

Circularity

2023

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AUSTRALIAN
CIRCULAR
ECONOMY
HUB
PLANET ARK

21 NOV | 7:00 - 8:30 AM

Industry Breakfast: Technologies for a Circular Economy

Moderator



Dr. Nicole Garofano

Planet Ark Environmental
Foundation & the ACE Hub



Steve Morriss

Close the Loop



Andy Hill

Planet Price



Tim Lee

Utilitarian



Laurissa Mirabelli

Polestar



Andrew Hanratty

Mint Innovation

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Adam Culley

Planet Ark Environmental
Foundation

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CE Tech

1. Turning problematic waste into value
2. Materials Circularity Indicators
3. Circular agreements (contracts)



Close the Loop



Close the Loop GROUP

Create Recover - Reuse



TonerPlas®

Steve Morriss – steve@closetheLoop.com.au (0414 445 642)

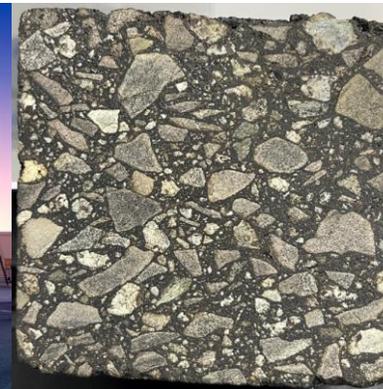
TonerPlas®

- Our 10 year overnight success
- Driven by our founding brand promise (Zero Waste to Landfill)
- Patented on 3 continents
- Numerous and significant barriers 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

