

nanollose™

ASX:NC6

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**A LEADING BIO-MATERIALS COMPANY  
COMMERCIALISING SCALABLE TECHNOLOGY  
TO CREATE FIBRES AND FABRICS WITH  
MINIMAL ENVIRONMENTAL IMPACT**

Investor Presentation – April 2021

# INVESTMENT HIGHLIGHTS



## SUPERIOR TECHNOLOGY

- ◇ Developing a scalable revolutionary technology to create Tree-Free fibres and fabrics, with minimal environmental impact.
- ◇ No deforestation, no requirement for the wood-pulping process, pesticides or fertilisers, and have only a modest demand for energy, land and water.
- ◇ First wearable garment made from Tree-Free Rayon using standard industrial equipment, and first garment ever made using a plant-free rayon fibre.

## HIGH GROWTH MARKETS

- ◇ First mover advantage in the Rayon market, a high growth market forecasted to grow from US\$14.4b in 2019, to US\$20.9b by 2024, at a CAGR of 7.8%.
- ◇ The personal wipes market is a high growth market estimated to grow to US\$23b by 2025, at a CAGR of 5.6%.

## STRATEGIC PARTNERSHIPS

- ◇ Joint patent application with Grasim Industries business unit, Birla Cellulose to accelerate development and commercialisation with work now progressing at an accelerated rate.
- ◇ Collaboration agreement with Codi Group, Europe's leading producer of personal wipes, to develop a viable consumer wipe product.

## THE SHIFT IS HAPPENING

- ◇ Leading fashion companies globally have already started to shift towards sustainability.
- ◇ Nanollose has strong interest from major international clothing brands and super users of cellulose based fibres.

## SIGNIFICANT OPPORTUNITIES

- ◇ Future opportunities to leverage Nanollose's core IP for applications beyond fibre and fabrics.
- ◇ Strategic investment to acquire a 20% holding in CelluAir, an Australian company developing an Advanced Filtration Technology ("AFT") based on nanocellulose.

# COMPANY OVERVIEW



## NANOLLOSE LIMITED (ASX:NC6)

### 1 - CLOTHING & TEXTILE INDUSTRY

Nanollose Solution: Nullarbor™ Tree-Free Lyocell

**\$20.9b**

Rayon market forecasted to reach US \$20.9 billion by 2024.

**7.8%**

Global CAGR for the period 2019– 2024.

### 2 - SINGLE USE PERSONAL WIPES MARKET

Nanollose Solution: Nufolium™ Non-Woven Tree-Free Lyocell

**\$23.1b**

Personal care wipe market forecasted to reach US \$23.1 billion by 2023.

**5.6%**

Global CAGR for the period 2019– 2025.

# CORPORATE SNAPSHOT

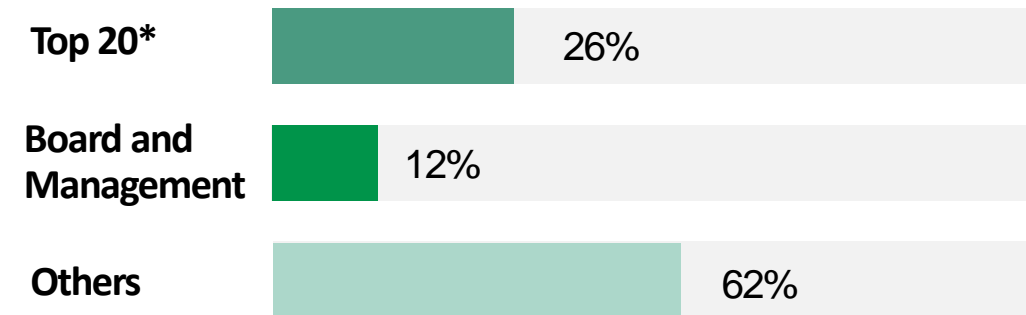


Nanollose Limited (ASX:NC6) is a leading bio-materials company, commercialising scalable technology to create fibres and fabrics with minimal environmental impact.

The Company has developed a Tree-Free nullarbor™ lyocell fibre for clothing and textiles and nufolium™ for nonwoven fibre applications, including personal wipes. Following a Collaboration Agreement, in January 2021 the Company filed a joint patent application with Grasim Industries for its tree-free, nullarbor™ high tenacity lyocell fibre, with development and commercialisation now progressing at an accelerated rate.

Capital Structure	
ASX Code	NC6
Shares on Issue	147.6m <sup>1</sup>
Options	4.7m <sup>2,3</sup>
Performance Rights	2.0m <sup>4</sup>
Share Price (23 April 2021)	A\$0.125
Market Capitalisation	A\$18.46m
Number of shareholders (23 April 2021)	1,522

## Shareholder Breakdown



\* Excluding Board and Management

1 An additional 1,000,000 Shares at an issue price of \$0.10 will be issued following receipt of shareholder approval to be sought as soon as practicable.

