# Measuring Circularity for Roads

## Ecologiq Supplier Showcase 2023

Close the Loop

Close the Loop GROUP
Create Recover Reuse

THE CIRCULARS 2019
FINALIST

An initiative of
THE FORUM OF
YOUNG GLOBAL LEADERS

The Circulars
In collaboration with Accenture Strategy
Sponsors: Dell | Ecolab | Gulf International Bank
Media Partners: CNBC | Fortune

TonerPlas®

Steve Morriss
Head of Circular Economy
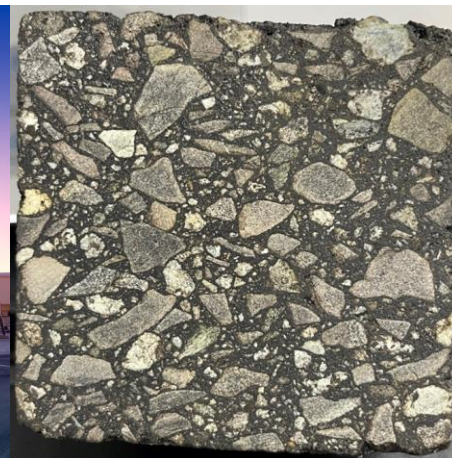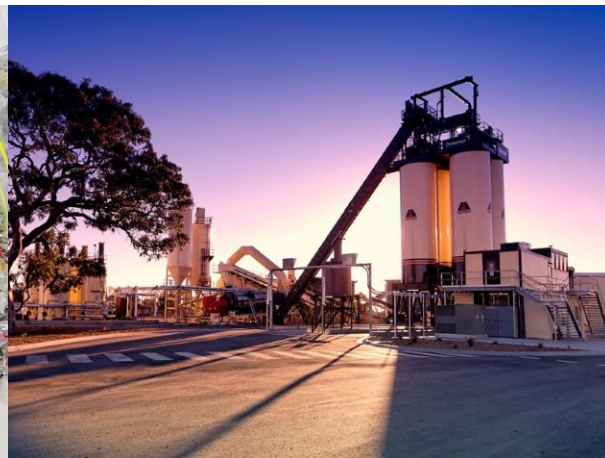steve@closetheloop.com.au

# TonerPlas®

- Our 10 year overnight success
- Driven by our founding brand promise (Zero Waste to Landfill)
- Patented on 3 continents
- Numerous and significant barriers to overcome to get to market
- Features and benefits
  - Increased resistance to deformation
  - Increased fatigue life, increased asset life
  - Reduced whole of life cost
  - Reduced bitumen, reduced CO2e, reduced footprint
  - Diversion of valuable atoms and molecules from landfill
  - Increased resistance to water – better bonding of stone
  - 1000's of KM's laid around Australia without a single issue

