



General Introduction

# CLEANTEQ WATER

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Sep 2021



**Clean TeQ Water Limited (ASX:CNQ) is an Australian based leading provider of wastewater treatment technology solutions**

**CNQ recently demerged from Sunrise Energy Metals (ASX:SRL) to create a stand-alone water technology company to focus on sales growth and commercialization of its new technologies**

**CNQ has successfully delivered integrated plants across Australia, China, The Middle East and Africa**

**Strong future growth outlook:**

- Four new recently awarded contracts
- Significant pipeline of new revenue generating projects
- Close to launch new graphene membrane with wide applications across the industry

**Strong board and management to execute growth strategy**



**ASX: CNQ**

|                       |            |
|-----------------------|------------|
| Share price           | 0.71       |
| Shares on issue       | 45 million |
| Market Capitalization | \$31m      |



**~7,500**  
shareholders



# Current Target Markets

## Industrial Brine Treatment



## Municipal Effluent Re-Use



## Mining Waste Water and Metal Recovery



Annual Market Size

> US\$ 20 BLN

> US\$ 20 BLN

US\$ 5 - 10 BLN

Challenges

- Nitrate, ammonia and organics
- Need for brine minimization
- Use of membranes

- Brine production and disposal
- Total Cost
- Nutrient removal

- Complex waste waters, brine / tailings management
- Recovery/removal of metals

Clean TeQ Water  
proprietary Solutions

- HIROX and EVAPX for brine and cost minimization
- BIOCLENS for nitrate/ammonia removal from brines

- BIONEX for nitrate removal
- HIROX for maximum recovery

- CIF for removal/recovery of target species
- DESALX for brine free desalination

Clean TeQ Water  
Benefits

- More robust/less complex flow sheets
- Less brine leading to much lower OPEX

- Maximum recovery, minimum brine
- Lowest TCO and footprint

- Targeted and thorough removal of target ions producing highly concentrated & pure eluate
- Simple low OPEX flowsheets



## SERIOUS GLOBAL NITRATE PROBLEM



Nitrate in drinking water linked to thousands of cancer cases and birth defects



Nutrients causing algal blooms resulting in lower oxygen and ecosystem destruction