Downer



Close the Loop



Advanced (Mechanical) Recycling

New Australian Technology

Made in Australia

Proven by Ctl on multiple feedstock

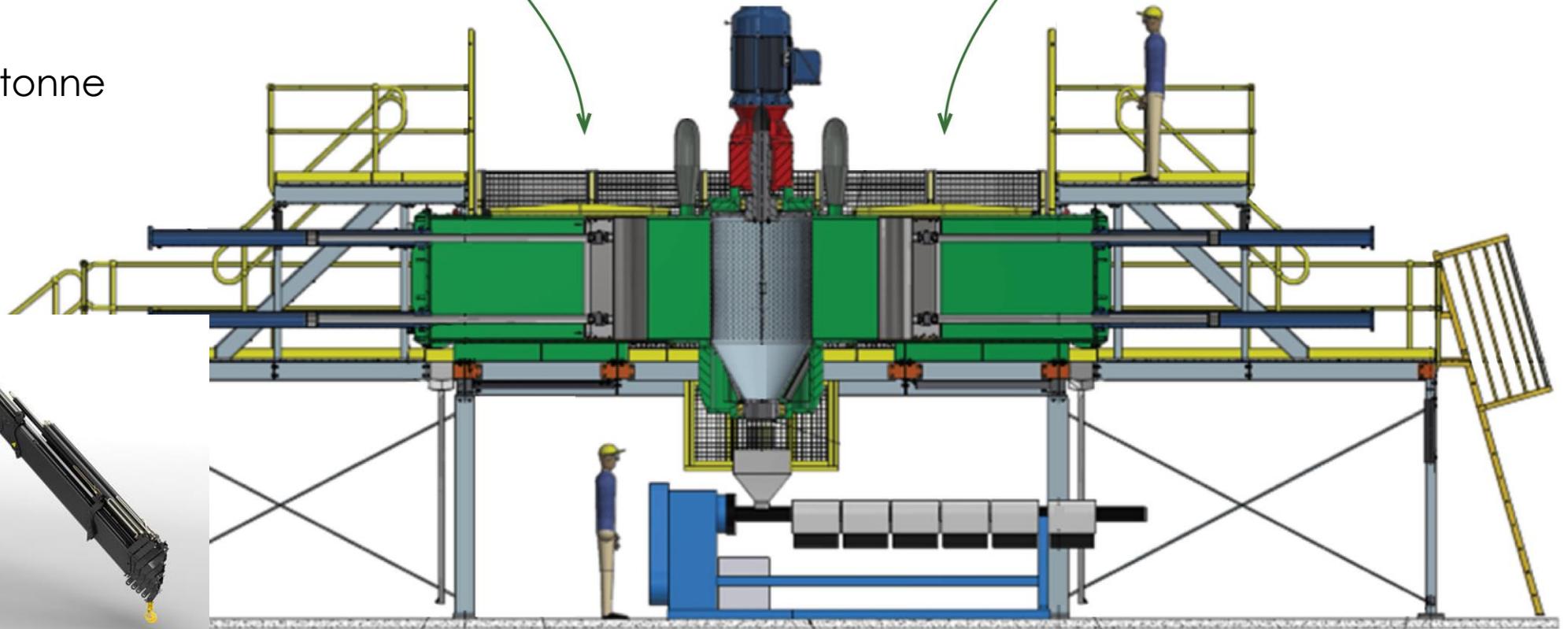
Low carbon footprint per tonne

100% yield

Soft plastics bale



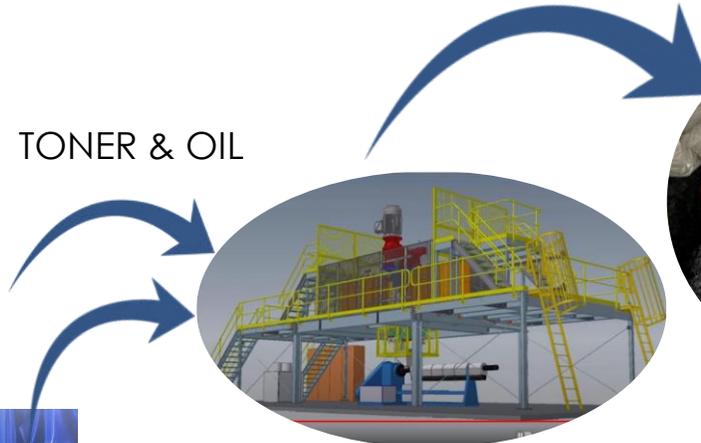
Soft plastics bale



What happens **downstream** is the key



TONER & OIL



PROCESSED AT
CTL



TURNED INTO ASPHALT
IMPROVEMENT AGENT FOR ROADS

CAN BE RECYCLED AT
EVENTUAL END OF LIFE

TonerPlas[®]



POST-CONSUMER
SOFT PLASTICS MATERIAL
TAKE-BACK & SHRED



rFlex[™]

TURNED INTO PLASTIC RESIN
FOR MAKING NEW PRODUCTS

CAN BE RECYCLED AT
EVENTUAL END OF LIFE



No recycling without end markets

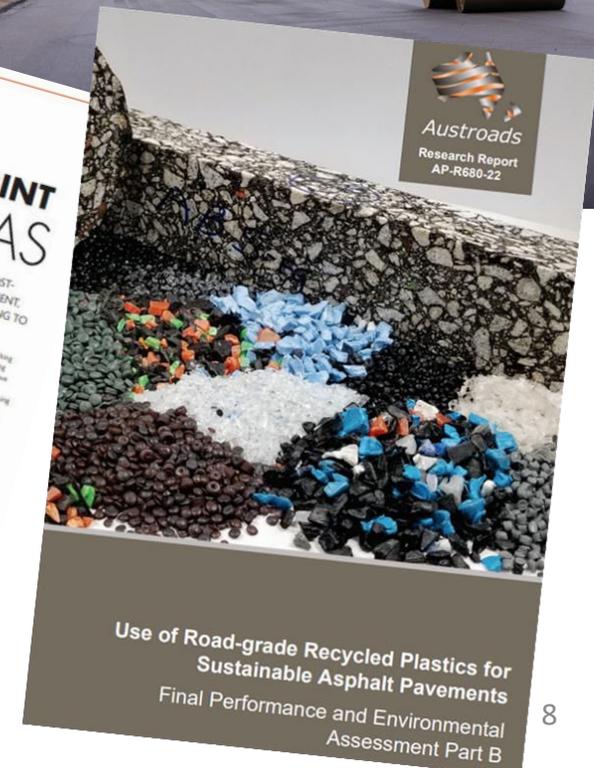


Woolworths



Focus on Circular Economy

- Local Government
- State Road Authorities
- Contractors
- Downer (direct to asphalt and in binder)
- All asphalt companies



