



# Investor update

6 February 2023

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# Who we are

## **Entyr Limited**

is an Australian company applying unique, next-generation technology to cleanly convert waste tyres into valuable products. Entyr's technology represents a significant advancement on other tyre recycling processes.

# What we do

## **Solving the waste tyre problem**

Our patented thermal desorption technology cleanly converts end-of-life tyres into valuable products, (fuel, carbon, steel) using heat in an oxygen free environment.

We are a complete environmental and circular solution beyond anything offered by other types of tyre recycling process. Offering an environmental and ethical solution.

# Entyr - Snapshot

## The Company

- ASX listed since 2015 “ETR” (formally Pearl Global)
- Market cap c., \$35m
- Substantial shareholders – GW Holdings, Lindsay Barber & ROC
- Board and management renewal over the past 12 months
- 60 employees

## The Problem

- End of life tyres are a significant unresolved global environmental problem
- Tyres can take approx. 2000 years to decompose
- Only niche environmentally sustainable solutions exist
- Increasing pressure to reduce/stop the exporting and burning of waste tyres



# Entyr - Snapshot

## The Entyr Solution

- Developed in conjunction with UWA
- Uses a patented thermal desorption process, breaks down tyres into steel, carbon, fuel and gas – each of which can be sold or reused

## The Entyr Operation

- Based on a leased site at Stapylton, Qld
- 4 thermal desorption units installed and operating on site
- Processed almost 3 million tyres to date
- Carbon and fuel products being sold into the asphalt industry – delivering environmental and performance benefits
- Significant capital investment underway to enable full scale commercialisation of the operations
- Anticipated to achieve approximately \$5m p.a. of EBITDA at site level – full commercialisation with next generation plant anticipated to achieve \$9m p.a. of EBITDA per facility (excluding corporate OH)



# The scale of end-of-life tyres globally

Every year approx. **1 billion of waste tyres are generated**. However, the recycling industry **processes only 100 million tyres every year. Leaving 90% to be stockpiled, buried or burnt**. Tyres are indestructible in nature making them inherently difficult to recycle.

Source: **Global Tire Recycling Market Analysis 2025 Report: Opportunity, Demand, Growth and Forecast 2017-2025**



Creator: Exclusivepix | Credit: Exclusivepix 7 June 2013

# The scale of end-of-life tyre waste

**56,000,000**

used tyres disposed of annually in Australia<sup>1</sup>

**86%**

OF AUSTRALIAN WASTE  
TYRES EXPORTED TO BE  
BURNT, DUMPED OR  
BURIED.<sup>1</sup>

**93%**

OF AUSTRALIAN WASTE  
MINING TYRES ARE  
BURIED ON SITE.<sup>1</sup>

**2,000**

YEARS FOR TYRES  
TO DECOMPOSE.<sup>2</sup>

Monetizing the Australian market = \$530,000,000 p.a. opportunity

*Tyre dumping*  
Courtesy: RMIT

1. Source: National Waste Policy Action Plan 2019, Federal Government

2. Source: South Carolina Department of Natural Resources - <https://stacker.com/stories/2682/how-long-it-takes-50-common-items-decompose>

# The time for change is now

Entyr's clean conversion process addresses multiple regulatory and governmental policy trends:




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**New environmental law changes** both at federal and state government level




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**Tighter govt policy** implemented relating to tyre disposal and how the tyre recycling industry operates




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**Producer responsibility laws** for manufacturers to manage product end-of-life




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Policy makers addressing the **environmental impact of the asphalt industry** and decarbonise its processes and products.



