

## SCALABLE TECHNOLOGY TO CREATE FIBRES AND FABRICS WITH MINIMAL ENVIRONMENTAL IMPACT

Investor Presentation - January 2020

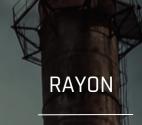


# CURRENT FIBRES ARE FACING ENVIRONMENTAL & COMMERCIAL PRESSURES

POLYESTER - NYLON - ACRYLIC

Non-biodegradable and made from nonrenewable petroleum resources, with production processes that are energy intensive, toxic and difficult to recycle COTTON

Requires large amounts of pesticides, water and land to grow. It is also a seasonal crop



Wood-pulping process is energy intensive, polluting and results in deforestation. Rayon is a high growth market valued at US\$16.6B in 2019





## COST-EFFECTIVE, SCALABLE & ECO-FRIENDLY PROCESS



#### WASTE FEEDSTOCK

Liquid organic waste from food and beverage industries are used as feedstock



#### **FERMENTATION**

Fermentation of waste using a natural biological process produces microbial cellulose



#### **PURIFICATION**

Microbial cellulose is then separated, washed and dried



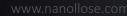
FIBRE & YARN

Microbial Cellulose is spun into a high-quality Tree-Free Rayon fibre or yarn



**FABRICS** 

Ability to knit or weave fibre into fabrics and garments





## TECHNOLOGY AND PROCESS VALIDATED

The first wearable garment using nullarbor<sup>TM</sup> Tree-Free rayon was manufactured using standard industrial equipment, validating Nanollose's waste-to-wear technology.

## ADVANTAGES OF OUR TREE-FREE RAYON





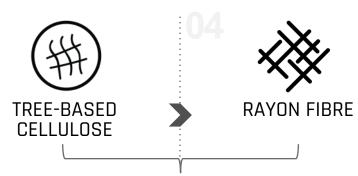
### TREES CUT & CHIPPED

Destruction of forests12-18 year growth cycle



### WOOD PULPING PROCESS

Energy intensiveHazardous chemicalsWaste & pollution



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



NANOLLOSE FEEDSTOCK
WASTE

WASTE REMEDIATION



FERMENTATION OF WASTE

- Cellulose from waste - Grow cycle of 18 days



'COMPLETE BYPASS'

Time and cost savings while protecting the environment





HIGH TRACEABILITY

**RAYON FIBRE** 

NO DEFORESTATION - NO PULPING PROCESS - LOW ENERGY USE - NO PESTICIDES - LOW WATER USE - LOW USE OF LAND

## 2019 HIGHLIGHTS & OUTLOOK FOR 2020

2019 ACHIEVEMENTS

#### **SUPPLY**

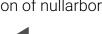
Developed the microbial cellulose (MC) supply chain



Secured initial commercial supply of Microbial Cellulose for fibre trial and initial production



Signed a Supply and Purchase Agreement to unlock a consistent supply of Microbial Cellulose for commercialisation of nullarbor<sup>TM</sup> fibre



#### **PROCESS**

Refined Nanollose's products and processes to commercial levels



Developed revolutionary Tree-Free fibre products









Successfully validated entire production process from Waste-to-Fibre-to-Wear



#### CORPORATE

Initial development partner secured and commercial strategy implemented



Signed cooperation agreement with Codi group, a global leader in the personal wipes market



Implemented a "Fibre First" development strategy to focus efforts towards commercial outcomes and transitioned from internal to external R&D activities



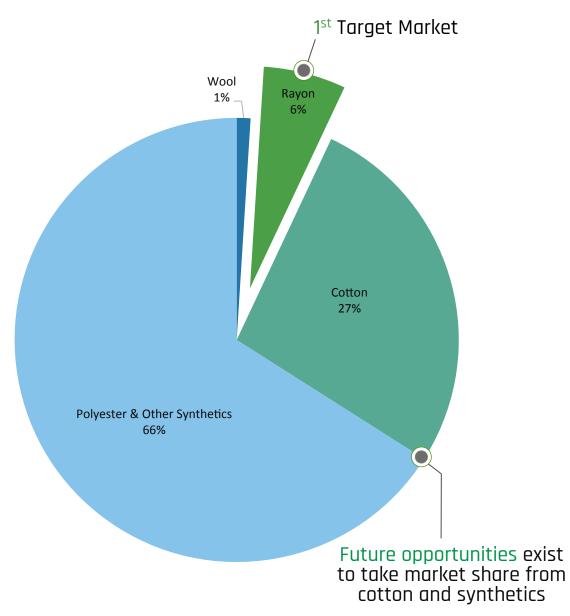
Nanollose has established a refined 2020 commercial roadmap