MCI – Materials Circularity Indicator

- We measured the circularity of Reconophalt using MCI
- The MCI tool measures how well a product **avoids consuming non-renewable resources**
- It measures how well a material or product **avoids creating waste**
- And it measures the **resilience / longevity** of a product or material
- From 0 to 1.0, so small improvements are impactful. TonerPlas helped standard asphalt go from 0.64 to 0.68
- The key to better materials circularity is:-
 1. Longer lasting but 100% recyclable asphalt
 2. Design out waste
 3. Avoid using non-renewable resources

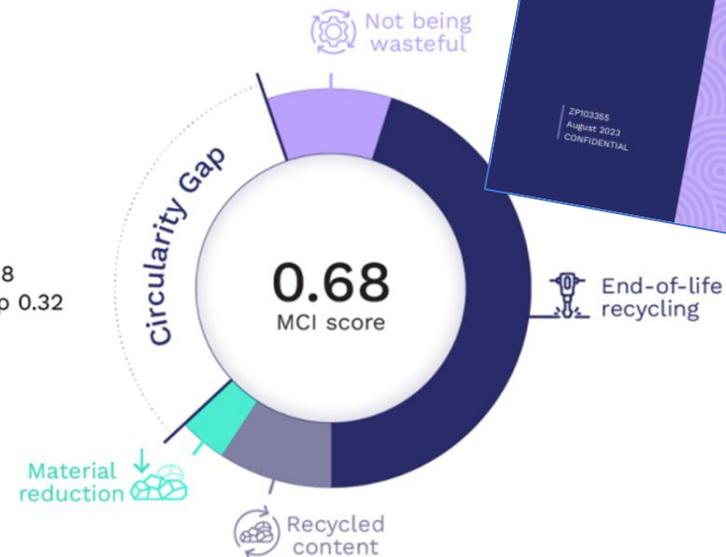


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Reconophalt
20 Years

MCI score 0.68
Circularity gap 0.32



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



Close the Loop

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
- Council buys back TonerPlas at same rate as supplying plastic waste



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



TonerPlas is a proven, Australian, circular economy innovation

It's now time to leverage off our existing work and take it to the next level



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Calculating the **real** cost of everything
Circularity 2023