# Entyr — 12-year development journey

## 2010

Commenced R+D to build an industrial waste tyre processing technology: Needed low emissions, continuous process, high quality products and scalable

## 2017

Company lists on ASX

Secures DES approval to establish facility in QLD

Submission of Intellectual Property Patents

## 2020

5-year offtake agreement signed with asphalt manufacturer

TDFO and rCB available as asphalt products

## 2022

2 million tyres processed through our QLD facility

~2 million litres TDFO consumed

~500 tonnes of rCB consumed

Commercialisation rollout locked in  
Name change to Entyr

## 2015

First commercial scale Thermal Desorption Unit (TDU) prototype completed in WA

Granted licence to operate by D.E.S. WA – first of its kind in Australia

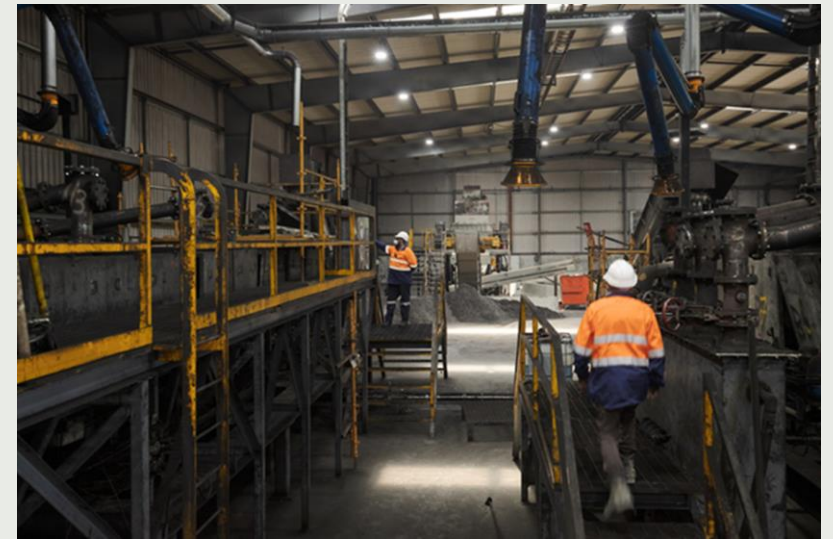
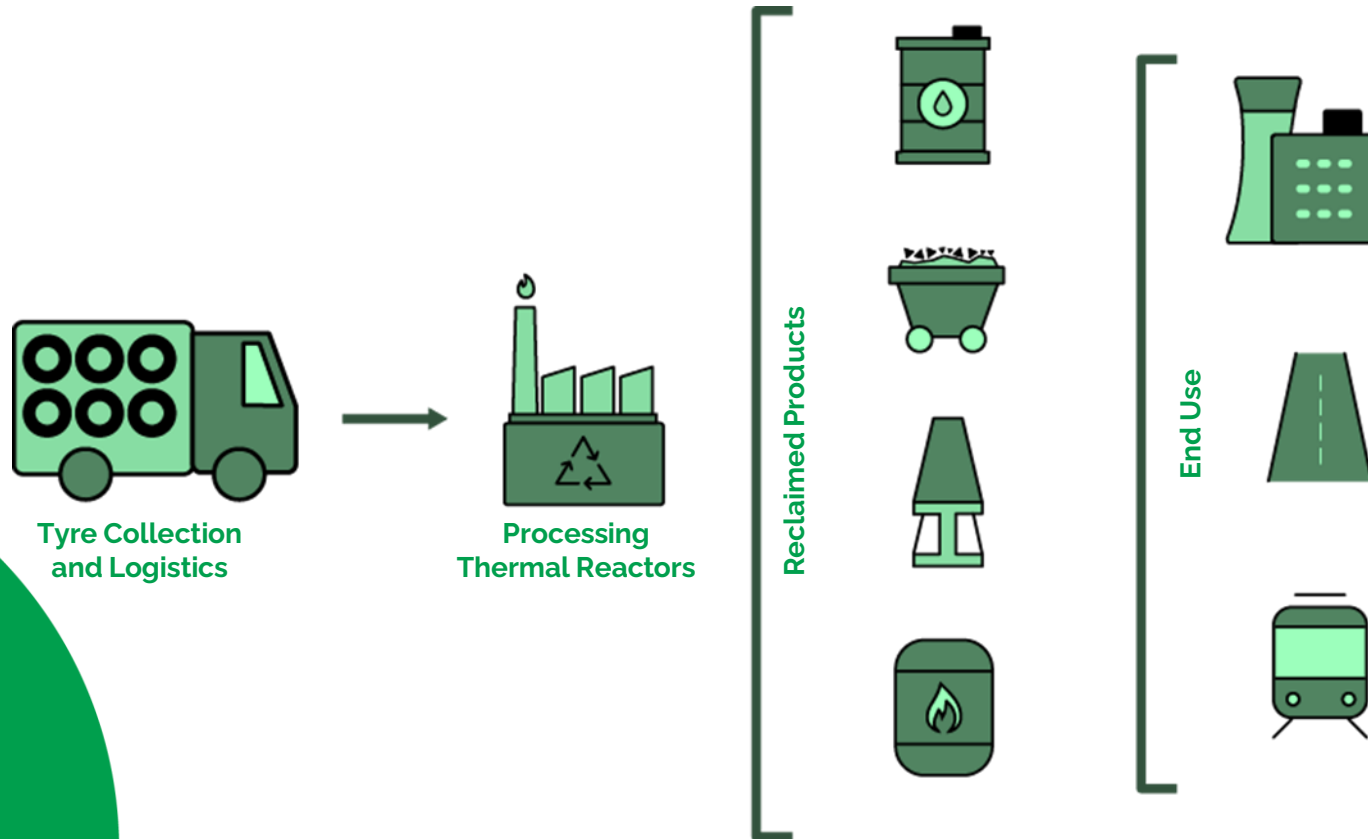
## 2019