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## OUR BREAKTHROUGH RAYON PRODUCTS

- Rayon is a well established fibre currently derived from trees
- Nanollose has developed three revolutionary **TREE-FREE Rayon products**
- ♦ All nullarbor<sup>TM</sup> products are **100% biodegradable**
- Proven ability to withstand current industrial manufacturing
- Easily retrofitted into today's textile and clothing production processes
- Nanollose also developed **nufolium** TM for non-woven fibre applications





## FIRST MOVER ADVANTAGE IN RAYON MARKET



- ♦ High growth market growing 10% pa
- Rayon is used to make everything from textiles, personal hygiene products to tyres
- Nanollose has the only eco-friendly Tree-Free Rayon fibre alternative available

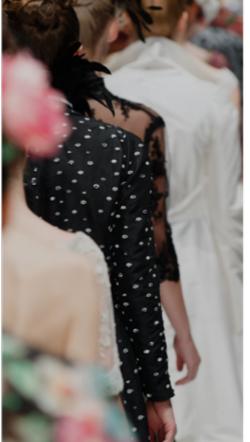
## STRONG INTERNATIONAL INTEREST

- Brands, retailers and manufacturers **urgently seek** sustainable alternatives to rayon and cotton
- Nanollose has **significant interest** from major international clothing brands and super users of cellulose based fibres
- The company is **currently in discussions** with a number of these groups and plans to work towards manufacturing / collaboration agreements in 2020
- The company is also working with Codi Group to establish a long-term commercialisation path for Nanollose's Non-Woven fibre for **applications in personal wipes**























## THE SHIFT HAS ALREADY BEGUN

Thirty fashion companies, including Chanel, Adidas and H&M have joined an initiative spearheaded by Kering Chief François-Henri Pinault, which focused on climate, biodiversity and oceans

Zara has announced that all of its collections will be made from **100% sustainable fabrics before 2025** 

Prada signed a £42.9 million loan with banking group Crédit Agricole, with repayment terms conditional to meeting key **targets around the sustainability** of its products and operations

Nike unveiled a comprehensive "Move to Zero" sustainability plan, building upon existing efforts to fight climate change

## PEER LANDSCAPE

#### **OUR CELLULOSE PEERS**



Developing cellulose fibre without the use of current dissolution chemicals needed for wood base

#### ORANGE FIBER

Orange Fiber manufactures fibre from citrus waste

#### re:newcel

Developing recycling tech that dissolves used cotton and rayon fibers into a pulp then into textile fibre



Developing recycling and separation tech that turns post consumer textiles-paper and agricultural waste to new fibre



#### **WASTE-TO-FIBRE TECHNOLOGIES**

Technology that turns organic liquid waste from food and beverage industries into Microbial Cellulose (MC) that bypasses all chemical extractions





Technology that regenerates MC into fibre using current industry infrastructure that bypasses significant investment or retro fitting





#### **SUPER LAB TECH**



**Bolt** Threads





#### **RECYCLE TECH**





#### REPURPOSE TECH



EVZNU

**PANGAIA** 

#### SYNTHETIC TECH



ADVANCING FROM BOTH SIDES

NANOLLOSE IS THE ONLY COMPANY DEVELOPING FIBRE FROM MULTIPLE WASTE STREAMS / SOURCES

## **DEVELOPMENT & COMMERCIAL PARTNERS**



**ORGANISATION** 

**Nanollose is in discussions** with a number of industrial fibre manufacturing companies to potentially solidify a cooperation agreement in the near-term

**AGREEMENT** 

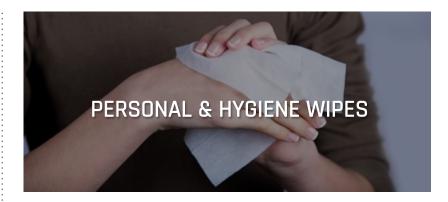
These agreements could provide Nanollose with access to world-class expertise/facilities to further develop and commercialise nullarbor<sup>TM</sup>

**NANOLLOSE FIBRE** 



**MARKET SIZE** 

Rayon fibre market estimated at US\$16.3 Billion in 2019 and growing to an estimated US\$23.8 billion in 2023



