

# The Future of Sustainable Pine Chemicals

Decarbonising the chemical industry

INVESTOR PRESENTATION, July 2022



# Disclaimer: forward looking statements

**IMPORTANT: YOU MUST READ THE FOLLOWING BEFORE CONTINUING.**

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The traditional petrochemical industry is responsible for an estimated **923 million tons** of CO<sub>2</sub> last year, making it the third-largest source of global CO<sub>2</sub> emissions<sup>1</sup>.

1. <https://www.iea.org/fuels-and-technologies/chemicals>







**Leaf Resources produces carbon-efficient and cost-effective chemicals of superior quality; sourced from renewable pine tree feedstock with no unnatural chemicals.**





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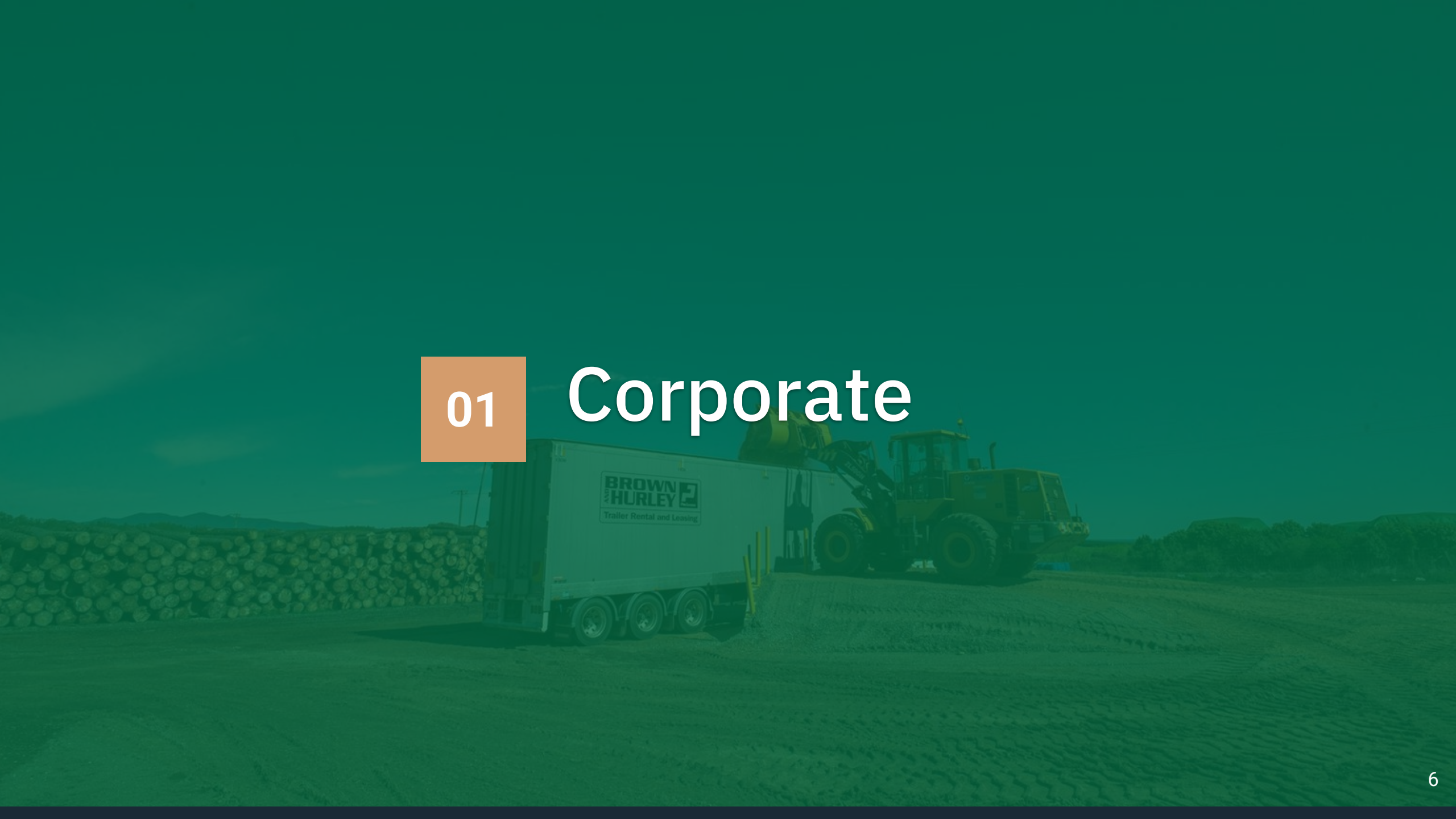
## 06. Appendix





01

# Corporate





# Corporate overview

Strong alignment: Directors currently own 770 million of the 1.8 billion post-money shares on issue or 43%<sup>1</sup>

## TOP SHAREHOLDERS

| Position | Holder Name                                                           | Holding     | %     |
|----------|-----------------------------------------------------------------------|-------------|-------|
| 1        | RAMON DUDLEY MOUNTFORT & SHIRLEY JOY MOUNTFORT <MOUNTIES1 FAMILY A/C> | 590,700,000 | 32.7  |
| 2        | GREGORY LLOYD SAMSON & ROSEMARIE ANNE SAMSON                          | 53,625,000  | 3.0   |
| 3        | NATIONAL NOMINEES LIMITED                                             | 48,946,017  | 2.7   |
| 4        | ALTOR CAPITAL MANAGEMENT PTY LTD <ALTOR ALPHA FUND A/C>               | 46,851,852  | 2.6   |
| 5        | KELIRI PTY LTD <KEN RICHARDS FAMILY SUPERANNUATION FUND>              | 42,558,000  | 2.6   |
| TOTAL    |                                                                       | 782,680,869 | 43.5% |

## LEAF RESOURCES (ASX: LER) DAILY SHARE PRICE CHART AND VOLUME SINCE ESSENTIAL QUEENSLAND ACQUISITION



1. Source: Link Market Services - Miraql reporting



# Directors



**KEN RICHARDS**  
NON-EXECUTIVE  
CHAIRPERSON

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Over 35 years of experience as a Managing Director in various listed and unlisted companies across the finance, agriculture, technology and renewable chemical sectors.



**RAY MOUNTFORT**  
MANAGING DIRECTOR

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For the last 20 years Ray has been primarily involved in the pine chemicals industry, working to establish his vision of sustainable natural hydrocarbon based chemical production.



**GRANT YEATMAN**  
EXECUTIVE DIRECTOR

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Grant is a co-founder of EQ having been involved in EQ since its incorporation in 2017, providing guidance on intellectual property development and the management and growth of the company.