Used the public markets to raise capital to build further TDUs and to continue to improve processes

## 2021

Began search for new Chairman and CEO to begin the commercialisation and expansion strategy. Signed second offtake agreement with asphalt manufacturer.

# Our patented process



Thermal desorption units at Entyr's Stapylton site Source: Company

- Thermal energy process using a dynamic management system.
- High quality products, combined with low emissions creates unique process.
- Scalable infrastructure and modular design.
- Strong environmental practices.

# Stapylton, Queensland

SHOWCASE FACILITY



▲ Thermal Desorption Units and Rasper

◀ Aerial view of Stapylton facility



# High value – high impact commercial markets



## Tyre Derived Fuel Oil (TDFO)

- Direct replacement for diesel in industrial burners.
- Used for two years, proven to increase asphalt plant efficiency and reduce overall costs.



## Recovered Carbon Black (rCB)

- 80% pure carbon base enhances binding function in asphalt.
- rCB added to asphalt creates a safer, longer lasting, superior road surface, as well as substantial environmental gains<sup>1</sup>.



## Recovered High Tensile Steel

- High tensile steel separated from tyres in the process.
- Currently used by steel mills to create railway wheels.



## Gas for energy

- Non-condensed gases are captured and will be re-used as energy reducing reliance on grid power.