Nanollose has signed a cooperation agreement with Codi Group, a global leader in the development, manufacturing and marketing of high-quality personal care wipes

Both parties are working exclusively with each other for the development of Plant-Free rayon wipes using Nanollose fibre for non-woven applications



The wipes market estimated to be US\$13.2b in 2018 and growing to US\$17.3b by 2023

## **COMMERCIALISATION STRATEGY**

PHASE ONE

#### **INITIAL REVENUE**

Sign formal agreement with large scale global fibre manufacturer to develop and produce commercial offerings for brands and retailers



Establish agreements with clothing brands to purchase initial quantities of fibre

PHASE TWO

#### REVENUE GROWTH

Develop a scalable, cost-effective supply chain that produces significant amounts of Microbial Cellulose from large and accessible waste streams



Monetise this supply chain through downstream partnerships and increase the quantity of fibre available to clothing brands

PHASE THREE

#### **NEW MARKET SEGMENTS**

Establish inroads in new sectors where our Microbial Cellulose can be transformed into valuable products – fashion accessories, personal hygiene, and biomedical

Harness current and future partnerships to progress development and commercialisation of these future products PHASE ONE PHASE TWO PHASE THREE

### PATHWAY TO INITIAL REVENUE



- Produce significant amounts Microbial Cellulose from Nanollose's Indonesian and Chinese based partners
- Provide this raw material to an industrial partner to convert into commercial fibres



- Sign a JV-Partnership with a globally recognised industrial fibre marker to;
  - Enhance technology optimisation
  - · Broaden product development
  - Refine manufacturing costs
  - Accelerate commercialisation
- Commence nullarbor<sup>TM</sup> fibre offerings, sales and marketing to brands and super users



LICENSE OF IP LICENSE OF PROCESS LICENSE OF TRADEMARKS



- Sign exclusive supply agreements with globally renowned designer and high tier apparel Brands
- Sign exclusive development agreements with globally renowned fabric mills
- Commence nullarbor<sup>™</sup> fibre offerings to other high value Textile sectors

#### **POTENTIAL REVENUE STREAMS**

PURCHASE OF NANOLLOSE FIBRE LICENSE OF TRADEMARKS PRODUCT COLLABORATIONS PROFIT SHARE ON PRODUCT

## MILESTONES FOR INITIAL REVENUE

#### SIGN MANUFACTURING COLLABORATION

- Sign manufacturing collaboration with an industrial fibre maker
- Commence development trials with current raw material inventory 500 kgs.

Q1 2020

#### INCREASE DELIVERIES OF MC TO MANUFACTURING PARTNER

- Produce 1-2 Tonnes of MC raw material for initial commercialisation trials
- Begin steps to produce and deliver 2-5 tonnes per month for continued commercialisation

#### SECURE DEVELOPMENT AGREEMENTS WITH CLOTHING BRANDS

- Sign supply agreements with 2 to 4 well-known global clothing brands
- Targeting high end European designers and outdoor/active wear brands

Q2 2020

#### COMMENCE EARLY-STAGE PHASE TWO REVENUE PROGRAM

- Formalise a New Forest Partner to accelerate MC supply and scale
- Begin initial design of a plant and investigate future funding options

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## MILESTONES FOR INITIAL REVENUE

Q3 2020

#### COMMERCIAL PRODUCTION TRIALS

- Deliver larger commercial amounts of MC to fibre manufacturer for production trials
- Optimise and produce first commercial amounts of nullarbor<sup>TM</sup> fibre for commercial offerings
- Commence product trials with Brands from fibre produced in Q1-2
- Commence product trials in Non-Woven sector

Q4 2020

#### FIRST FIBRE PURCHASE ORDER FROM BRANDS

- Initial fibre purchase orders from brands could see Nanollose achieve first revenue
- Commence potential in-store product offerings with Brands and possible B2C E-Tail

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• Further potential for revenues from royalties on clothing items sold

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### REVENUE GROWTH











- Nanollose is currently working with various entities to design a highly automated facility that will be able to **produce MC on industrial scale**
- This will allow the company to potentially produce quantities of fibre suitable for **engaging super users 10+ tons per month**
- Nanollose has trademarked the name newforest for these facilities
- Nanollose intends to partner (JV) with large producers of waste streams to develop this new ecosystem as an alternative to wood pulp
- Benefits include the reduction of costs associated with producing Microbial Cellulose and increasing supply

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**PHASE TWO** PHASE THREE **PHASE ONE** 

## SUPPLY CHAIN REVENUE





#### TARGET CUSTOMER

Large providers of Waste streams

Food & Beverage and related industries

#### **SERVICE FEE OR RETAINER:**

PLANT & PROCESS DESIGN PROJECT MANAGEMENT **INDUSTRIAL REBATES** 

PRIMARY 02

#### FRANCHISE PROCESS

#### CO-LOCATED

Located on/next to a super user sight

#### **TARGET CUSTOMER:**

Food & Beverage processing plants

#### CENTRALISED

Centrally located to a close cluster of super user sites that have a large combined scale.