# What happens **downstream** is the key



POST-CONSUMER
SOFT PLASTICS MATERIAL
TAKE-BACK & SHRED

PROCESSED AT
CtL

TonerPlas®

TURNED INTO ASPHALT
IMPROVEMENT AGENT FOR ROADS

CAN BE RECYCLED AT
EVENTUAL END OF LIFE

rFlex™

TURNED INTO PLASTIC RESIN
FOR MAKING NEW PRODUCTS

CAN BE RECYCLED AT
EVENTUAL END OF LIFE

# Advanced (Mechanical) Recycling

New Australian Technology
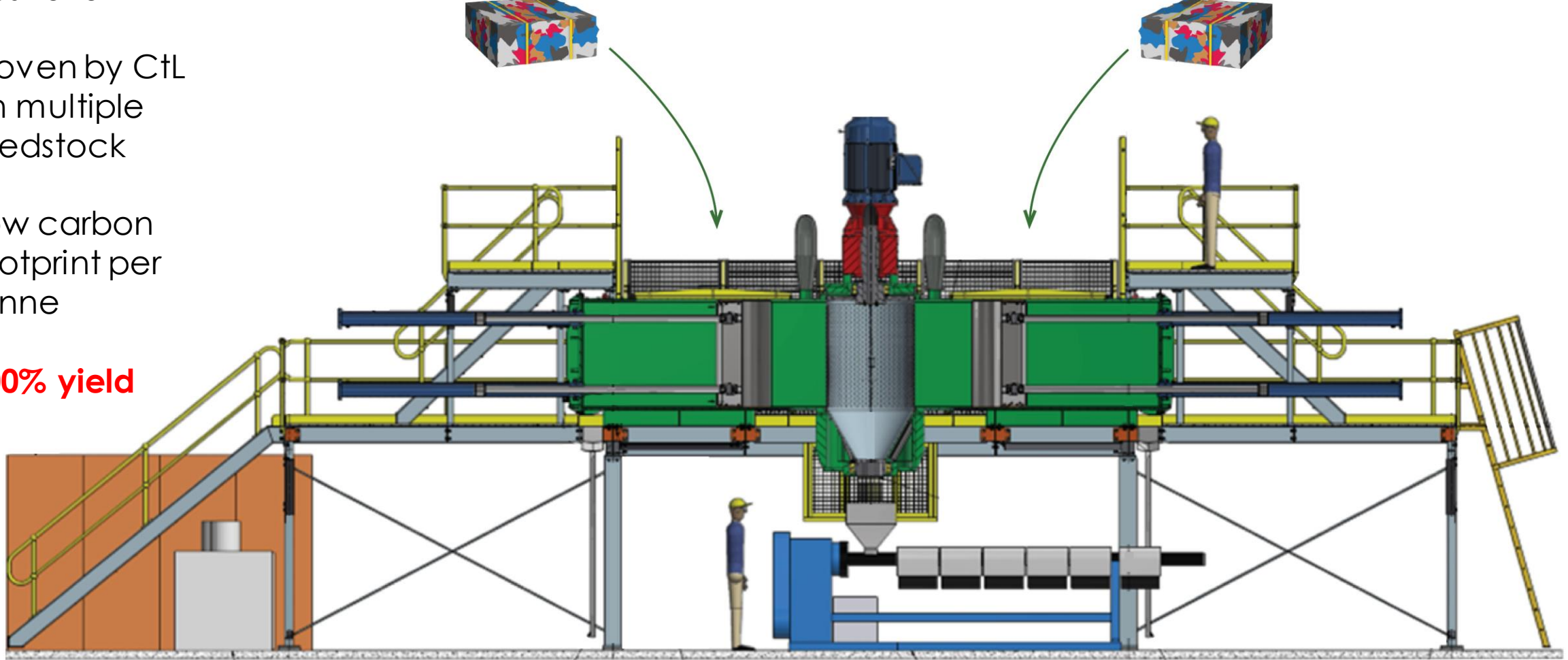
Made in Australia