2 Varying options with exercise prices of \$0.08 - \$0.10.

3 An additional 14,768,637 Options (free-attaching under the capital raising) and 7,500,000 Options (as consideration for capital raising services provided) (each exercisable at \$0.15), will be issued following receipt of shareholder approval to be sought as soon as practicable.

4 Held by the Executive Chairman, and subject to vesting conditions.

# BOARD OF DIRECTORS / ADVISORS



## Dr Wayne Best

Executive Chairman

- 40 years' experience in organic chemistry and biotechnology, Fellow of the RACI, and Graduate of the Australian Institute of Company Directors.
- PhD from UWA, 2 years at Imperial College (UK), a year at ANU (Canberra), followed by 4 years at chemical giant ICI.
- 10 years at the Chemistry Centre (WA) then founded and managed Epichem, a globally competitive contract R&D company, for 14 years.



## Heidi Beatty

Non-Executive Director

- 20 years' experience developing consumer and health care products, and founder of Crown Abbey, a leading product development consultancy.
- Chemistry degree from the University of York (UK), and worked with Johnson & Johnson for 10 years, developed wet wipes and Johnson's Baby®.
- In 2010 joined PDI Healthcare, where she led teams to launch surface disinfectants and skin antiseptics products.



## Terence Walsh

Non-Executive Director

- Former commercial lawyer and manager with over 20 years of experience in project development, mining and general commercial law.
- Initially worked with leading law firms in Perth & Sydney before moving to in-house Counsel with Rio Tinto Ltd and then Hancock Prospecting Pty Ltd.



## Winton Willesee

Non-Executive Director

- Experienced company director, with significant experience in strategy, development, corporate governance, IPO's, M&A & corporate finance.
- Qualifications in Commerce, Economics and Finance, Accounting, Applied Finance and Investment, Applied Corporate Governance and Education.
- Fellow of the Financial Services Institute of Australasia, the Governance Institute of Australia and the Institute of Chartered Secretaries and Administrators, Graduate of the Australian Institute of Company Directors and a Member of CPA Australia.



## Carla Woitd

Fashion Consultant

- Leading fashion consultant with 15 years' experience across all facets of the fashion industry, and has worked with leading fashion companies globally, provided consultancy services to leading international brands, with international experience working in London, New York & Rotterdam.
- Board member of The Australian Fashion Council, Australia's peak industry body.

# AN INDUSTRY PROBLEM

Fashion is the second most pollutive industry after oil, with over 150 million trees chopped down annually to make cellulose-based fibres for textiles, a figure that is set to double in the next decade, making it commercially, environmentally and socially unsustainable.

## THE ENTIRE INDUSTRY INCLUDING FASHION BRANDS AND FIBRE MANUFACTURERS ARE WORKING TOWARDS A MORE SUSTAINABLE SOLUTION



### POLYESTER - NYLON - ACRYLIC

- Non-biodegradable
- Made from non-renewable petroleum resources
- Production processes are energy intensive



### COTTON

- Large amounts of pesticides, water and land to grow, and is also a seasonal crop.
- 10,000 litres of water to produce 1kg of cotton = 2,700 litres to make a cotton t-shirt.
- Covers 2.5% of the world's cultivated land but uses 10-16% of the world's pesticides, more than any other single major crop.



### RAYON

- Wood-pulping process is energy intensive, polluting and results in deforestation.

# THE NANOLLOSE ADVANTAGE

## TRADITIONAL RAYON - PRODUCTION PROCESS



CURRENT  
FEEDSTOCK  
TREES

1



TREES CUT  
& CHIPPED

- Destruction of forests
- 12-18 year growth cycle

2



WOOD PULPING  
PROCESS

- Energy intensive
- Hazardous chemicals
- Waste & pollution

3



TREE-BASED  
CELLULOSE

4



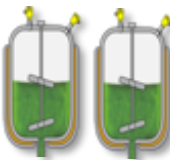
RAYON FIBRE

## NANOLLOSE TREE-FREE FIBRE - PRODUCTION PROCESS



NANOLLOSE FEEDSTOCK  
WASTE

WASTE  
REMEDiation



FERMENTATION  
OF WASTE

- Cellulose from waste
- Grow cycle of 18 days

WOOD PULPING  
NOT REQUIRED



Reduced processing  
saves time and money  
whilst protecting the  
environment



TREE-FREE  
CELLULOSE

HIGH TRACEABILITY



nullarbor  
FIBRE

TREE-FREE  
LYOCELL FIBRE

- Nullarbor™ can be produced using existing industry infrastructure so no need to invest in new equipment