**DOUG RATHBONE <sup>AM</sup>**  
NON-EXEC DIRECTOR

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Doug has extensive experience in chemical engineering and commerce. He is currently the Chairman of Rathbone Wine Group and Delta Agribusiness, a Director of Cotton Seed Distributors, GO Resources, Queenscliff Harbour, AgBiTech, and Cann Group (ASX:CAN). Mr Rathbone is the former Chief Executive Officer of Nufarm Ltd (ASX:NUF).



**TERENCE GRAY**  
NON-EXEC DIRECTOR

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Terence has deep knowledge of funds management and the Australian equity market providing expertise in company valuation, corporate financing and mergers and acquisition activity.



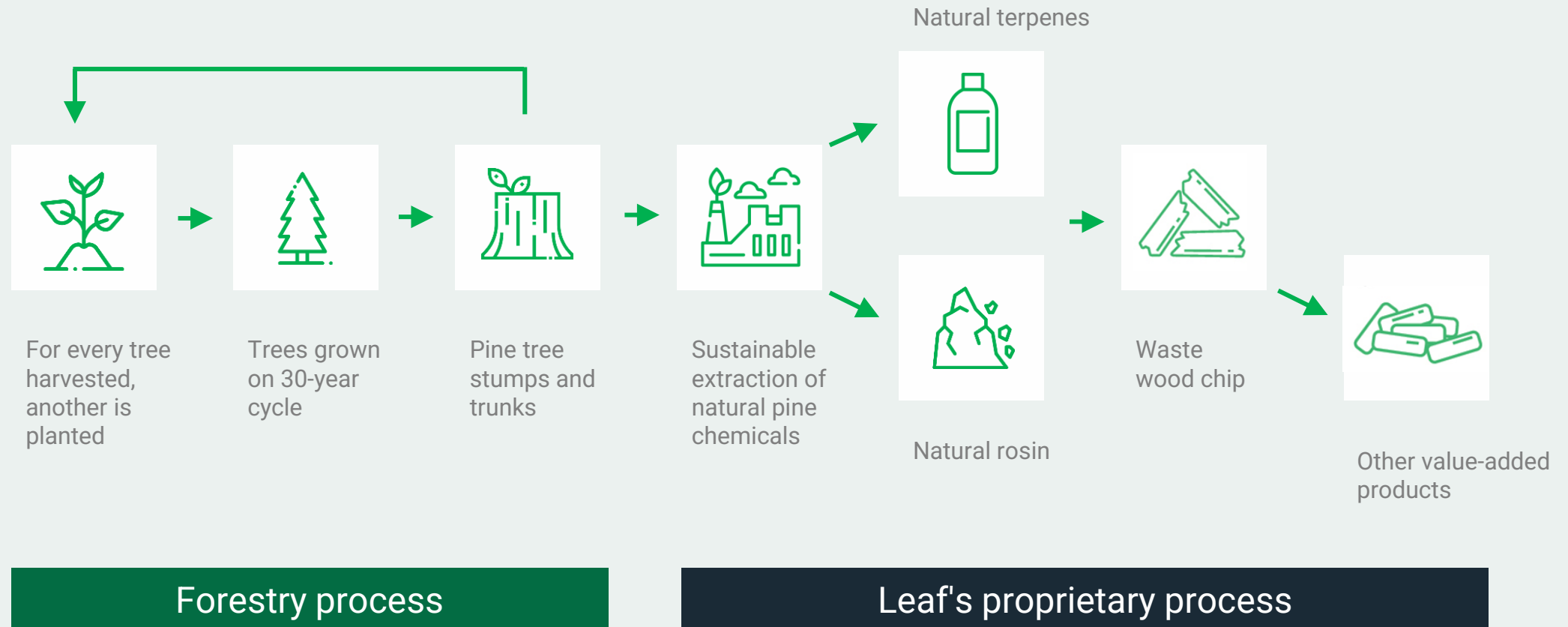
An aerial photograph of an industrial facility, possibly a refinery or chemical plant, with various storage tanks, distillation columns, and piping. The image is overlaid with a semi-transparent green filter. In the foreground, there are several large white storage tanks and a complex network of pipes and structural steel. In the background, there are more industrial buildings and a large area of land. The text "02 Business Overview" is prominently displayed in the center-left of the image.

## 02 Business Overview



# The organic solvent extraction technology uses only steam and natural solvents to extract the pine chemicals

Because the process doesn't use nasty chemicals, there is no additional cost to purchase them or strip them away.







# Natural gum rosin



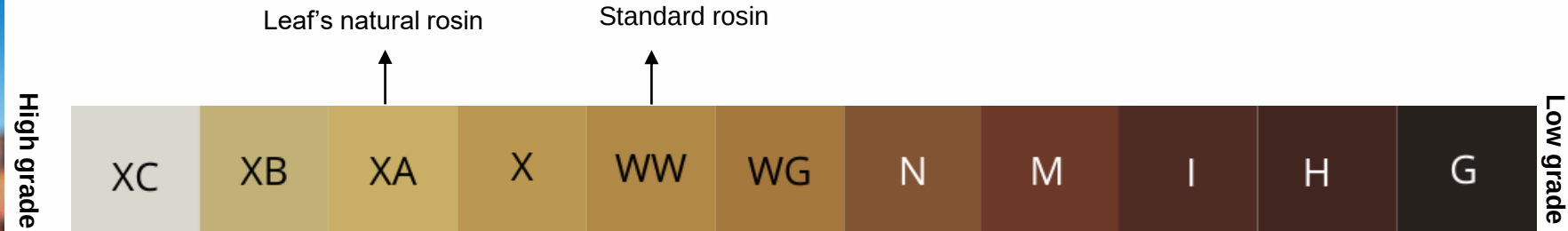
Found along with terpene in pine logs and stumps, pine rosin is a **highly sought-after material**, used in various everyday products, from chewing gum to tires.

The highest grade of natural rosin is produced through distillation. A process which only uses steam and **no toxic chemicals**.

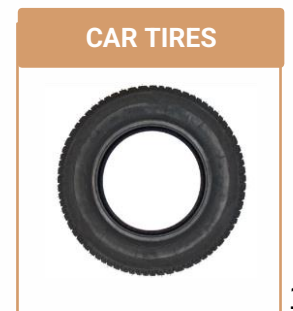
Leaf prides itself in producing world class natural pine terpene and natural **pine rosin in its purest form, with zero additives**.

This results in a lighter golden colour rosin which is considered superior quality and **can demand a premium pricing**.