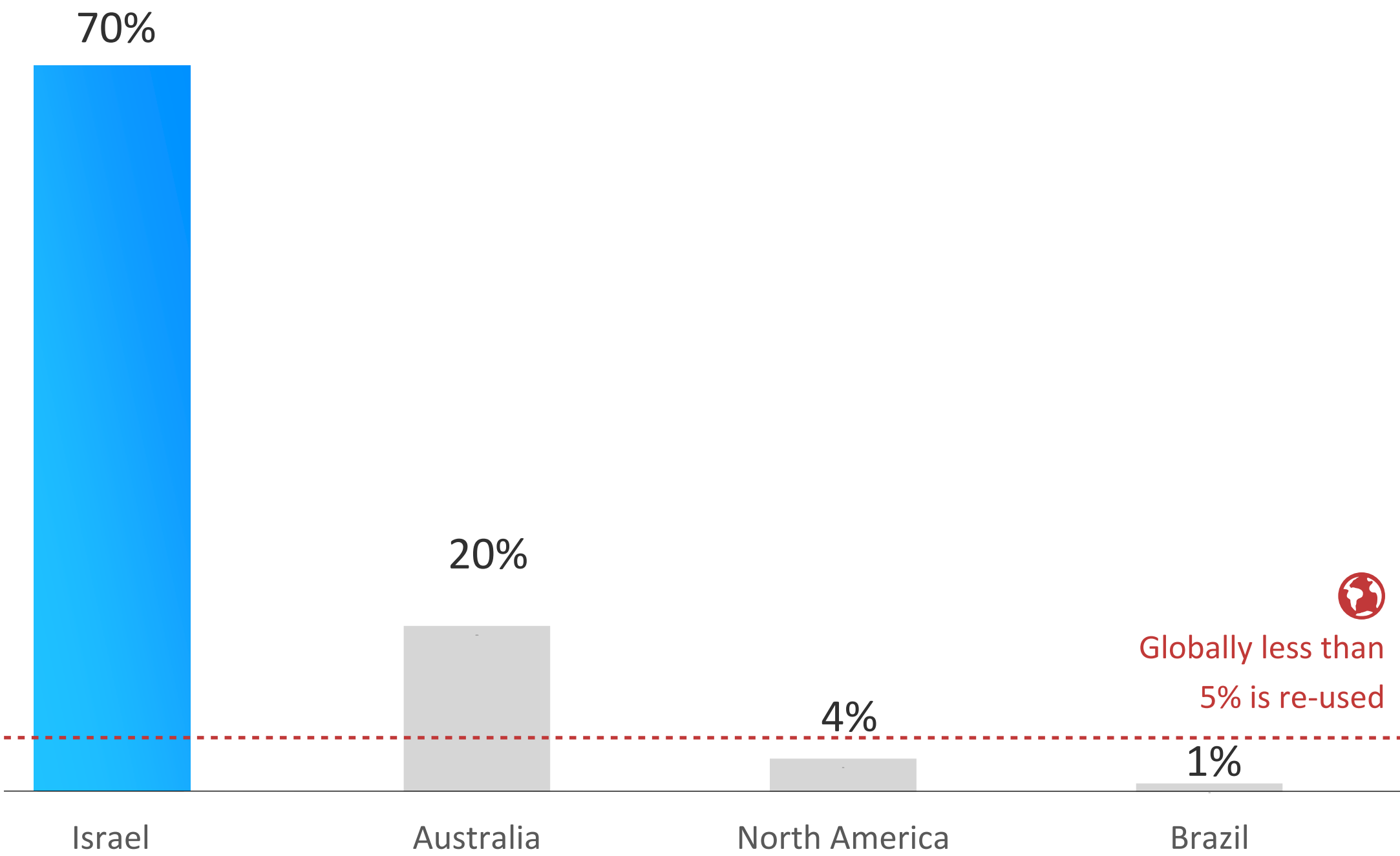
# Target Market 2: Municipal Re-use

Waste water plant effluent is already relatively clean and can be a reliable low cost source of additional water supply



Only Israel and Singapore have substantial water re-use, with other areas like California and Australia moving in this direction

## MUNICIPAL EFFLUENT WATER RECYCLING RATE



Source: [https://www2.deloitte.com/content/dam/Deloitte/pl/Documents/Reports/pl\\_Water-Tight-2-0-The-top-trends-in-the-global-water-sector.pdf](https://www2.deloitte.com/content/dam/Deloitte/pl/Documents/Reports/pl_Water-Tight-2-0-The-top-trends-in-the-global-water-sector.pdf)

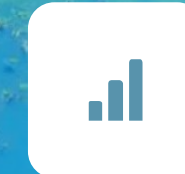




50 BILLION OF ANNUAL  
MINING REVENUE AT  
RISK



**27% of production** is  
estimated to be at risk from  
water stress by 2030E



The global mining equipment water  
treatment market estimated to  
reach

**US\$8 billion** by 2030

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Clean TeQ also targets the  
recovery of valuable metals  
from mining waste streams