Proven by CtL on multiple feedstock

Low carbon footprint per tonne
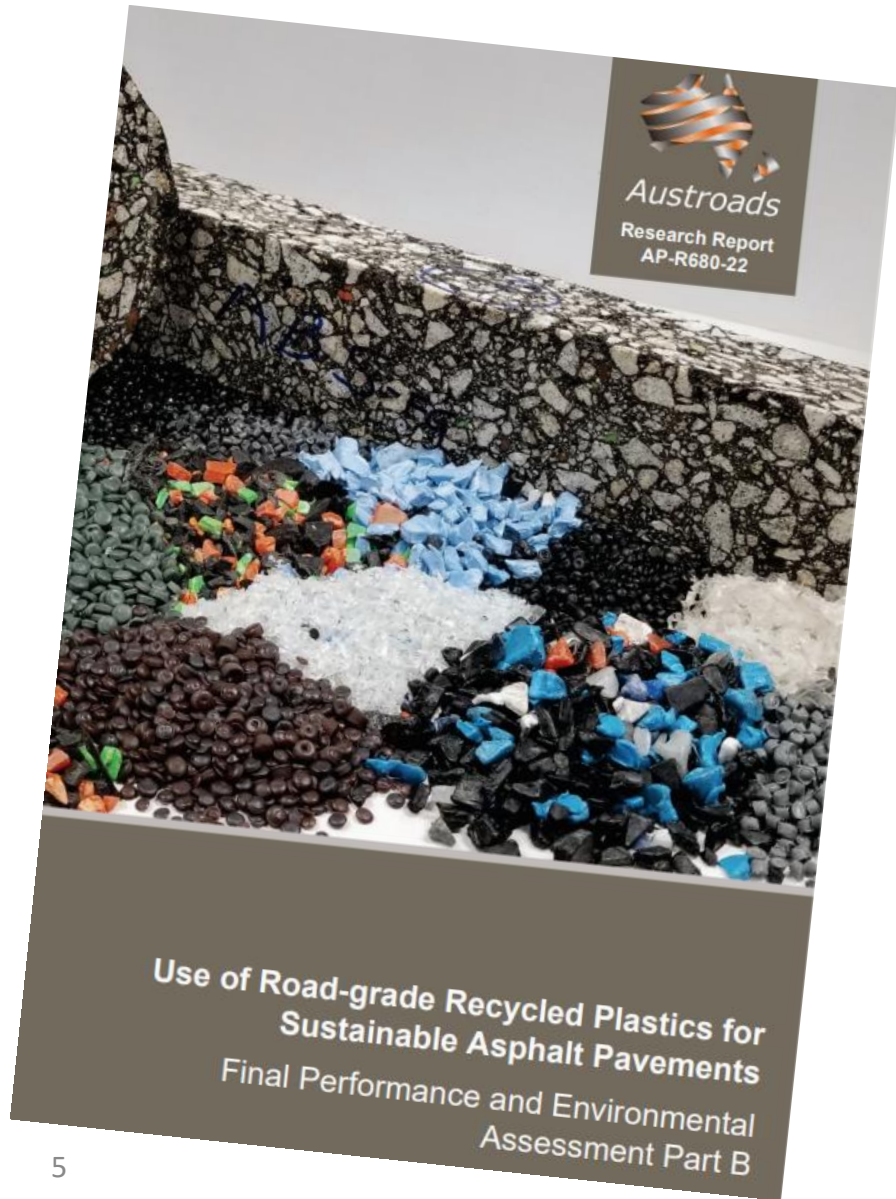
**100% yield**



Soft plastics bale

Soft plastics bale

# Tailwinds



Austroads Research Report AP-R680-22
Use of Road-grade Recycled Plastics for Sustainable Asphalt Pavements
Final Performance and Environmental Assessment Part B



Austroads Technical Report AP-T375-23
National Harmonisation of Test Methods Used in Asphalt Performance Specifications



Close the Loop

- What is Circularity
- Why do we need to consider Circularity?
- The 3 pillars of Circularity
    1. Design out waste
    2. Keep products and materials in circulation
    3. Regenerate living systems
- Qn. How do we manage our transition to a circular economy?
- Ans. Start to measure it!
    - It's one of many important steps

# What we did

- We measured the circularity of Reconophalt using MCI

- The MCI tool measures how well a product <span style="color:red">avoids consuming non-renewable resources</span>

- It measures how well a material or product <span style="color:red">avoids creating waste</span>

- From 0 to 1.0, so small improvements are impactful

- We tested an AC10H vs AC10H Reconophalt

- We assumed both were recycled as RAP at EoL

- We assumed both included 20% RAP

- Just measuring your product enables ISC Innovation points



Reconophalt
Material Circularity Indicator (MCI)

Created by thinkstep-anz on behalf of Close the Loop & Downer

ZP103355
August 2023
CONFIDENTIAL

# What we found

- We know that TonerPlas has many benefits for any road, including improved fatigue life which correlates to increased resilience (using Circly design tools)

- We learned that increased resilience = increased serviced life = improved circularity score (0.64 to 0.68)

- Increased service life could also mean the same service life with a thinner asphalt, which means an owner can get the same performance with less materials, between 5 and 12% less materials.