## **A pathway to environmentally sustainable asphalt**

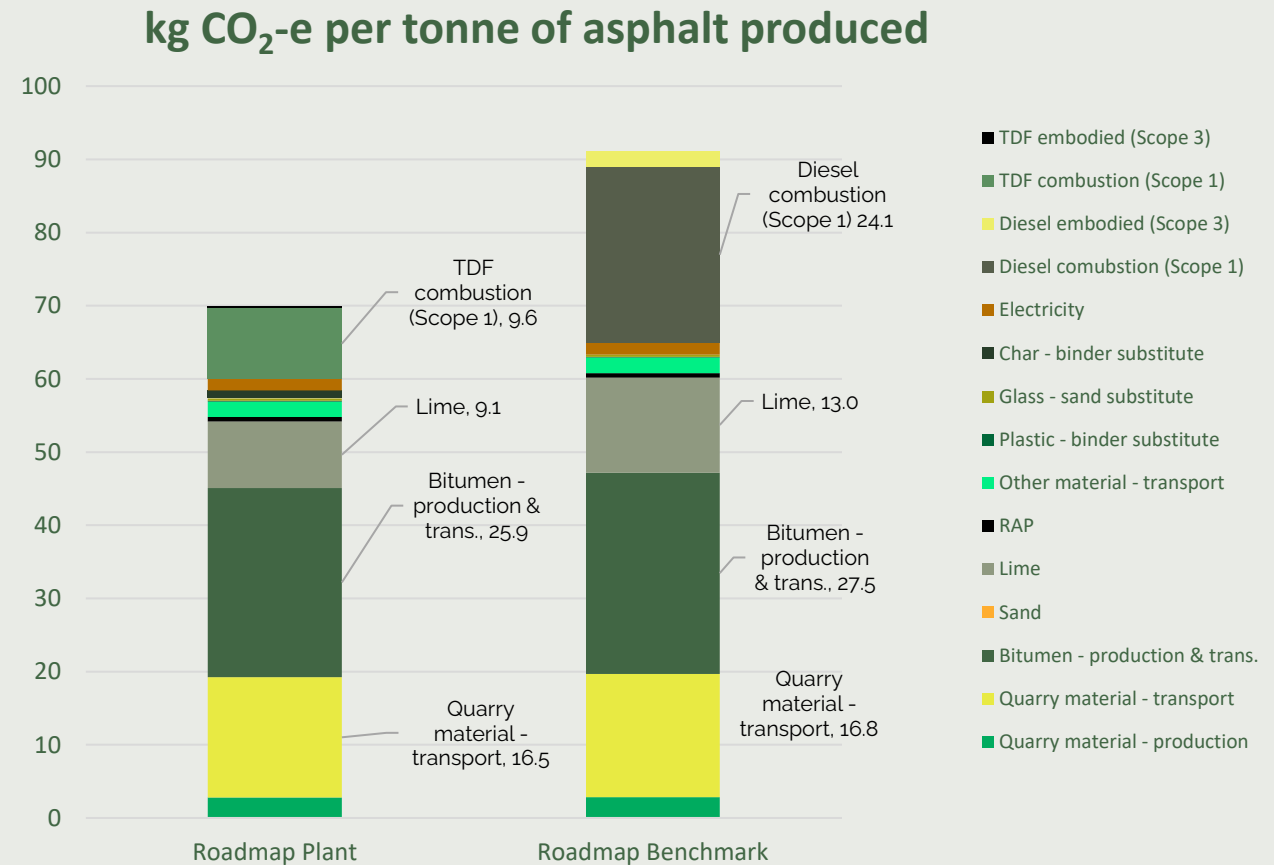
Entyr's clean conversion technology takes waste tyres and reclaims high value products that support the improved safety, performance and longevity of roads, whilst decreasing asphalt's environmental impact.

# 24% reduction in embedded carbon in asphalt pavements

In terms of Scope 1 and 3 Green House Gas (GHG) emissions, the process is estimated to reduce emissions by about 23 kgCO<sub>2</sub>-e per tonne of asphalt produced.<sup>1</sup>

**Scope 1:**  
14kg CO<sub>2</sub>-e per tonne<sup>1</sup>

**Scope 3:**  
8.2kg CO<sub>2</sub>-e per tonne<sup>1</sup>



1. RPS Pty Ltd: Pearl Global Process & Products, Environmental, Social and Economic Benefits Assessment– August 2022





## King Street, Clontarf — Moreton Bay Regional Council



- 2,217t of Carbonphalt<sup>®</sup> paved on 700m stretch of a busy suburban connector
- Using tyres from Moreton Bay Regional Council's waste facilities



22,217

REPURPOSED  
VEHICLE  
PASSENGER TYRES



37,689<sup>kg</sup>

SAVED CO<sub>2</sub>e  
CARBON  
EMISSIONS



EQUIVALENT TO 17  
CARS  
REMOVED FROM  
OUR ROADS



## Miller Road, Logan Village — City of Logan



- Side by side comparison of Carbonphalt<sup>®</sup> versus standard AC14
- First 210m paved with standard AC14
- Next 200m paved with Carbonphalt<sup>®</sup>



