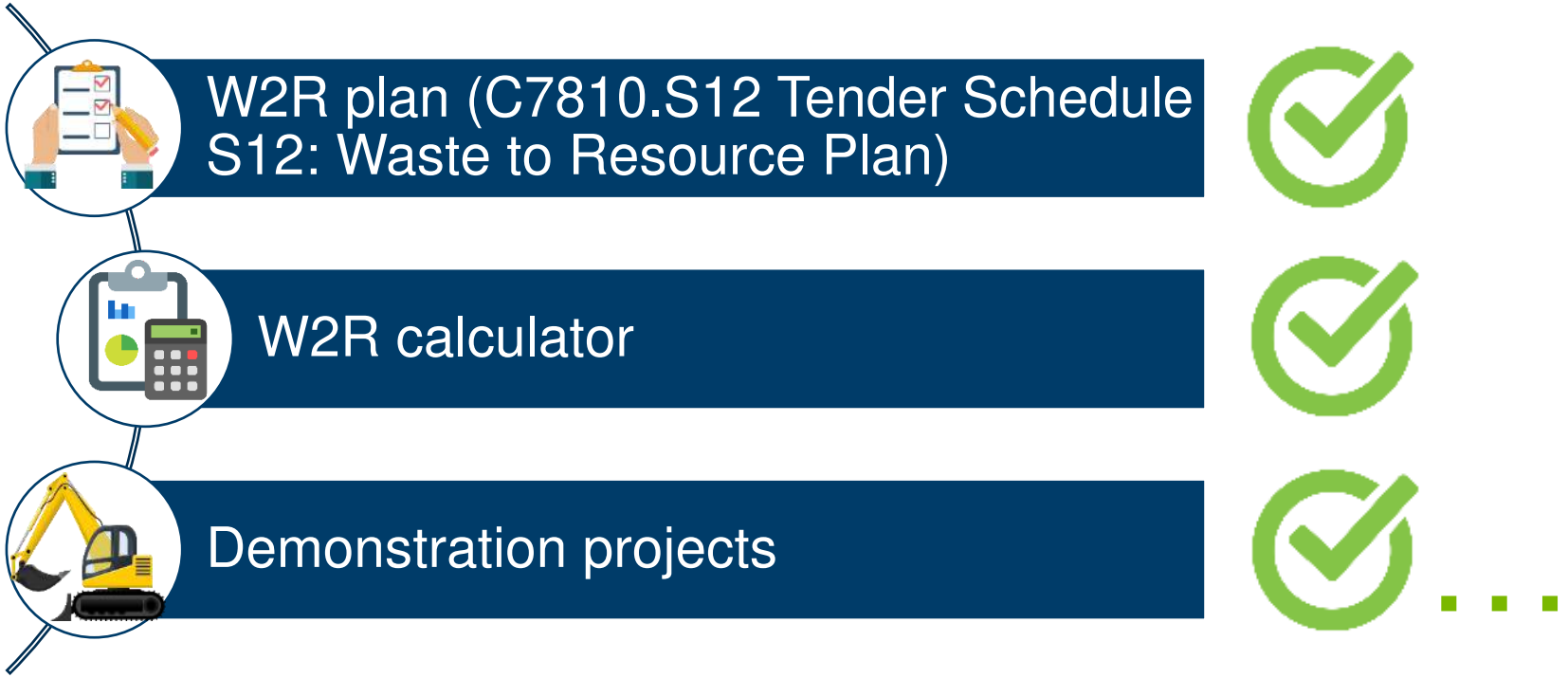
Waste 2 Resource Strategy

W2R strategy in transport infrastructure

TMR prefers the use of recycled materials (over conventional materials) where they are:

- permitted in accordance with TMR's technical specifications
- cost competitive with conventional materials
- available in quantities applicable to the specific project.

Quick wins:



W2R tender schedule – example: unbound pavements

Table 1 – Estimated Recycled Material Use

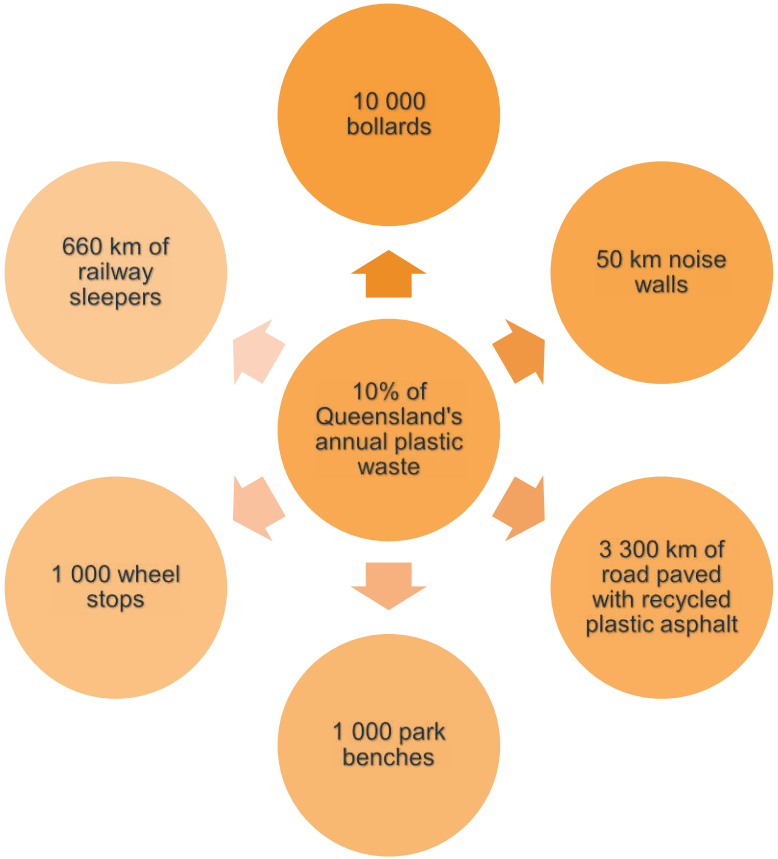
Product	Specification	Potential recycled material	Maximum allowable percentage (per unit)	Percentage proposed to be used (per unit)	Amount planned to be used (approx.) – tonnes or cubic metres	Reason not used to maximum allowable percentage
Unbound Pavement Materials						
Subtype 2.1	MRTS05	Recycled Concrete	100% ^			
Subtype 2.2	MRTS05	Recycled Concrete	100% ^			
		Recycled Brick	15% ^			
		RAP	15% ^			
Subtype 2.3	MRTS05	Recycled Concrete	100%			
		Recycled Brick	20%			
		RAP	20%			
	MRTS05 / MRTS36	Recycled Glass	20%			
Subtype 2.4	MRTS05	Recycled Concrete	100%			
		Recycled Brick	45%			
		RAP	20%			
	MRTS05 / MRTS36	Recycled Glass	20%			
Subtype 2.5	MRTS05	Recycled Concrete	100%			
		Recycled Brick	45%			
		RAP	45%			
	MRTS05 / MRTS36	Recycled Glass	20%			