## GRADE QUALITY



## MULTI BILLION-DOLLAR END USE MARKETS INCLUDE:





# Natural gum terpene



Terpene is an **essential product** which is used in the formulation of food flavouring essences, disinfectants, health products and perfumes.

Leaf uses a continuous counter flow steam distillation process, that is chemical free. It is immiscible with water and has a high boiling point. The natural organic solvent extraction technique results in **100% terpene**.

The only waste products are natural – water and spent wood – which are then used for irrigation and products such as wood pellets.

At full production, natural terpene is then exported from Australia to customers in large quantities.

## MULTI BILLION-DOLLAR END USE MARKETS:

### FOOD ESSENCES



### DISINFECTANTS



### PERFUMES





The addressable pine chemical market is estimated at **US\$10bn<sup>1</sup>**

**NATURAL PINE CHEMICAL DEMAND GROWING AT A 5% CAGR UNTIL 2027<sup>3</sup>**



Demand/supply gap widening<sup>4</sup> as:

- Declining gum rosin and terpenes production, particularly from China
- Renewable energy mandates divert CTO pine chemical production to biofuels



Diminishing sources of supply of pine chemicals due to high cost of extraction and inefficient “old world” supply practices, in particular, the high labour-based tree tapping production.



Reshaping the economics of using natural pine chemicals to replace petrochemicals in thousands of everyday products.



**US\$127bn<sup>2</sup>**  
global organic  
chemicals industry

**US\$10bn<sup>1</sup>**  
global pine derived  
chemicals industry

1. PCA Industry Report – Global Impact of Modern Pine Chemical Industry 2019

2. Organic Chemical Manufacturing in the US - Market Size | IBISWorld

3. Fact.MR Pine Chemicals Market Forecast, Trend Analysis & Competition Tracking - Global Market Insights 2019 to 2027 Feb 2020; Executive Summary

4. Inferred from Forchem data as detailed in the appendix



# Superior over incumbent processes and products<sup>1</sup>



A TRULY sustainable solution

|                               | LEAF'S PINE CHEMICALS | PINE CHEMICAL PRODUCERS (GUM TAPPERS) | CRUDE TALL OIL | PETROLEUM BASED CHEMICAL PRODUCERS |
|-------------------------------|-----------------------|---------------------------------------|----------------|------------------------------------|
| IP protection                 | ✓                     | ✗                                     | ✗              | ✓                                  |
| Low relative capex            | ✓                     | ✓                                     | ✗              | ✗                                  |
| Low waste                     | ✓                     | ✓                                     | ✗              | ✗                                  |
| No toxicity                   | ✓                     | ✗                                     | ✗              | ✗                                  |
| Sustainable manufacturing     | ✓                     | ✓                                     | ✗              | ✗                                  |
| Sustainable supply            | ✓                     | ✓                                     | ✓              | ✗                                  |
| Not labour intensive          | ✓                     | ✗                                     | ✓              | ✓                                  |
| Food safe quality             | ✓                     | ✗                                     | ✗              | ✗                                  |
| Australian made               | ✓                     | ✗                                     | ✗              | ✗                                  |
| Waste can be used for biofuel | ✓                     | ✗                                     | ✓              | ✗                                  |

1. Based on the Company's extensive industry knowledge of the pine chemicals industry





03

# Environmental Social Governance DNA



# Environmental: circular economy



## TREES SOURCED FROM FSC CERTIFIED FORESTS

HQPlantations, based in QLD, supply Leaf with pine tree feedstock. Its forests are farmed on a 30-year cycle. This means for every tree used, another is planted. HQPlantation forests store 54 million tonnes of CO<sub>2</sub><sup>1</sup>.



## CLOSED LOOP MANUFACTURING

Waste products from the process are water and spent wood. The water is used for irrigating local farmland and the waste wood can be used in a multitude of products, such as wood pellets that replace coal in heating and power generation plants.



## NO PART OF THE TREE IS WASTED

This includes stumps which would normally be considered a waste product or low value wood. Stump harvesting improves the productivity of the land as it encourages natural reforestation, adding more value to Leaf's partner forestry companies. HQPlantations remains committed to support Leaf with stump processing.



1. <https://www.hqplantations.com.au/our-sustainability/carbon-footprint>

# Environmental: clean biochemicals



## SUPPLEMENTING THE PETROCHEMICAL SUPPLY CHAIN

The chemicals industry is responsible for roughly 10% of global energy consumption<sup>1</sup>.

1. The industry has historically used petroleum, natural gas and phosphates to make its products, exacerbating air and water pollution.
2. The International Energy Agency estimates emissions from primary chemical production must decline 10% by 2030 to limit warming to 1.8 degrees Celsius<sup>2</sup>.
3. Pine chemicals can play a part in meeting these goals. The production of a product with pine chemicals results in a 50% weighted average reduction in carbon footprint when compared to the production of a product made with petroleum substitutes.<sup>3</sup>
4. Renewable chemicals are growing in demand as corporations introduce mandatory purchasing requirements which stipulate that products must have the USDA certified biobased and European OK biobased certification.
5. On the 25 April 2022, the European Commission published a "Restrictions Roadmap"<sup>4</sup> as part of the EU's Chemicals Strategy. If implemented as intended, thousands of chemical substances will rapidly be restricted in the EU (such as certain flame retardants, bisphenols and PVC plastics).



## NO HEXANE OR PETROCHEMICALS USED

Pine chemicals are extracted using only low heat, low pressure, water, steam and a natural organic solvent. No petrochemicals are used in the extraction process. This results in natural, clean pine chemicals.

1. [https://bellona.org/news/eu/2019-04-the-industrys-chemistry-with-climate-change#\\_edn2](https://bellona.org/news/eu/2019-04-the-industrys-chemistry-with-climate-change#_edn2)

2. <https://www.iea.org/reports/chemicals>

3. <https://www.americanchemistry.com/industry-groups/pine-chemistry>

4. [https://ec.europa.eu/docsroom/documents/49734?fbclid=IwAR0Ftb0aCg9\\_umH4IMvPBAuweakVQZiqGrL4jnOD7urUYAwz3nT6o8FHUd8E](https://ec.europa.eu/docsroom/documents/49734?fbclid=IwAR0Ftb0aCg9_umH4IMvPBAuweakVQZiqGrL4jnOD7urUYAwz3nT6o8FHUd8E)





# Revolutionising forestry: stump harvesting



Together with HQPlantations, Leaf has successfully processed pine stumps that confirm its suitability as a feedstock. Leaf's relationship with HQPlantations is **mutually beneficial for both parties and the environment:**



## INCREASES THE WOOD SUPPLY AND PINE CHEMICAL YIELD FOR LEAF RESOURCES

By harvesting an utilised feedstock, Leaf can increase its wood supply by up to 20%. In addition, stumps contain a higher yield of rosin than logs.