1,966  
REPURPOSED  
VEHICLE  
PASSENGER TYRES



6,970<sub>kg</sub>  
SAVED CO<sub>2</sub>e  
CARBON  
EMISSIONS



EQUIVALENT TO 5  
CARS  
REMOVED FROM  
OUR ROADS  
ANNUALLY



# Entyr Commercialisation - Growth

- New infrastructure spend driving higher production volumes
- Pipeline of future facilities
- Asphalt industry underpinning Entyr's expansion
- IP protection on our sustainable, certified business
- Path to profitability



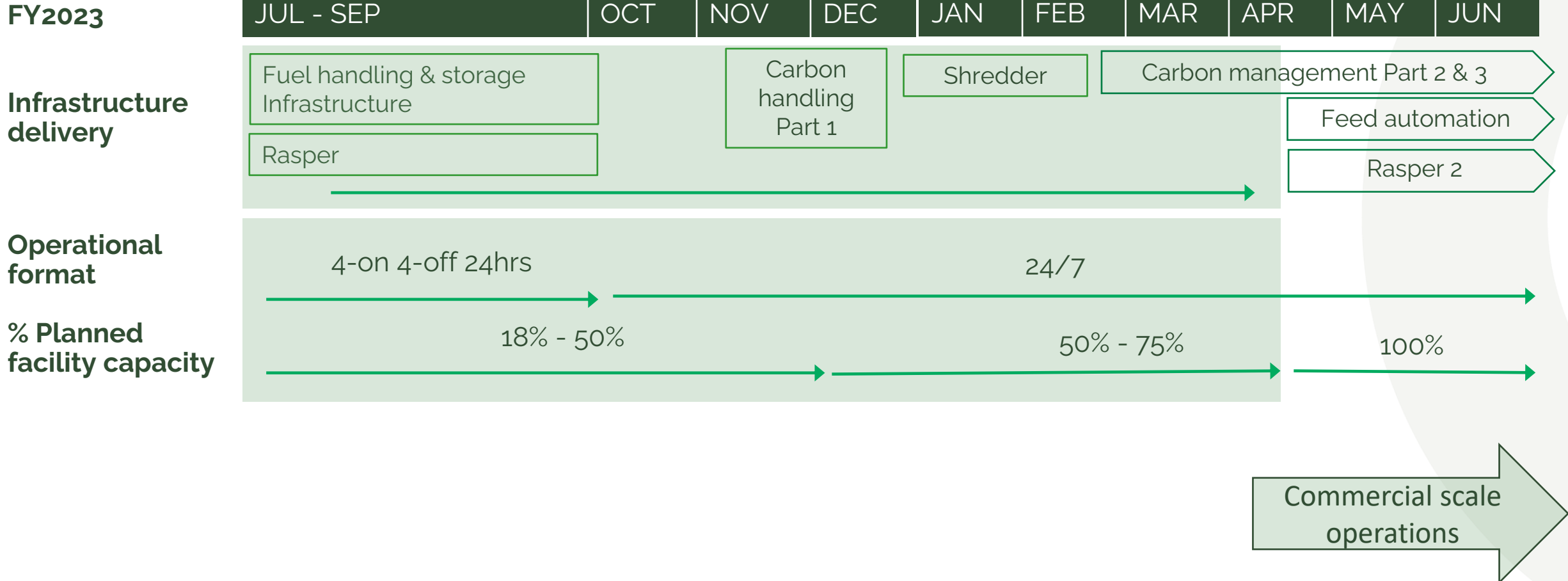


# New infrastructure driving higher production volume

## The Business

- \$10 million infrastructure plan underway to meet 20,000 (2 million tyres) tonne production at showcase site
- Sustainable operational performance (moved from Pilot to Commercial operations)
- Feedstock supply secured – 525 customers paying Entyr a disposal fee
- Offtake contracts secured – Austek, Hansons, Downer EDI
- 60 employees focused on business performance (up from 20)
- Planned operational and financial growth to come from production ramp up from 40% to 100% over 6 months