Also applicable for:

- stabilised (bound) pavements
- asphalt and sprayed seals
- concrete (structural, non-structural and pavements)
- earthworks, drainage and landscaping.

Waste plastics

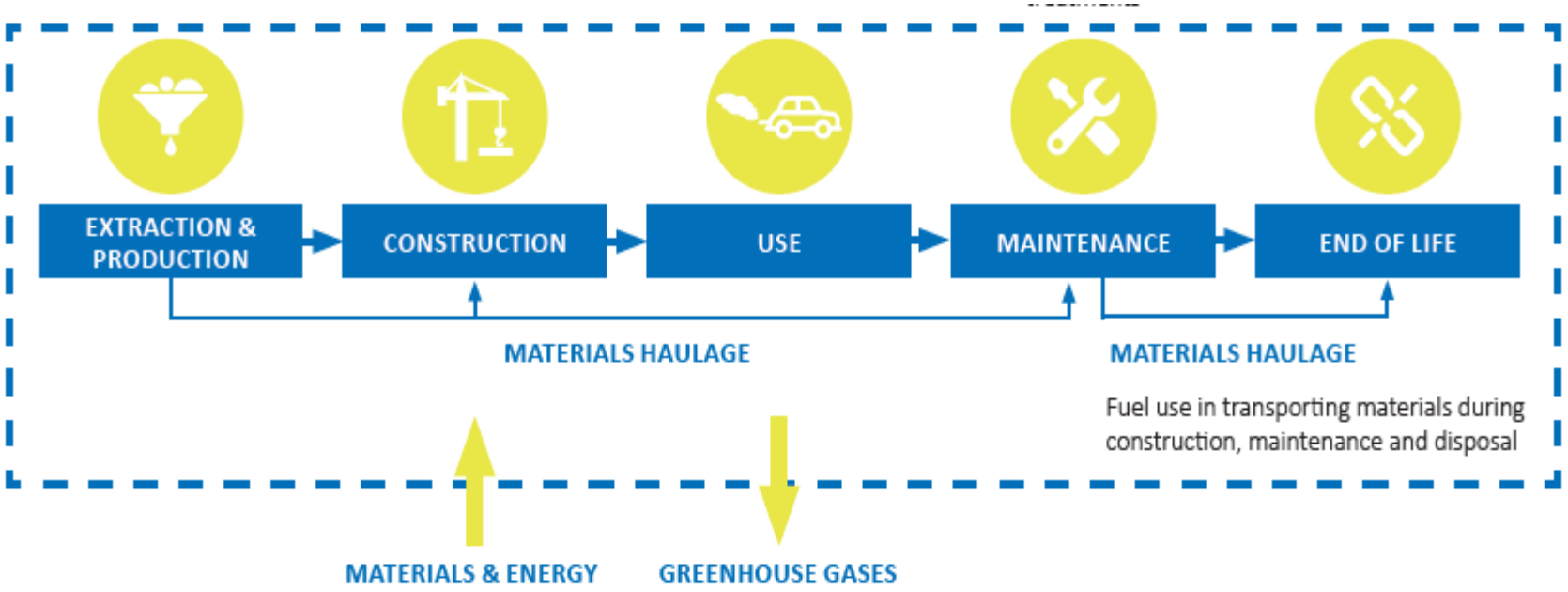
- The waste plastics problem is complex.
- There are multiple potential uses.
- Use in roads alone isn't going to solve the problem e.g.:
  - Using 6% plastic in all bitumen would use only two to three per cent of waste plastic.



(Image sources: refer TMR Technical Note 193)

Sustainability Assessment Tool

- Comparative life cycle assessment of pavement design options.
- Enable greater consideration of sustainable / innovative materials and technologies.
- Public launch is anticipated October 2022.



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More information

- Website – tmr.qld.gov.au/Buildingsustainableroads
- Recycled material factsheet
- TMR's Technical Note 193 Use of Recycled Materials in Road Construction
- TMR's specifications – https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Specifications

Thank you
and stay connected

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