## IMPROVED PRODUCTIVITY FOR FOREST OWNERS

Harvesting what is traditionally a waste wood promotes forest regeneration and productivity of the land. Forestry owners can generate additional income by extracting an extra 20% of wood from the forest by collaborating with Leaf.

# Social and governance



## DIVERSITY

Leaf Resources recognises that an inclusive culture supports a diverse workforce.



## EFFECTIVENESS AND PROFITABILITY

The board is passionate about developing environmentally friendly manufacturing processes that can be more cost effective and profitable than incumbent processes.



## ZERO-HARM WORKPLACE

Leaf strives to achieve and maintain a zero-harm workplace. It engaged APS in March 2022, a specialised and independent agency to develop and implement a gold-standard safety policy which requires all employees, suppliers, contractors and visitors to operate to the highest standards.



## AUDIT AND CONSULTING ENGAGED

Health and safety performance is monitored via regular internal and external audits to ensure the company meets stringent quality, safety and environment requirements. Leaf has engaged PROCOM Consultants for the supply of multidisciplined RPEQ engineering leadership and project management of the design and implementation of a safe, reliable and operable plant to optimise resin yields. In addition, links have been established with University of Queensland to support improvements to yield and general chemistry optimisation using a whole of tree approach.

PROCOM  
CONSULTANTS



QUT





03

# Business Plan



# Recovered, rebuilding, upgrading

In November 2021, the extraction equipment and control room at Apple Tree Creek was damaged beyond repair after a lightning strike set off a chain of events that resulted in an explosion at the plant.



**Staff well being** has been a focus of the board since the incident and remains a top priority. All key staff are continuing with the company.



**Heightened focus on health and safety.** Tier 1 independent agency engaged to audit and oversee future safety and rebuild.



**Insurance claim cover** estimated at \$4.6m<sup>2</sup>.



**Continued support** from suppliers and customers, with stump supply available once operational.



**An upgraded 16,000tpa extractor** has been acquired<sup>1</sup> with improved safety features to replace and expand capacity.

1. Acquired in May 2022

2. Estimate of insurance settlements under Leaf's insurance policy as indicated by Leaf's insurance broker





# Process flow

Damaged, upgrading

Not damaged, upgrading



Office x3



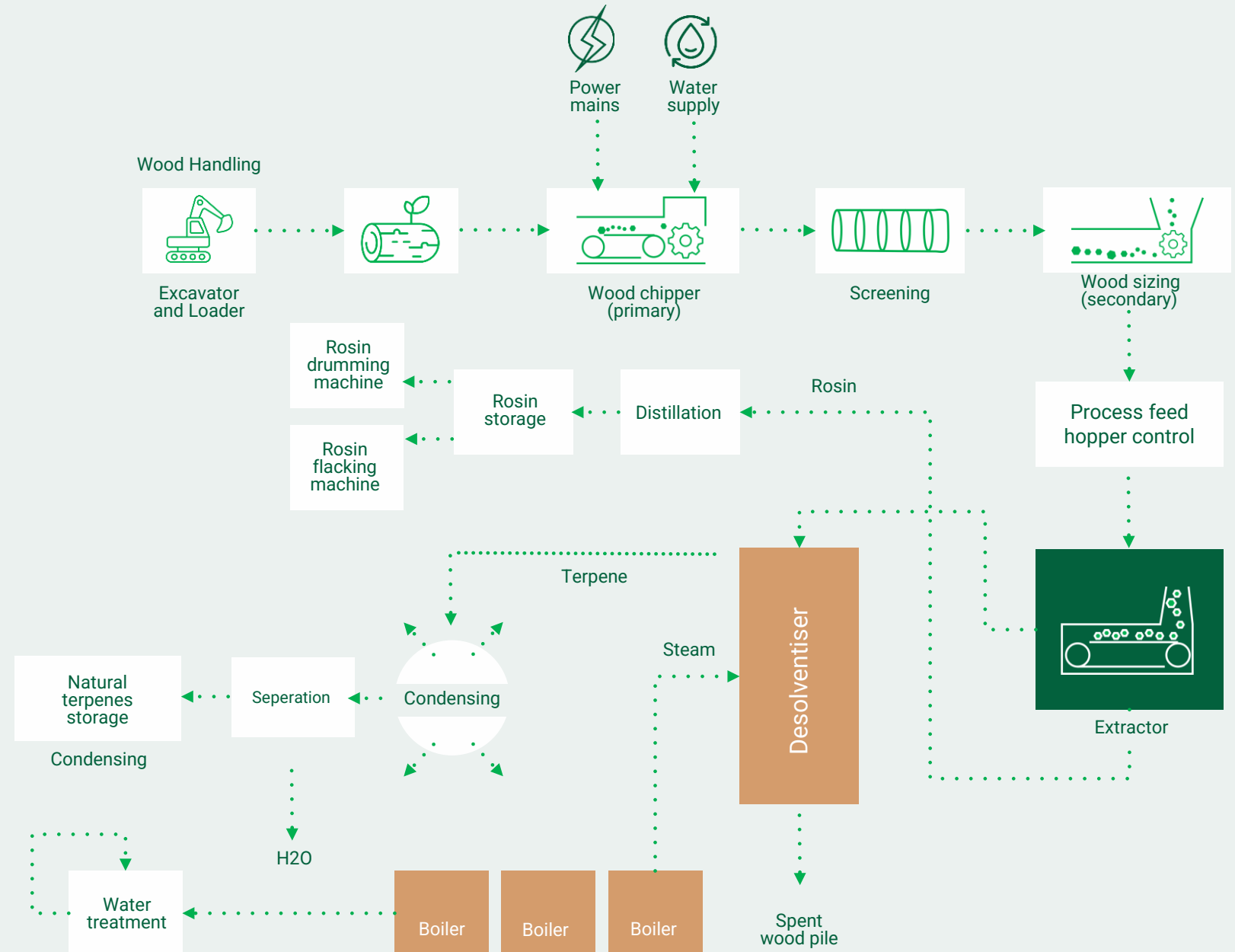
Boiler house / lab /  
MCC / automation



Drum making shed



Engineering shed





# Upgraded 16,000tpa plant acquired<sup>1</sup>



INITIAL TARGET PRODUCTION WITH UPGRADED EXTRACTION PLANT IS 8,000TPA, AND IMPORTANTLY, **PROVIDES CAPACITY TO SCALE TO 16,000TPA.**



Equipment has been designed for purpose and has been engineered to meet strict health and safety compliance requirements.