## WATER TREATMENT

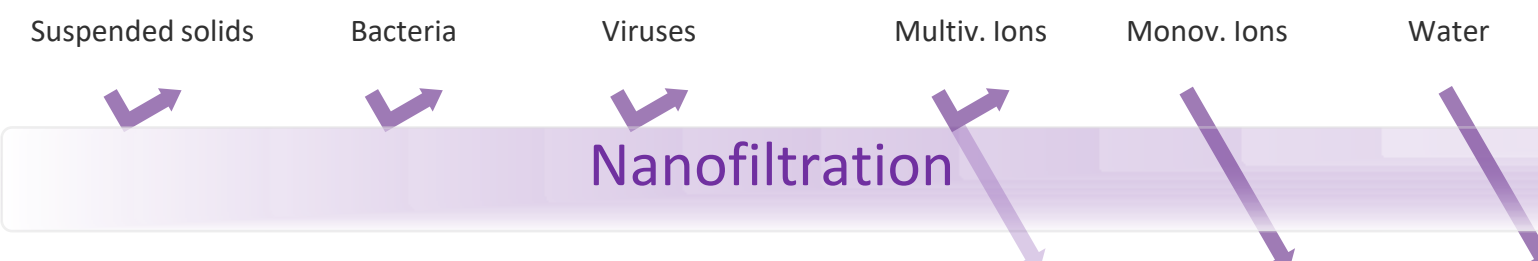


### Metal recovery



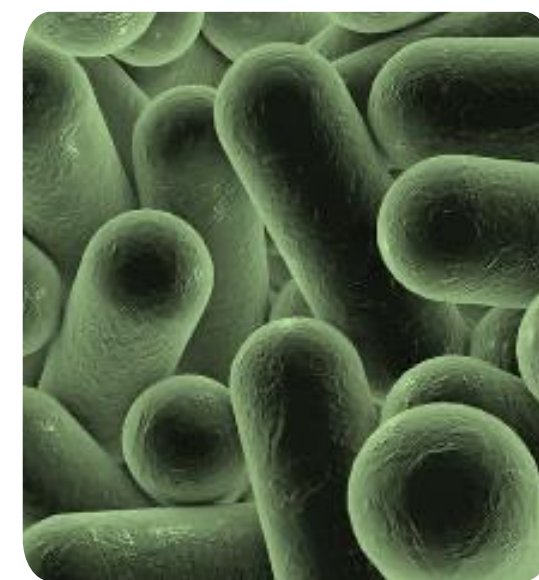
### Graphene Membranes

NEMATIQ



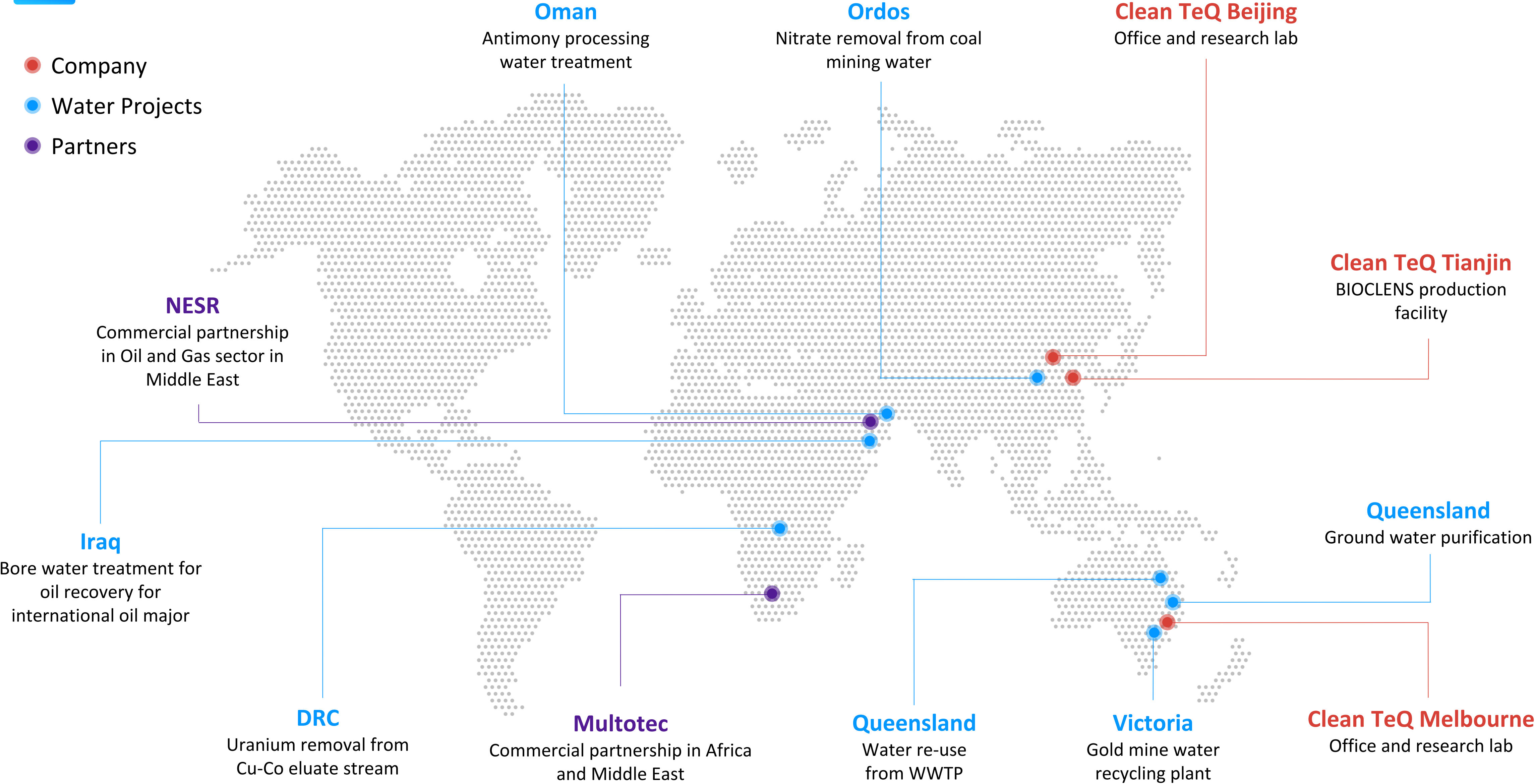
### Encapsulated bacteria

BIOCLENS™





# Our Reach





# Management and Board



## **Peter Voigt** | Executive Chairman and Chief Technology Officer

- Clean TeQ Founder. Over past 30 years, chairman and CEO
- Extensive experience in product development and technology commercialization.
- Mr Voigt has a bachelor and Masters of Applied Science (Chemistry) from Royal Melbourne Institute of Technology.



