



# Clean Technologies for a Healthier World

**PuriflOH Limited**  
**(ASX: PO3)**

Steve Annear, Executive Director

November 2018



**Air Purification | Water Treatment | Medical Sterilisation**

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# The Global Battle with Contamination



## Air Purification

Air inside buildings can be five times more polluted than air outside

1.6 million deaths each year attributable to substandard indoor air quality

## Water Treatment

**Drinking Water for 15 Million Americans Is Contaminated With Toxic Chemical, Report Finds**

**22 People Accidentally Poisoned by Bad Mix of Chemicals in a Disneyland Paris Resort Pool**

## Medical Sterilisation

**Superbug catastrophe risk as antibiotics fail**

**Superbugs Could Kill 10 Million Each Year By 2050, Overtaking Cancer**



# PuriflOH Snapshot



*Exclusive rights  
from Somnio Global*

Platform Technology

Free Radical Generation  
Technology (FRG)

Markets

Air Purification

Water Treatment

Medical  
Sterilisation

Products

Portable & In-Duct  
Systems

Advanced  
Oxidation Water  
Purification

Robotic  
Sterilisation  
Systems

- PuriflOH is ASX listed (ASX:PO3)
- Holds exclusive global rights for Free Radical Generation (FRG) technology
- FRG is a platform technology to develop new products in key markets
- PuriflOH will fund the development of these products

# Strategy and Vision



To build a  
unique global  
company by:

Commercializing our three lead FRG applications through manufacturing and licensing strategies

Establishing its main operating base in Michigan to provide immediate access to the largest market for its products and to utilise the world class manufacturing capability of the region

Developing and releasing multiple FRG products that will drive a pipeline of new product releases and revenue over the next five years

Long term growth through recognising, developing and commercializing other world class and disruptive technologies in the environmental arena

# FRG Technology Overview



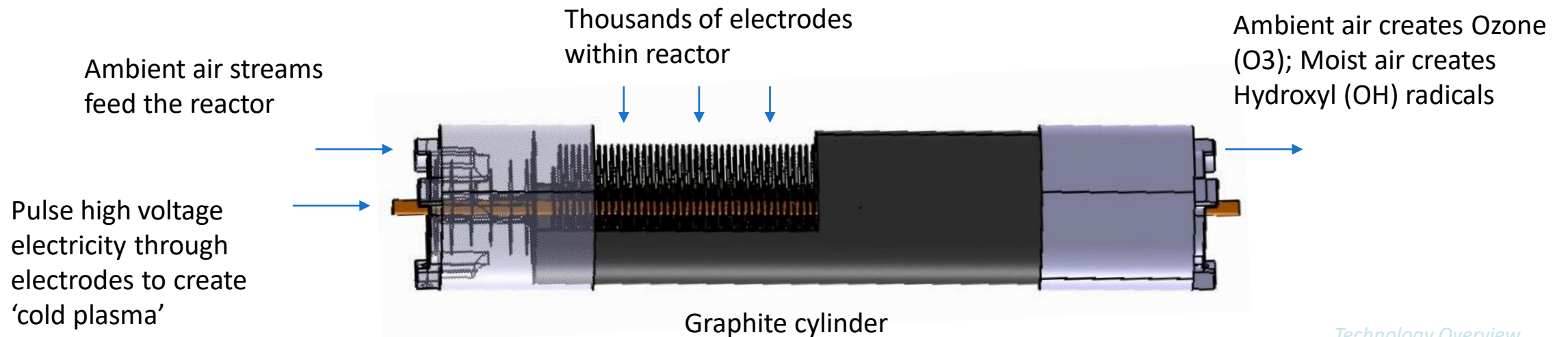
FRG transforms ambient air streams into powerful radicals

FRG creates a 'cold plasma' that generates Oxygen and Hydrogen radicals to maximise purification

FRG eliminates biological and chemical contaminants through a combination of plasma and radical impact