#### **TARGET CUSTOMER:**

Municipal Services and large waste management entities

#### LICENSE AND/OR FREE CARRY:

LICENSE OF IP & PROCESS PARTNERSHIP-PROFIT SHARE MUNICIPAL REBATES-GRANTS PRIMARY 03

#### **PROCUREMENT & RESELL**



Establish a global supply chain network that produces Tree-Free Cellulose

Develop industrial standards, quality control systems and origin security of the waste streams

> Monetise on procurement services and Trademarks

Secure-Control Supply, Distribution and Cost

**SECONDARY** 

#### **INDUSTRIAL PARTNER**











**TARGET CUSTOMER:** Industrial Partner

Fibre/Yarn/Fabric Manufacturers

FEES FOR WASTE REMOVAL / UP-SALES

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## **NEW MARKET SEGMENTS**



#### PERSONAL HYGIENE

Work with Codi Group to develop a Non-Woven product roll out and a go-to-market strategy that includes internal innovation on specific product types and messaging



#### DIRECT TO CONSUMER

Establish a tight and simple product range using nullarbor™ fibre/yarn to be marketed direct to customer (B2C) using E-Tailer channels such as Etsy.com or via partner websites



#### ADDITIONAL SECTORS

Establish inroads in new sectors where our Microbial Cellulose can be transformed into valuable products

Commence the development in other related product areas – **Acetate and Cellophane (alternative to plastics)** 

**Horticultural Growing mediums** 

Biomedical and Material Science applications

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## INVESTMENT SUMMARY

#### PROVEN TECHNOLOGY

Waste-to-Wear process successfully validated

#### FIRST MOVER ADVANTAGE

World first TREE-FREE Rayon set to become an alternative to rayon and cotton

#### STRONG GLOBAL DRIVERS

Brands, retailers and manufactures are urgently seeking sustainable alternatives

#### LARGE ADDRESSABLE MARKETS

US\$16 billion rayon market with potential to take share from cotton and synthetics

#### ROADMAP TO INITIAL REVENUES

Refined 2020 commercial roadmap that could see initial revenues this year.







## **CAPITAL** STRUCTURE

- Incorporated in September 2014
- Listed on ASX via IPO in October 2017 ASX: NC6
- ♦ 75m shares on issue
- 42.5m options (\$0.30, 31 December 2020)
- 5 founders hold 36% of shares
- Market Capitalisation of \$4.8m (Share price \$0.065)

## CONTACT DETAILS

**WAYNE BEST** 

Executive Chairman M: +61-421-545-820 wayne.best@nanollose.com **ALFIE GERMANO** 

Managing Director M: +61-411-244-477 alfie.germano@nanollose.com

## **MANAGEMENT & BOARD**



DR WAYNE BEST

- 35 Years experience in organic chemistry & biotechnology sector
- ▶ 10 years at the Chemistry Centre (WA) and was responsible for the formation and running the Medical & Biological Chemistry section
- Founded Epichem Pty Ltd in 2003, an award winning contract research company, where he remains Chairman



ALFIE GERMANO MANAGING DIRECTOR

- ▶ 30 years in the global textile industry sector
- 24 years in the Hong Kong garment industry as a leader of a large scale global product development, sourcing and retail operations
- Held VP and Director positions at GAP Inc, VF Corporation, Liz Claiborne Inc, Fila Inc and Carter's Inc



HEIDI BEATTY
NON-EXEC DIRECTOR

- ➤ Founder of Crown Addey Ltd and scientist who has over 20 years experience developing consumer and health care products
- After gaining a bachelors degree in Chemistry from the University of York UK, Heidi worked with Johnson & Johnson for 10 years in Europe and the US.

TERRY WALSH NON-EXEC DIRECTOR

WINTON WILLESEE

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