Andy Hill, Founder
andy@planetprice.io

A unique algorithm to calculate the hidden environmental costs of purchases



Single financial metric



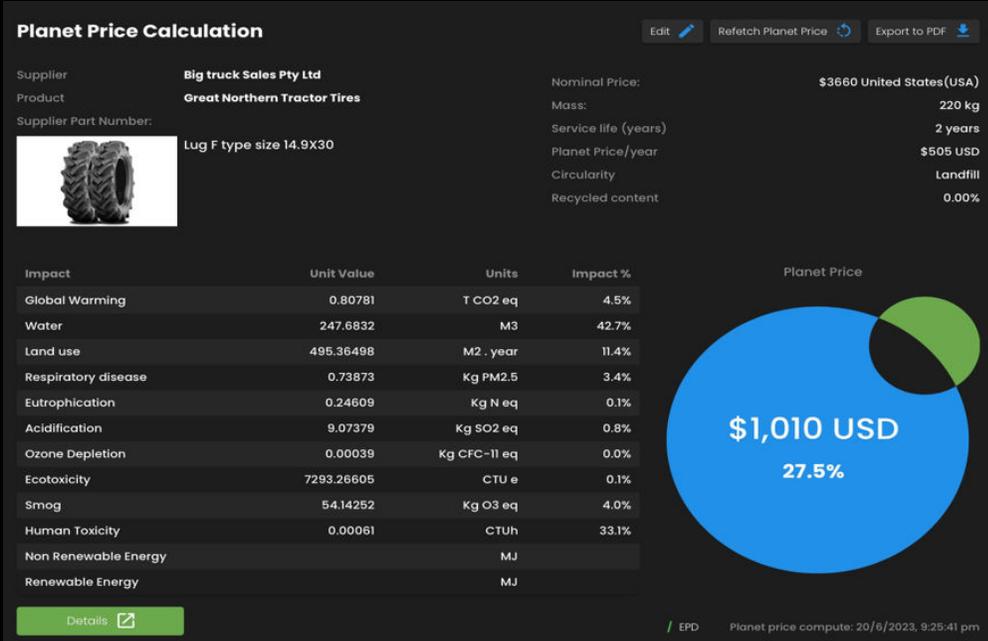
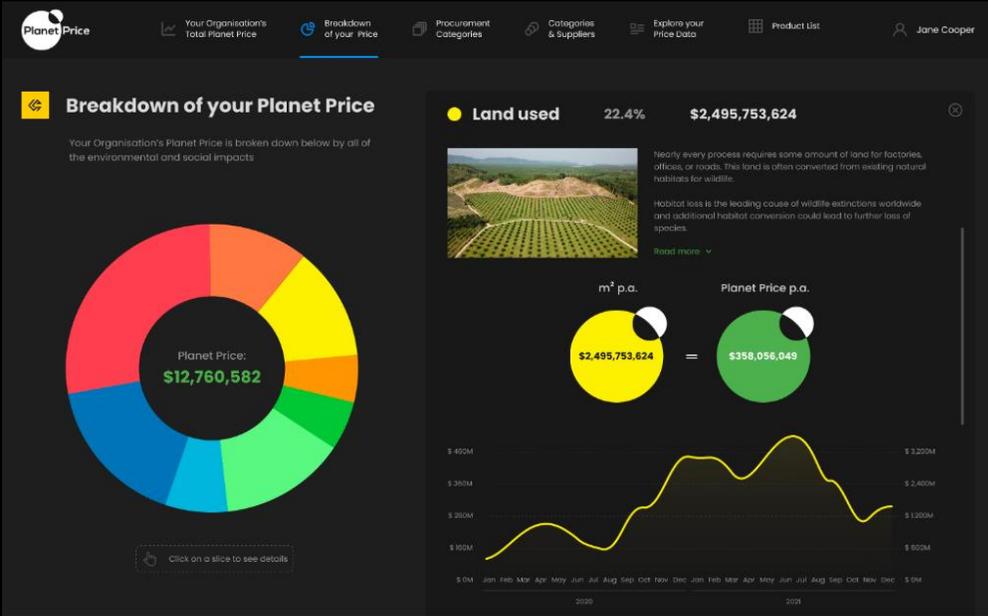
multiple planetary boundaries



high-level and hi-fidelity analyses



AI data mapping



From Sustainable to Circular Procurement

Planet Price Use Case Examples



Scope 3 GHG Emissions

Various, Worldwide



Green Infrastructure

Industrial, South Africa



Procurement Hot Spot Analysis

Various, Worldwide



Bulk Material Analysis

Councils, Australia



Office de-fit

Partner, Australia



Bridge Project

Engineering Co., Australia



Bikeway Project

Engineering Co., NZ



Recycled Products

Electronics Supplier, Australia

Planet Price Circulator™



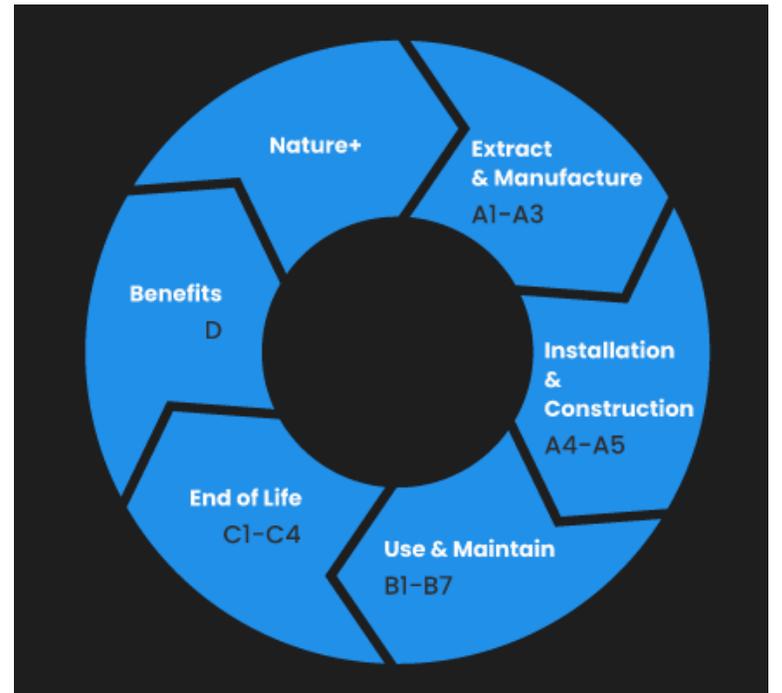
A comprehensive project tool for calculating lifecycle planetary impacts

Under development now...seeking collaborative partners!