## **Sam Riggall** | Non-executive Director

- Mr Riggall is currently CEO and director of Sunrise Energy Metals limited
- Previously, Mr Riggall was Executive Vice President of Business Development and Strategic Planning at Ivanhoe Mines Ltd
- Mr Riggall has previously been a director of Ivanhoe Australia and Oyu Tolgoi LLC as well as working for over a decade at Rio Tinto Group



## **Stefanie (Stef) Loader** | Non-executive Director

- Mining industry executive with experience in senior roles across seven countries and four continents.
- Ms Loader was most recently Managing Director of Northparkes Copper and Gold Mine for CMOC International.
- Ms Loader is Non-Executive Director of Sunrise Energy Metals and St Barbara Limited, and Chairperson of Waratah Coal Services.



## **Ian Knight** | Non-executive Director

- Mr Knight's has worked with Boards of public, private and private equity ownership, State and Federal Governments on a range of topics including mergers, acquisitions, divestment and capital raising.
- Mr Knight was formerly a Partner of KPMG where he held the position of Head of Mergers and Acquisitions and Head of Private Equity for KPMG Corporate Finance.



## **Willem Vriesendorp** | CEO

- Mr Vriesendorp has over 20 years experience in the cleantech sector
- Founded water treatment company in China in 2012
- Before moving to China Mr Vriesendorp spent 10 year at McKinsey & Company
- Mr Vriesendorp has a Masters in Applied Physics from Groningen University and an MBA from Insead in Paris



## **Magda Klapakis** | CFO

- Ms Klapakis has over 25 years of experience in finance including executive roles in ASX listed Tali Digital Ltd (formerly Avexa Ltd) and Amrad Corporation Ltd.
- More recently, she was CFO at both Plexus Healthcare Ltd and Hydrogen Systems Australia.
- Ms Klapakis has a post graduate accounting degree from Monash University and is a Fellow of the Australian Society of CPAs.

## Major Shareholders



### **Robert Friedland**

- Mining entrepreneur and founder and chairman Ivanhoe and Ivanhoe Capital Corporation
- Founder, financier and chairman of multiple non mining high-tech companies including I-Pulse and Puneng



### **Jiang Zhaobai,**

- Founder and Chairman of Shanghai Pengxin Group Co., Ltd,
- Shanghai Pengxin Group is a diversified conglomerate with controlling interests in four listed companies in China **including a water infrastructure company.**
- Mr Zhaobai has been ranked in the Forbes China "Hurun Rich List" for his outstanding achievements within the last decade up to 2016.



# Unique Technology Solutions

## Encapsulated Bacteria Lenses



Intensification of nitrification and denitrification to achieve lower footprint and operate under harsh conditions of high salinity and toxicity

## Continuous Ionic Filtration



Moving resin beds in counterflow to water to improve treatment efficiency, reduce chemical use, produce smaller volume brines and filter solids

## Complete Nutrient Removal



Resins to remove TN from main effluent irrespective of temperature and composition with BIOCLENS used to remove TN from concentrated brine

## Chemical Free Ultra high Recovery RO



CIF removes hardness to maximize recovery and membrane life, while produced brine is used to regenerate the resins without need for additional chemicals

## Membrane Free Desalination



Chemical removal of divalent ions resulting in ultra-high recovery of complex waste water at low cost without producing saline brines


## Low Energy Evaporation/ Crystallization




Low temperature normal pressure evaporation to minimize energy use, reduce scaling and fouling risks and enable the re-use of waste heat



# Resin Technology Background

 Continuous ion exchange has been specifically adapted by Clean TeQ Water for water treatment applications

 Clean TeQ holds over 10 patents and extensive know-how






**Continuous ion exchange originates from the former Soviet Union where around 40 plants are still in operation\***



Graphene Membranes focus  
on the micropollutants market  
estimated at USD2B in 2022 growing to  
USD3B in 2028



-  NematiQ has developed a ground-breaking technology to produce Graphene Membranes at scale
-  Graphene Membrane nanofilters can potentially reduce the energy cost of water filtration by 50% and with a much improved resistance to fouling
-  NematiQ is currently organising field pilot demonstration and scale-up of manufacturing, the final steps towards commercialization