Output by-products are only water and ozone

FRG can power products that decontaminate and sterilise air, water and surfaces



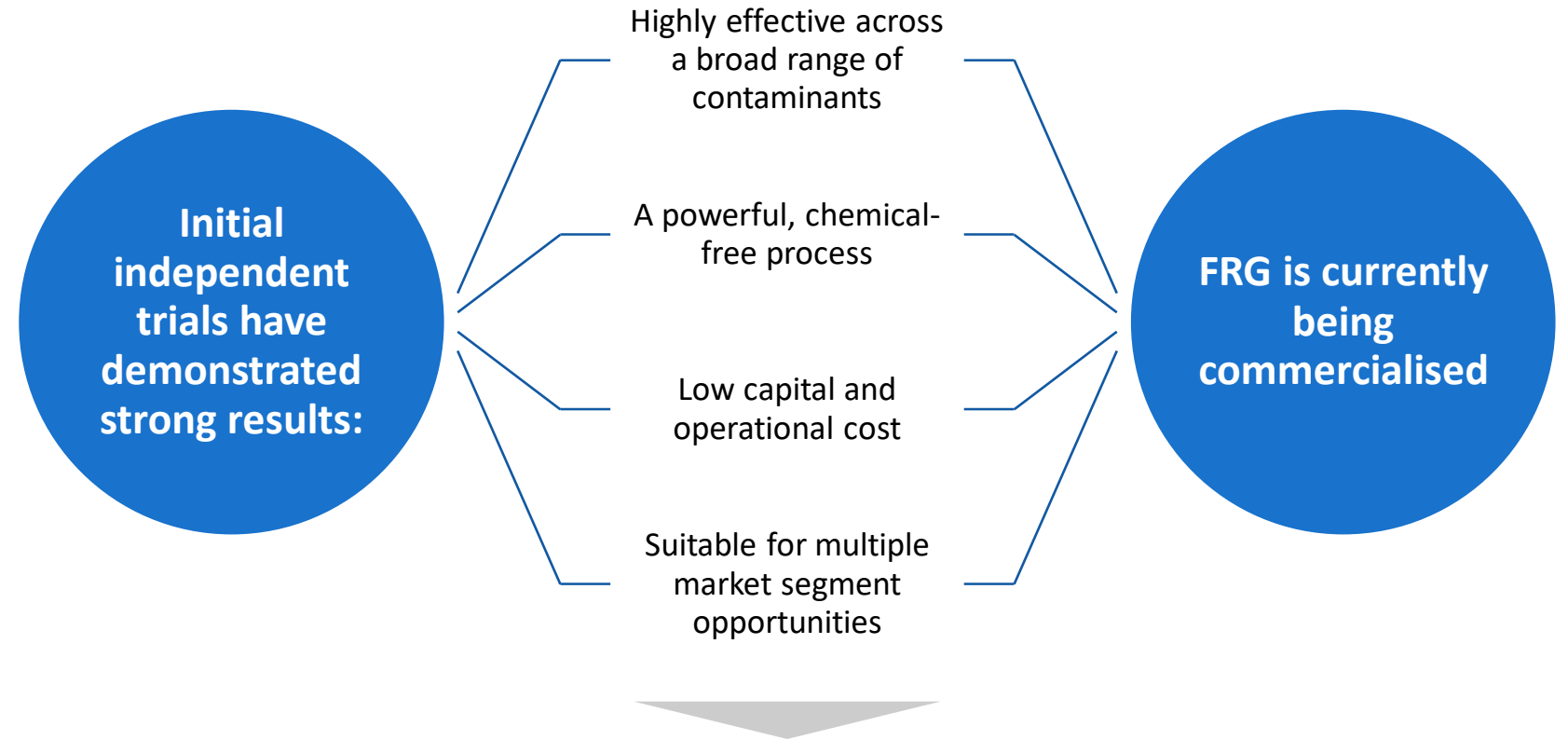
Technology Overview

# Key Advantages



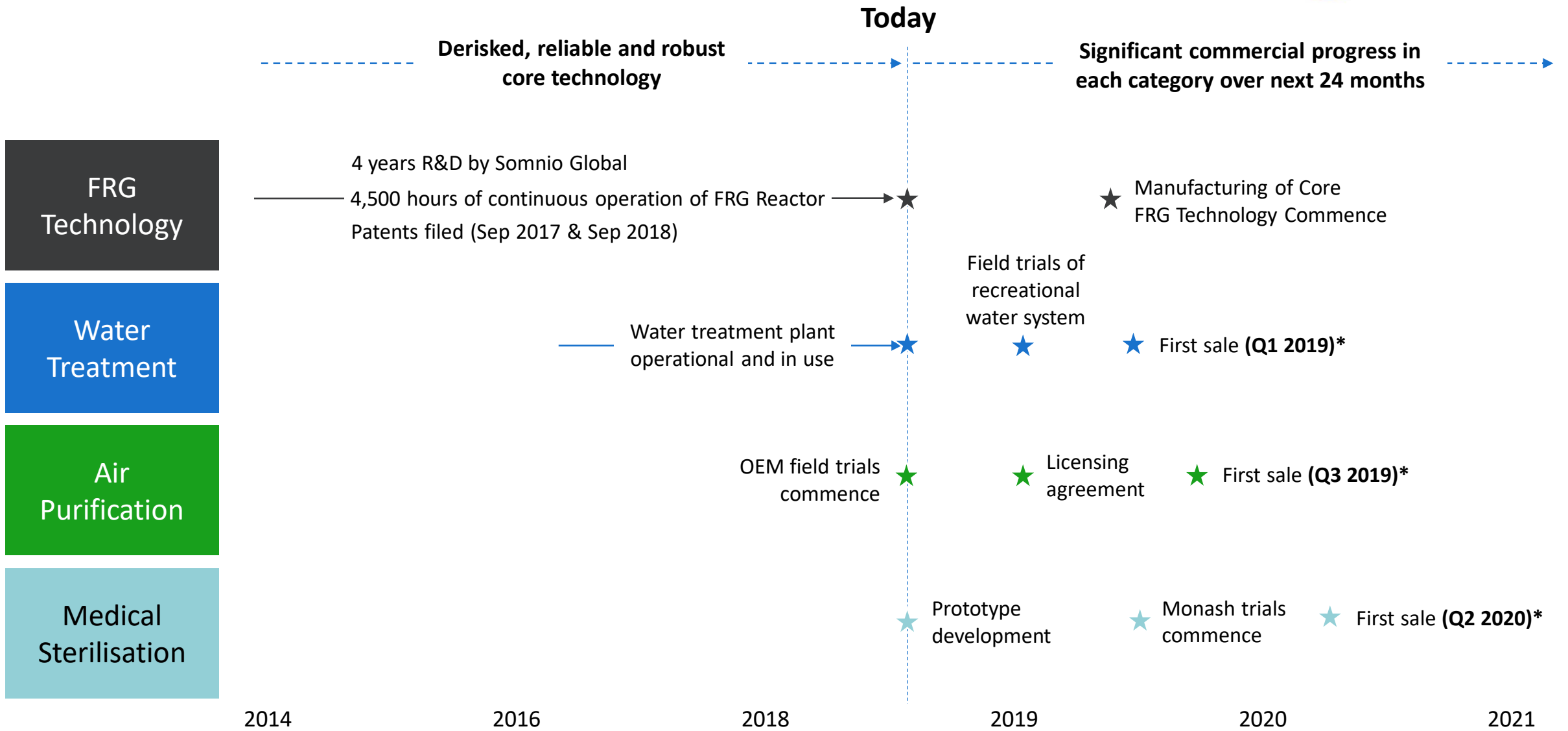
Oxygen and hydrogen radicals are well known to kill agents, but no one has been able to cost-effectively harness this approach

No system can perform as powerfully, effectively and flexibly as FRG in the generation and deployment of oxygen and hydrogen radicals



**PuriflOH is commercialising FRG technology by developing partnerships with major Original Equipment Manufacturers (OEMs) seeking disruptive technology**

# Commercial Timeline



\*Estimated timeframe



# Initial Target Market: Air Purification

## Independently Validated Competitive Advantage

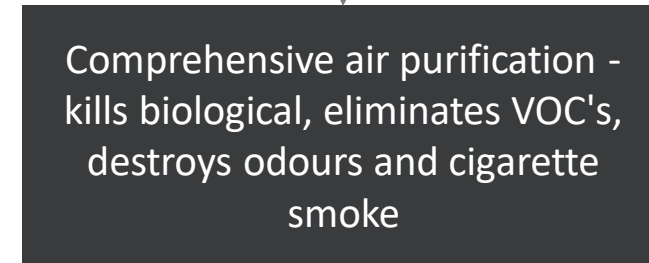


Global Air Purification Market is set to exceed US\$21B by 2021 driven by:

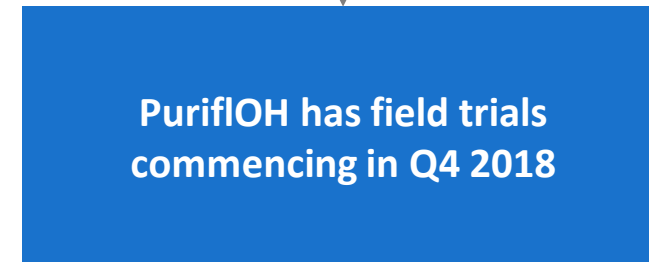


Market leader, HEPA filtration, doesn't purify or eliminate bio-pollutants, chemicals + ultra-fine contaminants and its effectiveness declines over time

Global industry players are demanding more advanced solutions to meet increasing consumer needs



*(verified by independent trials)*



# Follow-on Markets: Water Treatment & Sterilisation



## Water Treatment

- Initial target market is recreational water due to:
  - Lower barriers to entry
  - Substantial opportunity in US & Australia - 10.5 million residential pools & 340,000 commercial pools
  - Demand is moving away from chlorine
- Ozone provides a superior experience to chlorine.
  - No chemicals = less smell, irritation, bleaching
  - Eliminates micro-organisms that chlorine cannot – ie cryptosporidium
  - Greater underwater clarity
  - Less infrastructure damage
- Field trials commencing imminently
- FRG technology will also be developed for applications in the global waste water treatment and potable water markets
- 1.1 Billion people have no access to safe drinking water

## Medical Sterilisation

- Healthcare Associated Infections (HAI's) are a major global health care problem
- In the US alone, CDC states that HAI's are linked to:
  - \$20B in excess healthcare costs
  - \$35B in societal costs
  - 1.7 million infections per year
  - 99,000 deaths per year
- Inadequate current solutions create a strong market need
- Target Market is all Healthcare Facilities (350,000 in US and 33,000 in Australia)

***"The total cost to the global economy [of HAI] is forecast to reach as much as \$100 Trillion by 2050, a threat that warrants as much attention as climate change"***

*Economist Jim O'Neill*

# FRG Technology Comparison



## Air Purification

- Independent Trials have verified that the FRG system has superior performance

	FRG	HEPA
Eliminates chemicals	■	
Kills biologicals / bacteria	■	
Highly effective at sub-micron particle capture	■	
No toxicity	■	■
No environmental impact	■	■

## Water Treatment & Medical Sterilisation

- Chemicals (chlorine for pools / bleach for medical sterilisation) are the incumbent solutions
- Current oxidation technologies such as Ozone or UV have been recognized as superior substitutes but have high costs and performance issues that FRG has overcome

	FRG	Ozone	UV	Chemical
Highly effective	■	■		
No gas prep. required	■		■	■
No purified air required	■		■	
Low total cost	■			■
No toxicity	■	■	■	
No line of sight required	■	■		■
No environmental impact	■	■	■	

# Proposed Business / Revenue Model



	Air Purification		Water Treatment		Medical Sanitisation
Vertical	Residential	Healthcare	Recreational	Commercial	Healthcare
					
Target Unit Price (US\$)	\$800	\$1,500	\$1,200	\$10,000	\$75,000
Business model	<ul style="list-style-type: none"> <li>Licensing</li> <li>Own product development</li> </ul>		<ul style="list-style-type: none"> <li>Licensing</li> <li>Own product development</li> </ul>		<ul style="list-style-type: none"> <li>Licensing</li> <li>Own product development</li> </ul>