Near new equipment designed by prominent solvent extraction technology provider enables world class economies of scale.



Time to production has been reduced as equipment is already manufactured; saving 9 - 12 months<sup>2</sup>.



Contains internal fire suppression and significant safety improvements to previous extractor.



Processing efficiencies due to superior mechanical processes including continuous flow process.



Integrates with existing wood handling and distillation capabilities.

1. Acquired in May 2022

2. Company estimate





04

# Capital Raising



# Recovery schedule and key milestones

Targeted at eventual 16,000tpa production of rosin and terpenes at Apple Tree Creek, with many expansion opportunities to increase production beyond this point

| Product    | Revenue per tonne AUD <sup>1</sup> | Operating capacity (Apple Tree Creek) <sup>2</sup> | Revenue Potential |
|------------|------------------------------------|----------------------------------------------------|-------------------|
| ROSINS     | \$3,800                            | 13,600 tpa                                         | \$51.7m           |
| TERPENES   | \$6,014                            | 2,400 tpa                                          | \$14.4m           |
| WOOD CHIPS | \$36                               | 52,200 tpa                                         | \$1.9m            |
| TOTAL      |                                    |                                                    | \$68.0m           |

1. Rosnet, average spot price LTM assuming AUD/USD exchange rate of \$0.69

2. Internal mechanical and chemical engineering estimates

Notwithstanding the revenue potential, there is no guarantee that the company will be profitable.

## Milestones

Concurrently assess greenfield expansion opportunities and optimising supply mix

|            |                                                         |
|------------|---------------------------------------------------------|
| Q2/Q3 CY22 | New equipment acquired<br>Capital raising completed     |
| Q3 CY22    | New equipment begins to be delivered on site            |
| Q4 CY22    | Plant construction                                      |
| Q1 CY23    | Plant commissioning begins<br>First pine chemical sales |
| Q2 CY23    | Ramp to 8,000tpa production target run rate             |
| Q3 CY23    | Ramp to 16,000tpa production target run rate            |





# Capital raising to fund through to production

## Pro-forma cash

| ITEM                           | \$m                        | %                       |
|--------------------------------|----------------------------|-------------------------|
| Cash and cash equivalents      | 0.7 <sup>1</sup>           | 5                       |
| Insurances recoveries expected | 3.2 <sup>2</sup>           | 22                      |
| Equity capital raising         | 5.1 <sup>3</sup>           | 34                      |
| Non-dilutive funding           | 3.5 <sup>4</sup>           | 23                      |
| R&D rebate                     | 2.4 <sup>5</sup>           | 16                      |
| <b>TOTAL</b>                   | <b>\$15.0m<sup>6</sup></b> | <b>100%<sup>6</sup></b> |

## Use of funds

| ITEM                                                         | \$m                        | %                       |
|--------------------------------------------------------------|----------------------------|-------------------------|
| CAPEX (replacement equipment installed and production ready) | 8.8                        | 59                      |
| General working capital                                      | 4.7                        | 32                      |
| Debt repayment                                               | 1.2                        | 8                       |
| Costs of the offer                                           | 0.3                        | 2                       |
| <b>TOTAL</b>                                                 | <b>\$15.0m<sup>6</sup></b> | <b>100%<sup>6</sup></b> |

1. 30 June 2022, Company estimate

2. The Company has already received \$1.4m from its insurer of the expected total of \$4.6m

3. The Company raised \$5.1m by way via a placement and is exploring additional funding facilities over an above this amount

4. The Company is in discussions with several non-dilutive funding providers that, when secured, will fund Leaf through to profitability and free cash flow

5. Approximately, estimated based on prior successful R&D claims experience

6. Figures have been rounded and includes contingencies



# Pro-forma capital structure

**\$5.1m<sup>1</sup>**  
CAPITAL RAISING

**170.0m**  
SHARES

**\$0.03**  
PER SHARE

| Capital structure                              | Pre-money        | Post-money       |
|------------------------------------------------|------------------|------------------|
| Offer price                                    | \$0.03           | \$0.03           |
| New shares - placement (m)                     |                  | 170.0            |
| New shares – convertible note (m) <sup>2</sup> |                  | 55.9             |
| Shares on issue (m)                            | 1,582.1          | 1,808.0          |
| <b>Market cap (\$m)</b>                        | <b>47.5</b>      | <b>54.2</b>      |
| Net cash (\$m)                                 | 0.7 <sup>3</sup> | 5.6 <sup>3</sup> |
| Debt and equipment leases (\$m)                | 3.2 <sup>3</sup> | 3.2 <sup>3</sup> |
| <b>EV (\$m)</b>                                | <b>49.9</b>      | <b>51.8</b>      |

In addition, the following securities are on issue:

85,000,000 unlisted options with an exercise price of \$0.045, expiring on 31 August 2023

39,199,170 unlisted options with exercise prices between \$0.023 and up to \$0.2941 and various expiry dates

35,000,000 performance rights relating to either EBITDA (2023) or retention milestones

1. The Company raised a total of \$5.1 million via a placement

2. Convertible notes were issued in May 2022 to allow the Company to settle on the new plant. The notes will convert at \$0.027 and noteholders will receive 3% in total interest as cash.