Capabilities



Benefits



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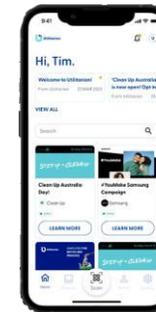
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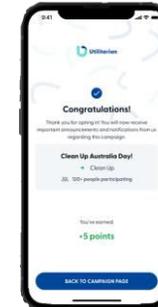
1. Engage



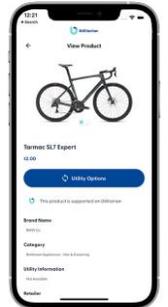
2. Activate



3. Reward



4. Retain



Customer Expectations, Legislation, Traditional Channels New requirements / Tech – same customer challenges

Brand D2C Circular Economy Platform

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Andrew Hanratty

Mint Innovation



mint

Accelerating circular green metals

Andy Hanratty
Global Head of Business
Mint Innovation

Building the future of e-waste recycling

We are expanding our pioneering technology to accelerate the circular supply of green metals globally.

Our vision

To be the world's leading provider of circular green metals.

Our solution

Our proprietary clean technology uses natural biomass and smart chemistry to extract green metals from waste, accelerating circular domestic supply.

Our philosophy

Nothing new needs to be sourced when you make the most of what's already in circulation. We repurpose metals otherwise destined for landfills or incinerators into circular green supplies.

Minerals underground are rapidly depleting

- 80% of known gold exists above ground
- Demand for copper is forecast to overtake supply
- Less than 20% of metals that exist in electronics are recycled
- The mining sector is responsible for 4-7% of greenhouse gas (GHG) emissions globally.



Mint enables the supply chain to support current & future industries

- Climate and geopolitical change are driving a paradigm shift in raw materials use and reuse
- The global economy is electrifying and decarbonising
- Domestic supply chains are vulnerable

Five steps, one impact loop:

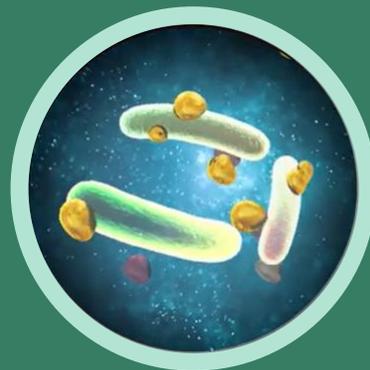
Mint deploys a fully scaled and IP-protected extraction process that takes e-waste feedstock, grinds it up to expose the particles, and then selectively recovers critical materials through biosorption and smart chemistry, all whilst recycling used chemicals for further processing.



Input:
Add printed circuit
boards



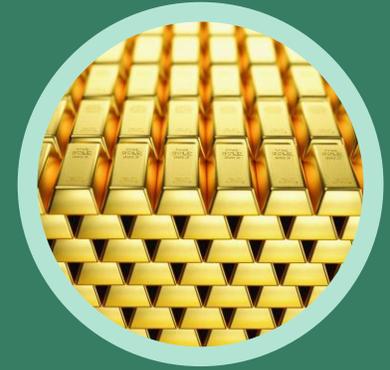
Grind into small particles



Biosorption carefully
selects gold particles



Acid leaching process
applied



Output:
Valuable metals

The world's first biorefinery

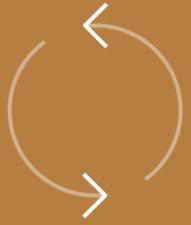




Low Carbon

Mint's clean technology releases up to 90% fewer carbon emissions than traditional methods.





Circular

Mint returns green metals back into the same ecosystem for reuse.





Low Cost

Mint's technology is designed to scale to urban needs close to where waste is produced.