No Deforestation

No Wood Pulping Process

Low Energy Use

No Pesticides

Low Water Use

Low Use of Land

# THE NANOLLOSE SOLUTION



## A WORLD FIRST TECHNOLOGY THAT TURNS LIQUID WASTE INTO LYOCCELL FIBRES WITH MINIMAL ENVIRONMENTAL IMPACT

- Scalable and environmentally friendly technology to create Tree-Free fibres and fabrics with minimal environmental impact.
- Directly addresses the industry problem as Nanollose's fibres are made from 100% natural materials, and produced from waste streams from food, beverage and agricultural industries, meaning that it is 100% Tree-Free, hence doesn't require an intensive pulping process.





# GRASIM INDUSTRIES COLLABORATION & JOINT PATENT APPLICATION

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- ◇ In January 2021, Nanollose and Grasim Industries Limited (Grasim) filed a joint patent application for a Tree-Free high tenacity lyocell fibre made from Microbial Cellulose.
- ◇ Grasim is a company belonging to global conglomerate, Aditya Birla Group, one of the world's largest Rayon manufacturers.
- ◇ Grasim's experts produced a fibre that is finer than silk and significantly stronger than conventional lyocell made from wood pulp.
- ◇ Nanollose and Birla Cellulose, Grasim's business unit focussed on sustainable fibres, are now focussed on taking this success to the pilot production phase to produce sufficient quantities of fibre to enable commercial agreements with fashion brands.
- ◇ The joint patent application follows a Collaboration Agreement announced 30 January 2020, to exclusively develop, and commercialise Nanollose's Tree-Free fibres.
- ◇ Provides Nanollose with a world class and globally recognised industrial partner with the ability to accelerate development and commercialisation.
- ◇ An industrial fibre manufacturer was the missing link needed to complete Nanollose's waste to textile value chain.

Grasim Industries Limited, is the flagship company of US\$48.3 Billion Aditya Birla Group, and ranks amongst the top publicly listed companies in India, and a leading global producer of manmade cellulosic fibres for apparel, textiles and non-woven applications.

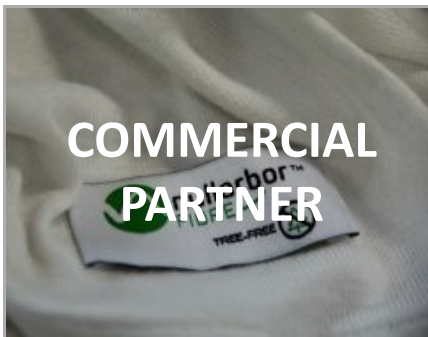
# COMMERCIALISATION STRATEGY



- ✓ **ACHIEVED – SEP 2020 - Commence Scale-up of Microbial Cellulose with Nanollose’s Chinese partner**
- ✓ **ACHIEVED – FEB 2021 - Commence Pilot Production Phase of Nullarbor lyocell fibre with Grasim**
  - Scale production from kg to tonne quantities
  - Begin steps to produce and deliver 2-5 tonnes per month for continued commercialisation



- ✓ **ACHIEVED – JAN 2021 - Joint Patent Application with Grasim Industries Limited to:**
  - Commence pilot production phase to produce sufficient quantities of lyocell for sample distribution
  - Broaden product development
  - Refine manufacturing costs
  - Accelerate commercialisation
- ... **PENDING – Q3 2021 - Commence nullarbor fibre offerings to brands and super users**
  - Nanollose to provide samples of fibre and textiles to selected brands and fashion houses and enter discussions regarding supply agreements and licensing trademarks



- ... **PENDING – Q3 2021 - Sign exclusive supply agreements**
  - With globally renowned designers and high tier apparel Brands
- ... **PENDING – Q3 2021 - Provide nufolium samples to nonwoven manufacture**
  - With the aim of further progressing the Codi agreement

# THE SHIFT HAS ALREADY BEGUN

100% MORE SUSTAINABLE COTTON +  
100% MORE SUSTAINABLE LINEN +  
100% RECYCLED POLYESTER +  
80% USE OF RENEWABLE ENERGY +  
NEW PLASTICS ECONOMY GLOBAL COMMITMENT FROM THE ELLEN  
MACARTHUR FOUNDATION +

2025  
**ZARA**

## PRADA



"Nowadays sustainability topics, particularly environmental and social ones, are shared at every level, ranging from individuals to institutions. Even more significant, they represent sound values that transcend all cultures."

CARLO MAZZI, Chairman of Prada S.p.A.