# Commercialisation timeline



# Recently installed and commissioned infrastructure



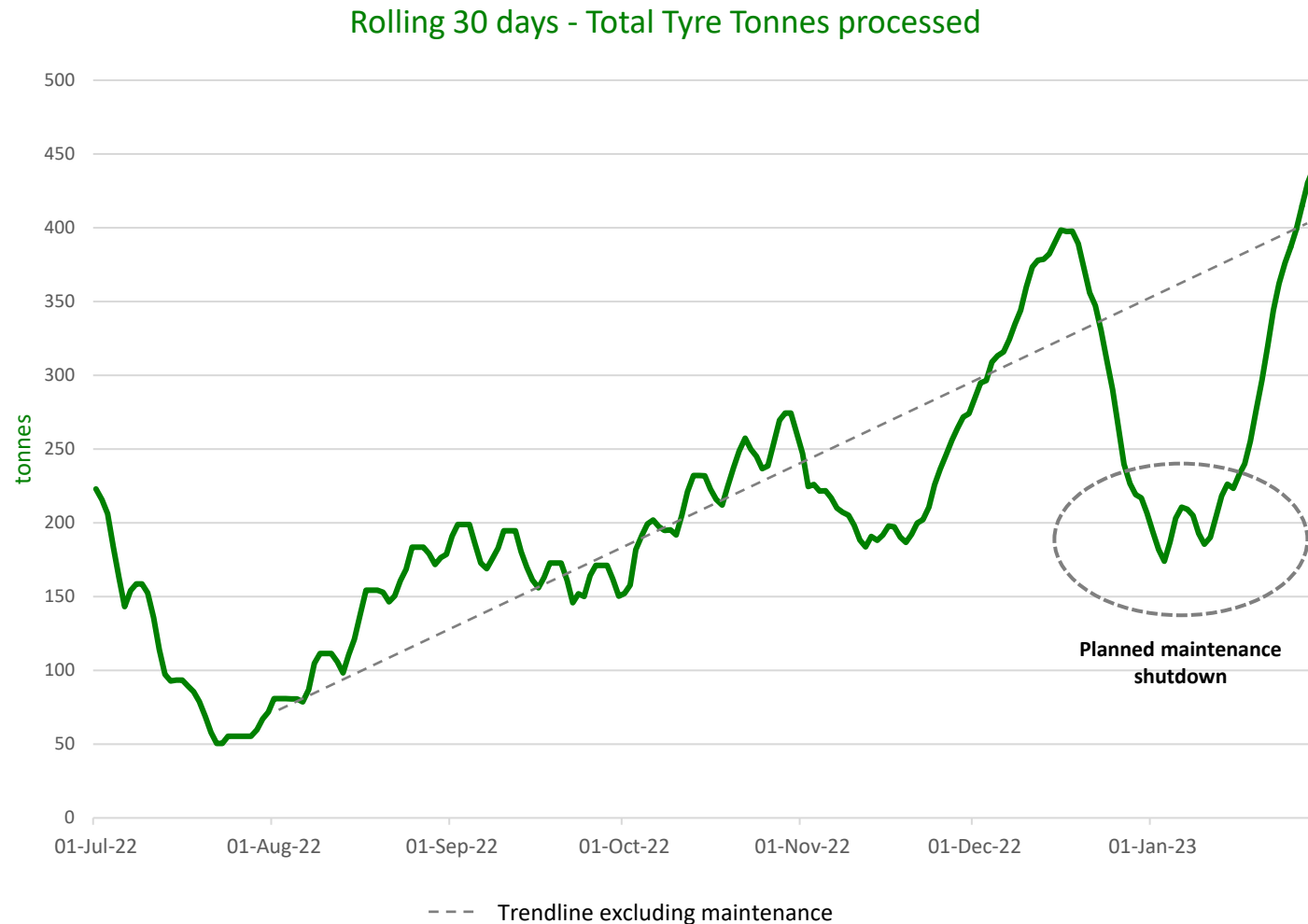
TDFO storage tank farm Entyr's Stapylton site



Rasper unit Entyr's Stapylton site



# Processed volume ramp up underway



# Future growth - strong rollout pipeline

Expansion: Demand driven by Asphalt producers.