# Somnio Global: Technology Partner

PuriflOH will establish its US operating base in Detroit, Michigan



- In late 2017, Somnio and PuriflOH formalised their partnership to develop and commercialise products based on the FRG platform
- Somnio is based in Detroit, Michigan, which provides:
  - World class engineering and manufacturing organizations and infrastructure
  - Central to major transportation routes
  - Surrounded by 20% of the world's fresh water and a water quality focused region
  - Commitment from State and Local Govt. to assist establishment of the company and support FRG manufacturing
  - Access to talent from University of Michigan, Michigan State, Wayne State University
  - **Access to the largest market in the world for PuriflOH's product solutions.**



- Detroit, Michigan, USA
- Scientific R&D Incubator founded in 2012
- 35 innovators operating in state-of-the-art R&D facility
- Scientific collaborations with US Government and major corporations



*10,000m<sup>2</sup> R&D facility on a 10 hectare campus*

# Intellectual Property Strategy



- FRG platform technology has patents pending
- PuriflOH has commercialisation rights over the technologies creating application-based IP
  - New patents per product to be developed
  - Water to be the first
- Additional IP embedded in the manufacturing process
- Continued IP development to ringfence core patents
- Decentralized manufacturing
- Market entry is the United States
- Commercial partnerships with strong OEM's

<b>Patent Description</b>	Free Radical Generation Device and Methods Thereof	Multiple Source Free Radical Generator
<b>Territory</b>	International Patent (PCT)	International Patent (PCT)
<b>Number</b>	US2017/050087	
<b>Status</b>	Pending	Filed
<b>Priority Date</b>	2 September 2016	4 September 2018

# Board & Key People



## Steve Morris (Chairman)

A long history of working in capital markets as a broker and with shareholder and investor based service companies providing advice to many different ASX listed companies. Mr. Morris is also a Non-Executive Director of De Grey Mining and on the Board of the Melbourne Football Club

## Steve Annear (Executive Director – Operations)

The Vice President of Somnio Global brings experience across of range of technologies and industries including senior leadership roles in a number of different companies in Australia and the U.S. His success in strategic change programs makes Steve most uniquely placed to assist in building the Company's operational strategy and capability

## Simon Lill (Executive Director – Corporate)

A lengthy history of capital markets, business development and management of small ASX listed companies, he has recently spent significant time in restructuring and recapitalising ASX listed companies and uniquely placed to understand the challenges ahead for PuriflOH

## Lucia Cade (Non-Executive Director)

An extensive career history in professional engineering. She has a board portfolio that spans utilities, technology and innovation, industry led research & development and infrastructure investment. She is currently Chair of South East Water, a Victorian owned water utility

## Jeremy Stone (Consultant)

Jeremy's role is to support the Board through its critical early stage development strategies. He has most recently been the global Executive Manager - Innovation, Commercialisation and Digital, for GHD, an 8,500-strong professional services company. He is a professional engineer and brings to the Company energy, passion and experience in developing implementable strategies

# Comparable Companies



	Company	Code	Technology	Market Cap
Water Treatment	CleanTeQ	CLQ	Ion exchange treatment & filtering	\$529m
	Phoslock	PHK	Removes phosphates in water	\$211m
	Fluence Corp	FLC	Membrane aeration water filtration	\$172m
	De Mem	DEM	Membrane based water filtration	\$15m
Air Purification	Carbonxt	CG1	Powered activated carbon	\$31m
	Aeris Environmental	AEI	Hygiene consumables	\$25m
	The Environmental Group	EGL	Industrial air filtration	\$11m
Medical Sterilisation	Nanosonics	NAN	Medical infection control solutions	\$961m
<b>Combined Categories</b>	<b>PuriflOH</b>	<b>PO3</b>	<b>Free Radical Generation Technology</b>	<b>\$15m</b>

PuriflOH controls a multi-category solution with considerable upside potential from its current valuation



# Why PuriflOH?



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Single FRG technology platform as base for multiple applications

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Significant unmet market need where superior technology supersedes incumbent solution

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Strengthening IP position increases competitive position

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Core technology is proven and supported by very strong independent test results

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Considerable profit potential in initial target markets with substantial upside in flow-on market segments

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Licensing strategy to global players establishes initial revenue base

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Long term technical development agreement with Somnio Global for continual funnel of numerous new product applications