Supply Chain Security

Mint secures metal sovereignty to
support current & future industries.





Data Security

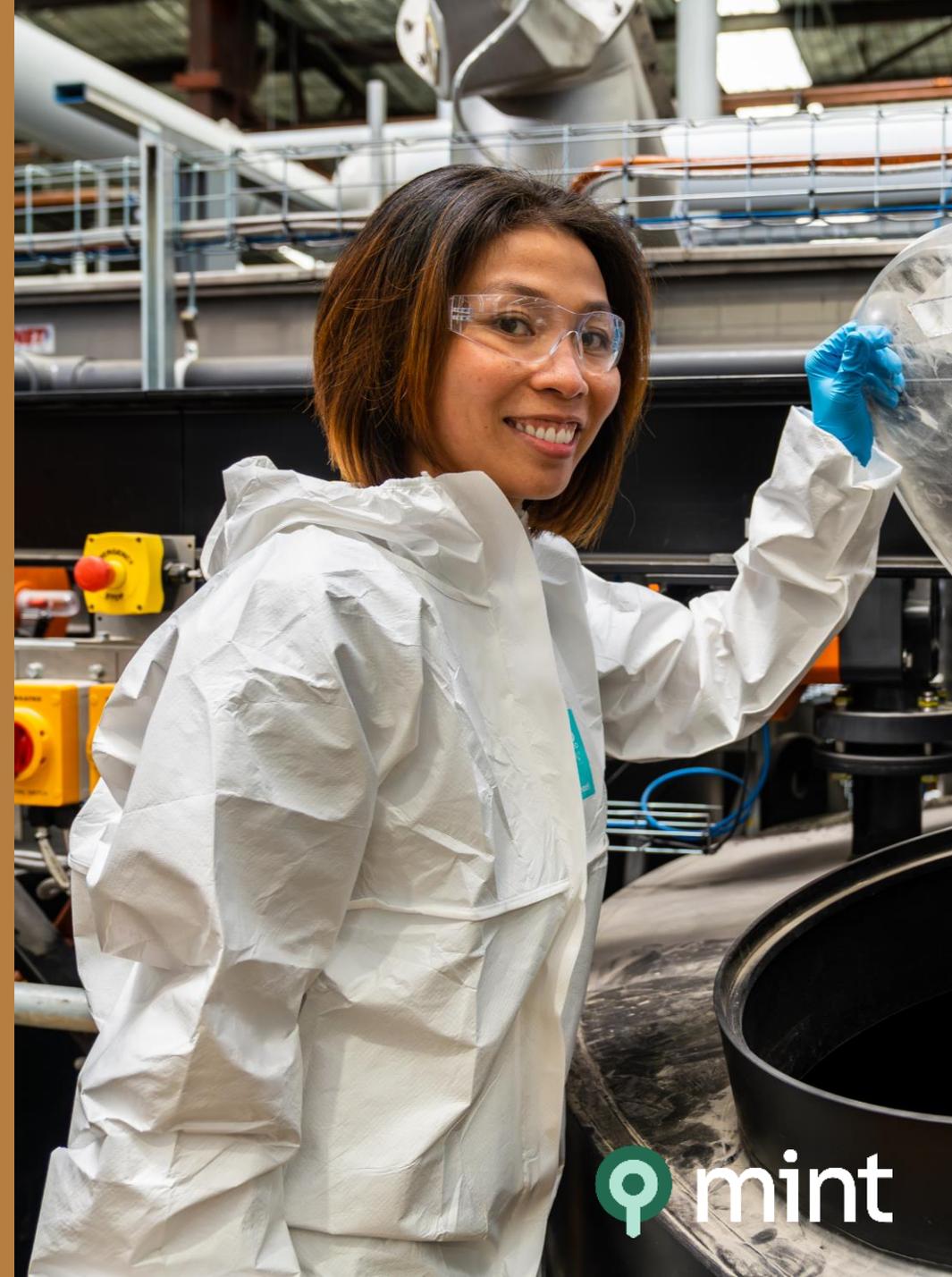
Mint provides safe and secure data destruction of all electronic waste.





Sustainable jobs

Mint keeps expertise and job opportunities local in sustainable industries.



Get in touch



E: Stephen.fletcher@mint.bio

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