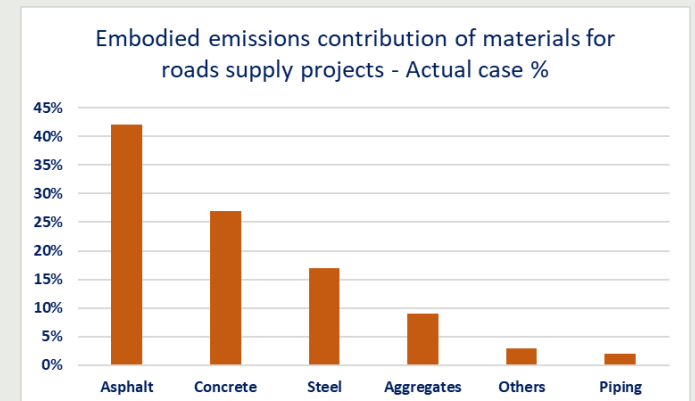
Why?:

- TDFO/rCB sustainable alternative to virgin resources;
- cheaper than virgin products; and
- better performance according to current users

Outcome: Entyr market opportunity of ~\$530,000,000 in Australia only  
Ability to secure long term agreements prior to site build commitment. (Bankable)

## DOWNER EDI :

*"In FY22, we continued to decarbonise our own operations. Downer's focus on our Urban Services businesses has seen our Scope 1 and 2 GHG emissions intensity reduce from 41.37t CO<sub>2</sub>-e in FY21 to 31.11t CO<sub>2</sub>-e in FY22. We are committed to implementing solutions that will reduce our operational emissions by 50 per cent by 2032 and net zero by 2050."* Downer 2022 Sustainability Report



Source: Australian buildings and infrastructure: Opportunities for cutting embodied carbon – CEFC Report 2022

# Asphalt Industry demand a key in driving Entyr's expansion

## AUSTRALIA

5 plants (4 new)

- Brisbane
- Melbourne
- Sydney
- Perth
- Adelaide

130,000 tonne capability

25% of waste tyre market

3–4-year timeline

Supplying 20 of 132 asphalt plants

[entyr.com.au](http://entyr.com.au)

## GLOBAL

- UK
- USA (California)
- Spain



Total number of Asphalt plants in Australia 2022 is 132 Source: Google



# Strong IP and product accreditation protections

FPA Ref	Country	Official No.	Property Type	Status Summary
M53036569	United States of America	11162030	Patent	Granted
M53137124	Australia	2021106096	Innovation Patent	Granted
M53036608	United States of America	11168259	Patent	Granted
M53137137	Australia	2021106104	Innovation Patent	Granted
M53036595	European Patent Convention	17878554	Patent	Pending



**Environmental Protection Act  
1994**

**Environmental authority  
EA0000862**

*This environmental authority is  
issued by the administering  
authority under Chapter 5 of the  
Environmental Protection Act*