# Recent Case Examples



Handed over

A\$ 0.6m

## Antimony Processing Plant

- Oman
- 500 tons/day
- DESALX + Reverse Osmosis for re-use
- Commissioning Complete



Handed over

A\$ 4.2m

## Gold Mine Wastewater

- Victoria, Australia
- 2000 tons/day
- Removal of Sulphate, Calcium, Magnesium, Arsenic, and Antimony



Hot Commissioning

A\$ 2.4m

## Cobalt Nickel Raffinate

- Democratic Republic of Congo
- 20,000 tons/day
- Removal & recovery of Uranium through CIX

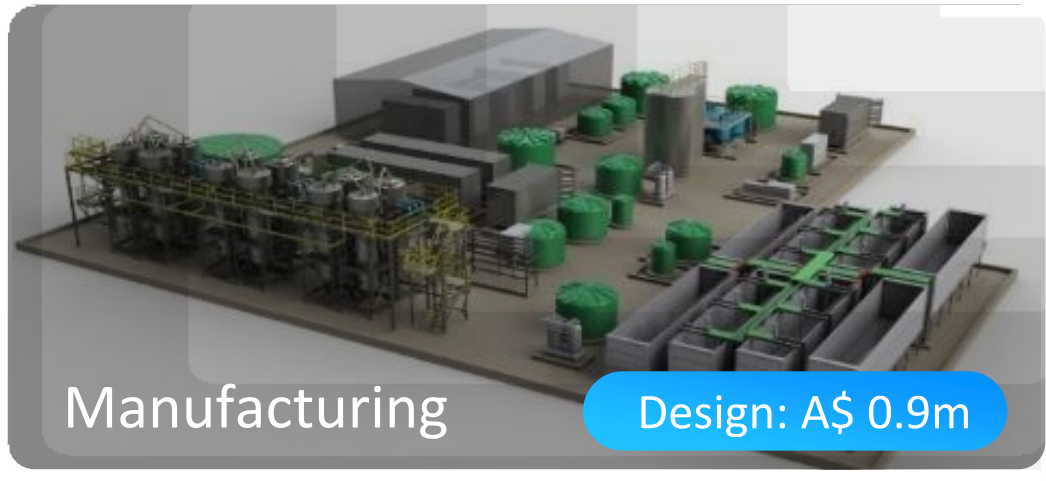


Manufacturing

>A\$ 1m

## Oman 2

- Expansion and upgrade of original project



Manufacturing

Design: A\$ 0.9m

(Won tender: ~ A\$ 16m)

## Sewage recycling

- Townsville, Queensland
- 10,000 tons/day for agriculture, 5,000 m3/day for industry
- 98% recovery through HIROX



Manufacturing

A\$ 1.8m

## Bore water to drinking water

- Koumala, Queensland
- 100 tons/day
- Removal of hardness, salinity and disinfection



Manufacturing

A\$ 2.0m

## Coal mine water nitrate removal

- Ordos, China
- 12,000 tons/day
- BIONEX, effluent nitrate <1 throughout the year



NEW: Design Phase

A\$ 3.0m

## Bore Water Treatment

- Middle East
- 1,000 tons/day
- HIROX, increase water recovery from 30% to 90% at much reduced OPEX



**#1**

Build on our unique portfolio of innovative technologies and solutions

**#2**

Focus on selected large and high growth sectors and regions that fit our solutions

**#3**

Provide integrated technology solutions, BOOT\* and consumables

\*Build, Own, Operate and Transfer. I.e. invest in an asset and provide water treatment as a service under long term supply contract



Demerger to create standalone  
water technology company

Pre 2017

Sunrise Ni, Co,  
Sc mine project  
launched

2017

2018

Reorient portfolio on water  
sector growth

- Signed new commercial scale contracts in priority markets
- Bought encapsulation technology for nitrate removal
- Accelerated Graphene Membrane development

2019

2020

Commercial and Technical  
proof

- First three commercial scale water treatment plants installed
- Start of BIOCLENS production in factory in China
- Pilots across priority geographies and markets

2021

2022

Growth Phase

- Four new contracts since January 2021
- Building dedicated commercial teams in Australia & China
- Planned commercial introduction of Graphene Membranes







# Case Example



Gold mine in Victoria aiming to eliminate use of brine ponds and increase recycling



Precipitation plus DESALX® technology to remove heavy metals, sulphates and scaling ions without producing liquid brines



Some of effluent towards reverse osmosis to enable re-use

**Reduced OPEX and low  
environmental footprint**