- NB. The circularity gap represents the materials that continue to be virgin, non-renewable feedstock. Our opportunity for improvement
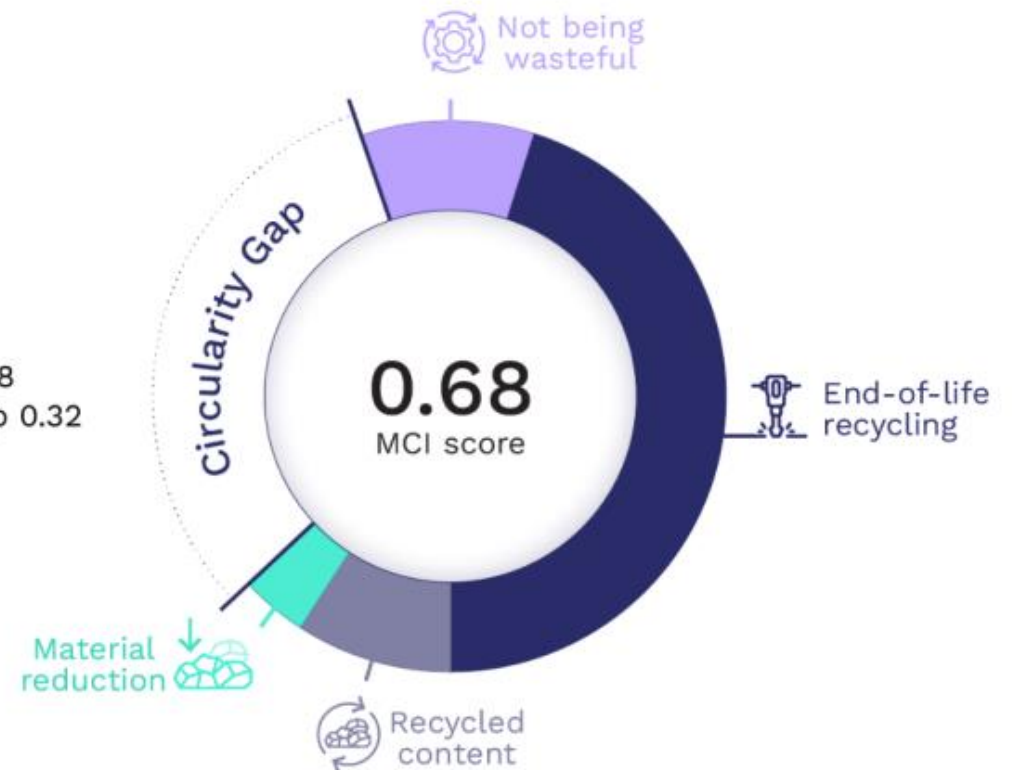


CIRCLY 7
a New Era in Pavement Design

**Reconophalt**
20 Years

MCI score 0.68
Circularity gap 0.32

Circularity Gap

Not being wasteful

End-of-life recycling

Recycled content

Material reduction

0.68
MCI score

# What are the benefits of doing this?

- Low carbon asphalt is a popular and important objective

- LCA's and EPD's are common reporting tools

- MCI is a new tool to help make impactful changes in design to achieve lower carbon asphalt. In fact calculating materials circularity helps the industry reduce many impacts, including carbon.

- The key to better materials circularity is:-
    1. Make longer lasting but 100% recyclable asphalt
    2. Design out waste
    3. Avoid using non-renewable resources

# Circular Contracts - The future of collaboration as we transition to a Circular Economy



**Building a Circular Greater Bendigo**

DELIVERING CIRCULAR ECONOMY SOLUTIONS FOR THE WIDER REGION IN A POST-LANDFILL ENVIRONMENT

EOI BRIEFING DOCUMENT

- The partners share responsibility for collecting, baling, processing, and reusing
- Must engage all arms of the octopus
- Your council or company could do it too

Soft Plastics collected in Bendigo and surrounds

Soft plastics decontaminated and baled in Bendigo and surrounds

Bales shipped to CtL in Somerton VIC

Bales unloaded at CtL and data captured

CtL makes TonerPlas and rFlex from mixed soft plastics

Finished products shipped back to Bendigo and surrounds for reuse in roads and other

Please talk to us about the benefits of using TonerPlas in your roads today

As all the Govt procurement guidelines are saying:-

"If not, why not?"

**steve @closetheloop.com.au**