# Pathway to profitability

## Indicative Site Financial Model

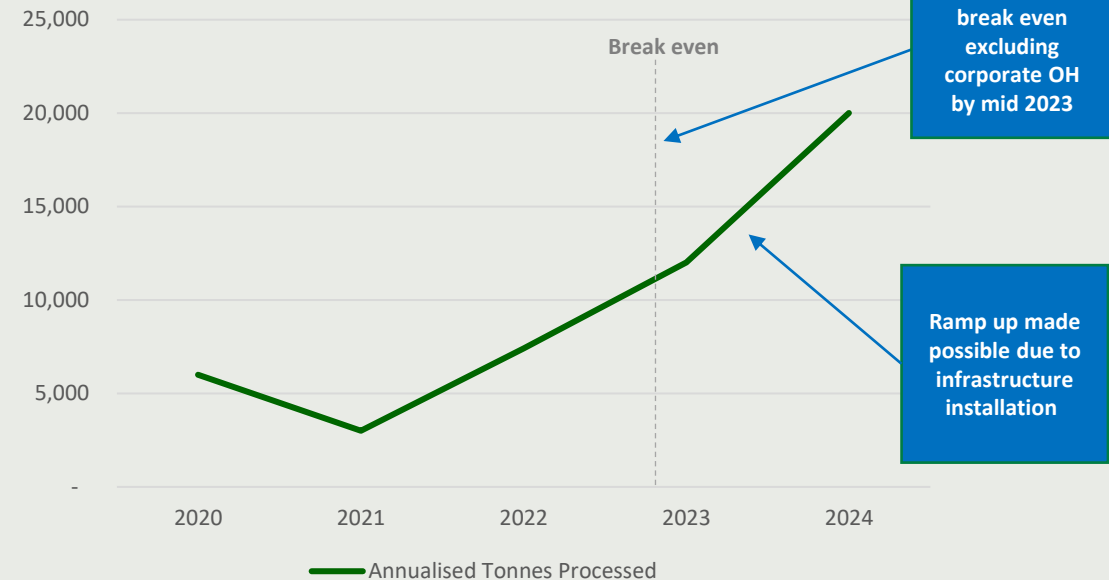
excluding corporate Overhead

	Stapylton			Next facility
	Break even			
Tyre Volume	11,000	15,000	20,000	25,000
Revenue \$'000	10,600	14,454	19,273	24,091
EBITDA \$'000	100	3,234	7,153	11,071
Revenue \$/t	964	964	964	964
Operating cost \$/t*	(1,091)	(848)	(681)	(581)
EBITDA \$/t	9	216	358	443
Operating cashflow \$/t	(127)	116	283	383

\* includes rentals  
entyr.com.au

## Operational progress

### Annualised Tonnes Processed



Future revenues from our operations and projects are based, in part, upon the current market price of products produced, which may vary significantly from current levels. These variations, if materially adverse, may affect the timing or the feasibility of a particular facility, the expansion of certain projects or the continuation of existing operations.

# Triple bottom line benefits – Future Australian footprint Entyr's TDFO and rCB

**24% reduction**  
in the embodied  
carbon of asphalt<sup>1</sup>

**\$320m** of monetised  
public benefits  
for road safety/  
maintenance over 30  
years<sup>2</sup>

Total CO<sub>2</sub> – e  
reduction **805kg** per  
tonne of tyre  
processed or a  
reduction of **104,607**  
**tonnes** of carbon as a  
result of Entyr's  
recycling process v's  
typical disposal<sup>2</sup>

Total CO<sub>2</sub> – e  
reduction **61,777**  
**tonnes** of carbon with  
use in Asphalt<sup>2</sup>

Circular economy  
benefit up to **29% of**  
**Australia tyres**  
being recycled  
by Entyr

*Assumption: Based on Entyr processing 130,000 tonnes of waste tyres per annum as per targeted regions.*

*1 Embodied carbon is the carbon footprint of an infrastructure project before it becomes operational.*

*2 RPS Pty Ltd: Pearl Global Process & Products, Environmental, Social and Economic Benefits Assessment– August 2022*



# Summary

- We have a proven world first technology developed in Australia that is a genuine environmentally sound solution to waste tyre disposal with significant CO<sub>2</sub> – e savings
- We have an infrastructure plan underway at our Stapylton site that will enable us to achieve commercial scale processed volumes (11,000t annually) in the first quarter 2023
- We are actively engaging with government
- Asphalt industry key to driving growth nationally and internationally

# Thank you

**David Wheeley**

Chief Executive Officer

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[entyr.com.au](http://entyr.com.au)