3. Estimate as of 18 July 2022



# Pro-forma balance sheet<sup>1</sup>

|                               | 31/12/2021        | Change to<br>30/06/2022 | Pro-forma Adjustments       |                      |                                   | Pro-forma<br>18/07/2022<br>total |
|-------------------------------|-------------------|-------------------------|-----------------------------|----------------------|-----------------------------------|----------------------------------|
|                               |                   |                         | Convertible note<br>raising | Insurance recoveries | Capital raising<br>(net of costs) |                                  |
| <b>Assets</b>                 |                   |                         |                             |                      |                                   |                                  |
| Cash and cash equivalents     | 3,863,849         | (4,537,929)             | 1,419,400                   |                      | 4,794,000                         | 5,539,320                        |
| Insurance recoveries          | -                 |                         |                             | 3,240,000            |                                   | 3,240,000                        |
| Trade and other receivables   | 1,580,643         |                         |                             |                      |                                   | 1,580,643                        |
| Property, plant and equipment | 6,475,157         | 3,077,995               |                             |                      |                                   | 9,553,152                        |
| Other current assets          | 393,557           |                         |                             |                      |                                   | 393,557                          |
| <b>Total Assets</b>           | <b>12,313,206</b> | <b>(1,459,934)</b>      | <b>1,419,400</b>            | <b>3,240,000</b>     | <b>4,794,000</b>                  | <b>20,306,672</b>                |
| <b>Liabilities</b>            |                   |                         |                             |                      |                                   |                                  |
| Trade and other payables      | 689,497           |                         |                             |                      |                                   | 689,497                          |
| Borrowings                    | 1,665,881         | (308,516)               |                             |                      |                                   | 1,357,365                        |
| Lease Liability               | 1,910,764         | (99,056)                |                             |                      |                                   | 1,811,708                        |
| <b>Total Liabilities</b>      | <b>4,266,142</b>  | <b>(407,572)</b>        |                             |                      |                                   | <b>3,858,570</b>                 |
| <b>Net Assets</b>             | <b>8,047,064</b>  | <b>(1,052,362)</b>      | <b>1,419,400</b>            | <b>3,240,000</b>     | <b>4,794,000</b>                  | <b>16,448,102</b>                |
| <b>Equity</b>                 |                   |                         |                             |                      |                                   |                                  |
| Issued Capital                | 23,146,672        |                         | 1,419,400                   |                      | 4,794,000                         | 29,360,072                       |
| Reserves                      | 645,850           |                         |                             |                      |                                   | 645,850                          |
| Accumulated Losses            | (15,745,458)      | (1,052,362)             |                             | 3,240,000            |                                   | (13,557,820)                     |
| <b>Total Equity</b>           | <b>8,047,064</b>  | <b>(1,052,362)</b>      | <b>1,419,400</b>            | <b>3,240,000</b>     | <b>4,794,000</b>                  | <b>16,448,102</b>                |

1. Estimate as of 18 July 2022



The background of the slide is a photograph of a large pile of cut logs in a field. The logs are stacked in neat rows, and the field is green. In the background, there are trees and hills. The entire image is covered with a semi-transparent green overlay. The text '06 Appendix' is centered on the image. The number '06' is inside an orange square, and the word 'Appendix' is in white text.

# 06 Appendix



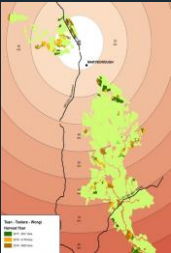
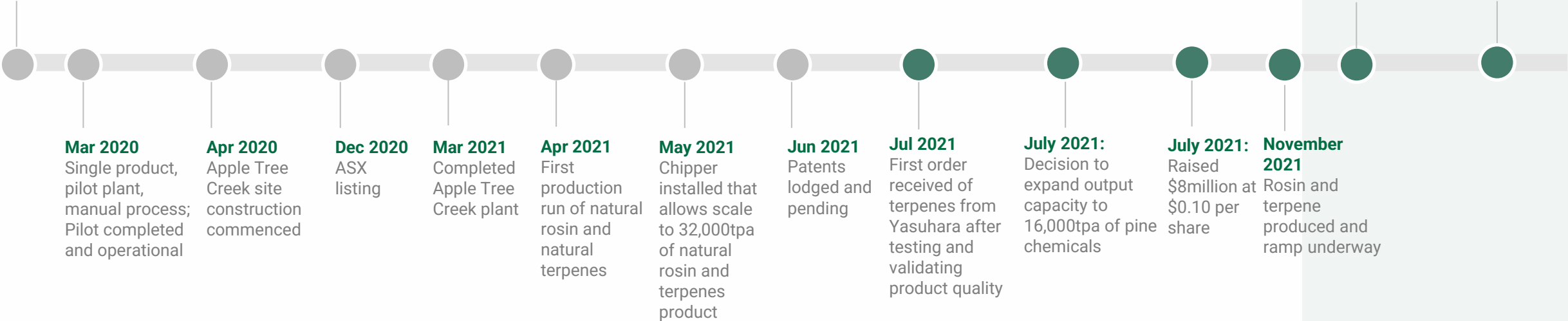
Click  
to play  
the video



# Company timeline



Initial agreement with Hancock Timber Resource Group (Hancock) for 15,000tpa feedstock supply agreement with first choice over resinous logs



**Apple Tree Creek site**  
Significant forest capacity within 150kms of plantations



**Long established relationship** with forest owners is a significant barrier to competition



**Expansion opportunities** are plentiful, well beyond 16,000tpa





# Positive structural market dynamics creates demand supply gap

Natural pine chemical demand increasing at a 5% CAGR until 2027<sup>1</sup>.

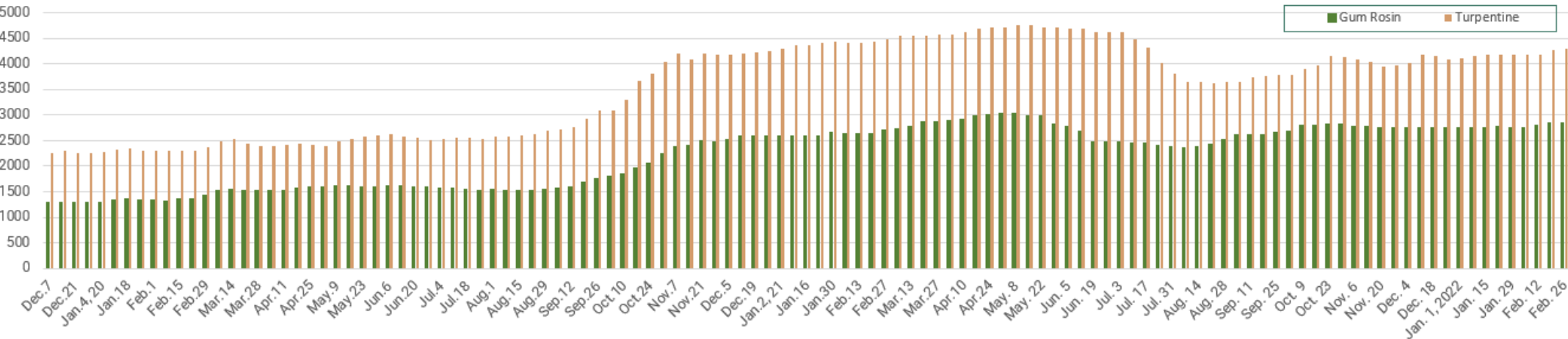
Pine chemical gum supply is in decline, and CTO<sup>2</sup> supply remains static.

Petrochemicals are being used to meet the supply gap pricing, which indicates customers prefer pine chemical supply over harmful processes.