NEWS ARTICLE

## ON THE WAY TOWARDS SOURCING 100% MORE SUSTAINABLE MATERIALS



Today, 57% of all materials sourced by H&M group are either recycled or sourced in a more sustainable way. This is an increase from 35% in just one year, and takes us closer to our goal to only use recycled or other sustainably sourced materials by 2030.

18 MAR, 2019

NIKE SPORTSWEAR

## The Latest Collection of Nike Classics is Made from Recycled Uppers

August 10, 2020

[GALLERY](#) [SHARE](#)



# PEER LANDSCAPE



	Company	Uses existing fibre making infrastructure	Creates new cellulose from waste	Technology Concept	Stage of Development	Country	Founded	Listed
	<b>Nanollose</b>	✓	✓	Production of tree-free cellulose & rayon	Working with world's largest rayon maker	Australia	2014	✓
	<b>Circular systems</b>	✓	✗	Extracting cellulose from waste	Pilot plant	USA	2017	✗
	<b>Orange Fiber</b>	✓	✗	Rayon from orange peel cellulose	Pilot plant	Italy	2014	✗
	<b>Renewcell</b>	✓	✗	Recycled cellulose	Production capacity 255,000 tonnes/year	Sweden	2012	✗
	<b>Evrnu</b>	✓	✗	Recycled cellulose	Small scale production	USA	2014	✗
	<b>Tyton Biosciences</b>	✓	✗	Recycled cellulose & polyester	Pilot plant	USA	2011	✗
	<b>Infinited Fiber</b>	✗	✗	Recycled cellulose with new rayon process	Pilot plants (150,000 tonnes/year)	Finland	2016	✗
	<b>Bolt Threads</b>	✗	✗	Production of new synthetic "spider silk"	Commercial factory under construction	USA	2009	✗
	<b>Spinnova</b>	✗	✗	New eco-friendly cellulose fibre spinning process	Investment received for commercial production facility	Finland	2014	✗

# OTHER COMMERCIAL APPLICATIONS



# CODI GROUP COLLABORATION AGREEMENT

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- ◇ Collaboration Agreement with Codi Group, Europe's leading producer of personal wipes, to develop a viable consumer wipe product, using Nanollose's Tree-Free nufolium™ nonwoven fibre.
- ◇ Codi's extensive technical and commercial understanding, along with its ability to prototype and test products, will assist Nanollose in commercialising its Tree-Free rayon fibre for this market sector.
- ◇ Clients include multinational brands, European retailers, distributors and institutional parties, with the group distributing products to more than 40 countries.
- ◇ Codi Group owns high value proprietary technical information relating to the production, marketing and distribution of consumer wipes.
- ◇ Once Nanollose's fibre has undergone further testing for the production of wipes and has demonstrated its ability to achieve commercial viability in this market, both parties will seek to enter into a formal agreement with the specific intention to form a long-term business relationship.

**Codi produces more than 7 billion wipes in  
around 150 million consumer packages per  
year.**

# STRATEGIC INVESTMENT IN CELLUAIR

- ◇ Nanollose has made a \$200,000 strategic investment to acquire a 20% holding in CelluAir, an Australian company developing an Advanced Filtration Technology (“AFT”) based on nanocellulose.
- ◇ Developed by Queensland University of Technology, the AFT has been developed and validated over a number of years, culminating in the filing of a patent application in July 2020.
- ◇ CelluAir is currently scaling the AFT using off-the-shelf commercial equipment
- ◇ The Investment potentially enables Nanollose to enter the high growth personal protective equipment market, within which the face mask sector alone has reached US\$11b in 2020, with strong growth forecast<sup>1</sup>.
- ◇ Initial testing by QUT has demonstrated the AFT to be potentially more effective than traditional N95 face mask filtration technology.
- ◇ The AFT and CelluAir are being incubated by Innovyz, the commercialisation specialists responsible for developing and listing of Titomic Limited (ASX:TTT) and Amaero International Limited (ASX:3DA).
- ◇ Strong working synergies exist between the companies, with the opportunity for Nanollose to supply microbial cellulose and expertise in nanocellulose to CelluAir, assisting in the commercialisation of the technology.



**The AFT was developed the  
Queensland University of  
Technology**

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The indicative 2020 timetable is a guide of Nanollose's intentions at the date of this presentation only. Nanollose reserves the right to vary the timetable at its discretion, and further notes that the above timings are subject to change due to circumstances outside of its control. It is Nanollose intention that if successful in securing a fibre purchasing agreement the company would expect payment for its products, however, Nanollose notes there is no guarantee that this type of partnership will eventuate within the time frame set out in the 2020 roadmap, or at all.



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