TURPENTINE, ROSIN AND HYDROCARBON DEMAND SUPPLY



GUM ROSIN AND GUM TURPENTINE WEEKLY PRICE TABLE DECEMBER 2019 – FEBRUARY 2022 (USD)

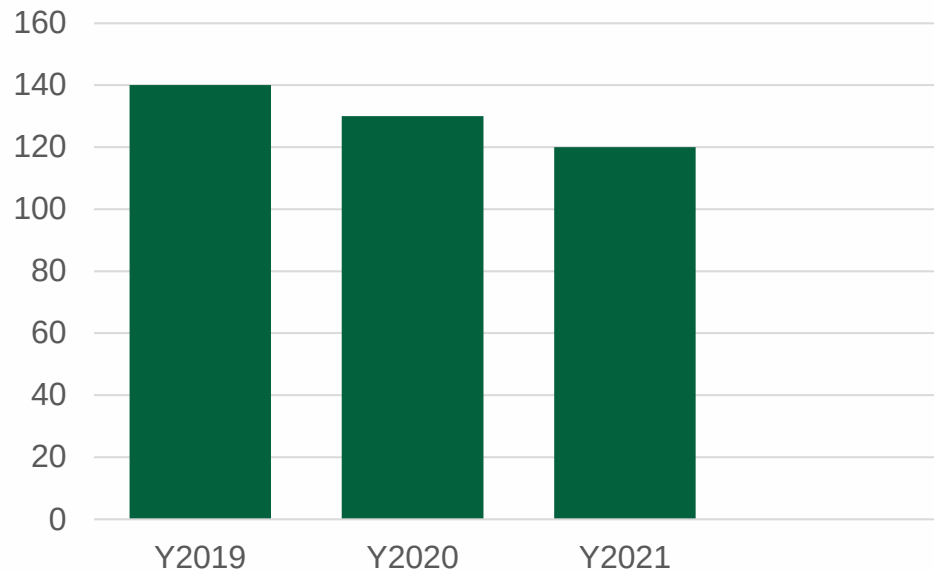


1. Fact.MR Pine Chemicals Market Forecast, Trend Analysis & Competition Tracking - Global Market Insights 2019 to 2027 Feb 2020; Executive Summary  
2. CTO: crude tall oil which is a byproduct of paper mill production, this can be fractionated to produce pine chemicals.

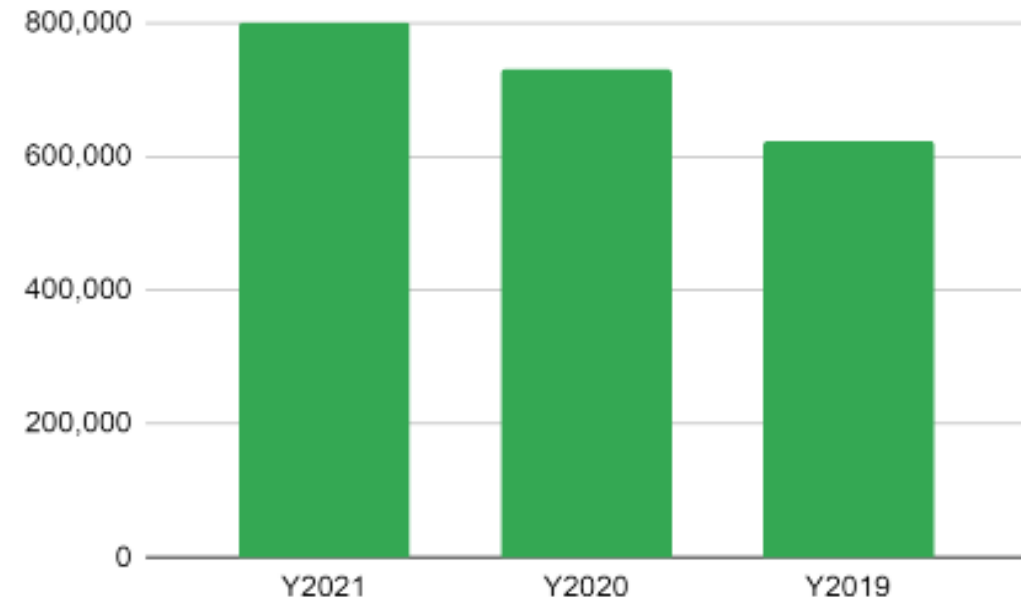


# Pine chemical gum supply is in decline, CTO<sup>1</sup> supply remains static

GLOBAL TURPENTINE PRODUCTION<sup>2</sup>



GLOBAL GUM ROSIN PRODUCTION<sup>2</sup>



Current supply gap has been met by resins from petrochemicals. Petrochemicals are being used to meet the supply gap but the pricing indicates customers prefer pine chemical supply.

1. CTO: crude tall oil which is a byproduct of paper mill production, this can be fractionated to produce pine chemicals.

2. Thousand tonnes, Pine Chemical industry Global overview and Trends Michel Baumassy , Forchem Oyj

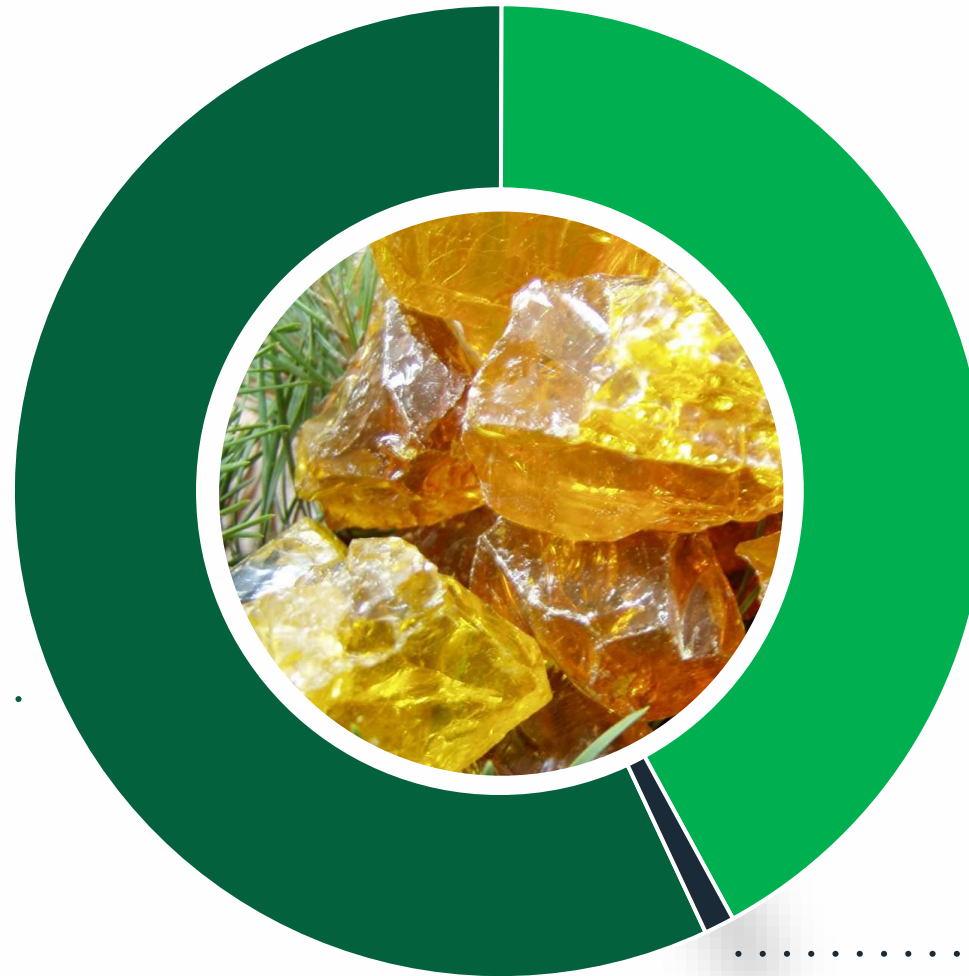


# Current pine chemical supply

2021 SOURCES OF  
ROSIN PRODUCTION

**57%**

Gum Rosin



**42%**

Tall Oil Rosin

**1%**

Wood Rosin





# Existing supply

Traditionally, rosin and terpene are extracted using environmentally unfriendly and labour-intensive processes. Existing production processes employ the use of high temperature, high pressure and environmentally and physically dangerous chemicals.

Leaf's only uses low temperatures, low pressure and a natural organic solvent. Products are environmentally friendly, have no undesirable residues from the production process and are suitable for all downstream processing including food grade products

Pine logs sourced from plantations, extracts and distills rosin and terpenes respectively (gum rosin & terpenes). Leaf's is an efficient, sustainable low-cost producer in the global market.

There are three processes commonly used to extract rosin and terpenes from pine trees:



## CRUDE TALL OIL (CTO)

A by-product of the pulp-making process, is fractionated to produce rosin and terpenes (tall oil rosin & terpenes). Whilst CTO is renewable it is an environmentally unfriendly process as it creates serious waste streams with harmful impacts.



## CRUDE WOOD OR EXUDATES (OLEORESIN) TAPPING

Is collected from incisions (Tappers) made in the tree trunk which is then distilled into terpenes and rosin (gum rosin & terpenes). This process is seasonal and highly labour intensive. This process is the primary production process used in China and ROW. High-cost and seasonal, making up 25-30% of supply.



## PINE WOOD (STUMPS)

Is solvent-extracted using petroleum based solvents such as Hexane and then distilled to separate terpenes and rosin (wood rosin & terpenes).



# Key terms used in this document

## **TERPENES**

The essential oil that is present in pine trees

## **ROSIN**

The gum or tacky sap present in pine trees

## **NATURAL ROSIN**

Used to describe the Leaf Resources manufacturing process

## **PINE CHEMICALS**

Terpenes, Terpenes, Rosin, Resin and Oleoresin

## **HYDROCARBON RESINS**

A larger group of chemicals that include long carbon chain chemicals from both petroleum based and also pine based chemicals

## **SUSTAINABLE**

Causing little or no damage to the environment and therefore able to continue for a long time

## **RENEWABLE RESOURCE**

A renewable resource is a natural resource which will replenish to replace the portion depleted by usage and consumption, either through natural reproduction or other recurring processes



# Risks

| Risk                           | Mitigant                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Natural disaster</b>        | Pine trees tend to be resilient. Most storm events tend to be localised and will not affect all properties or to the same degree. Damage is more likely to be localised on one forest, not normally all                                                                                                                                                                          |
| <b>Regulatory or political</b> | As Leaf is producing natural sustainable pine chemicals it is unlikely to be impacted by EPA regulations or other regulations that petroleum chemical companies have to contend with.                                                                                                                                                                                            |
| <b>Process or IP</b>           | Non-compete clauses exist for all existing staff of Leaf. Standard operating procedures exist but are not easy to copy or duplicate. The knowhow is a combination of over 30 years of experience including information not documented. Leaf lodged provisional patent applications in June 2020.                                                                                 |
| <b>Customer concentration</b>  | Leaf will seek to mitigate buyer risk by securing offtake from other parties.                                                                                                                                                                                                                                                                                                    |
| <b>Counterparty</b>            | Internal controls.                                                                                                                                                                                                                                                                                                                                                               |
| <b>Currency</b>                | Hedging as appropriate.                                                                                                                                                                                                                                                                                                                                                          |
| <b>Demand</b>                  | Leaf is unable to predict the future course of the pine chemicals industry, or the strength, pace or sustainability of its growth worldwide. Pine chemicals form a part of the hydrocarbon commodities market. Demand for hydrocarbons is ever present for oils, adhesives, grease, inks and plastics. It is not anticipated that these downstream markets are likely to decline |

| Risk                       | Mitigant                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Personnel</b>           | The founders / key personnel have an affinity to the project and hold equity to ensure ongoing retention. Leaf intends to systemise its business to reduce this risk.                                                                                                                                                                                   |
| <b>Plant commissioning</b> | The rosin processing pilot plant has been deployed and tested for over a year processing up to 75 tonnes of logs per day. Leaf believes any technical risks for its commercial plant would be minor. APS have been engaged to implement gold-standard health and safety policies and performance is monitored via regular internal and external audits. |
| <b>Feedstock supply</b>    | Forest owners are very conservative and Leaf obtaining the log supply contract was a major milestone built on a 33-year long relationship with major pine plantation manager. The Company has identified several feedstock supply sources to meet its manufacturing requirements.                                                                       |
| <b>Competitor response</b> | Leaf has lodged provisional patent applications on its innovative organic solvent process. The pine chemical industry is a relatively large commodity market. The Company is able to sell its commodities into this market.                                                                                                                             |
| <b>Commodity price</b>     | The market is defined as a worldwide commodity and both rosin and terpene chemicals are sold by open and closed bidding processes directly to consuming chemical companies and selling agents. Leaf will sell to both types of buyers.                                                                                                                  |





# CONTACT US

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