



**ASX ANNOUNCEMENT**

**FOR IMMEDIATE RELEASE TO THE MARKET**

**PPK Group Limited – ASX Code: PPK**

**Tuesday 26 November 2019**

**Chairman’s Address and Presentation - 2019 AGM**

The last 12 months have been the most exciting in the Company’s history.

The joint-venturing with Deakin University has delivered a raft of opportunities. The development of BNNT is nearing a commercial stage and the further research agreement with Deakin will potentially foster and provide broader markets in new generation batteries, thermal conductive materials, metal composites, reinforced armours, reinforced polymers and reinforced ceramics.

The acquisition of a 45% interest in Craig International Ballistics (announced 28 October 2019) is anticipated to complete mid-December.

Our mining business continues to have a real and meaningful position in the NSW coal mining regions and we think that too has further growth and opportunity.

There will be a presentation at the end of the meeting to provide more detail.

For further information contact:

**Robin Levison**

Executive Chairman of PPK Group Limited  
On 07 3054 4500.

**PPK GROUP LIMITED**

ABN: 65 003 964 181

Level 27, 10 Eagle St, Brisbane QLD 4000  
GPO Box 754, Brisbane Qld 4001  
Tel: +61 7 3054 4500 Fax: +61 7 3054 4599



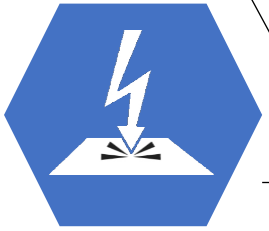
ANNUAL GENERAL MEETING  
Tuesday, 26 November 2019

# The Next-Generation Nano-Material

## BNNT

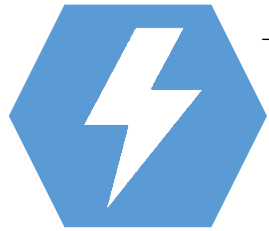
### They are Clear or White

Providing commercial advantages over the more widely adopted Carbon Nanotubes which are black only. They can also be dyed.



### An Electrical Insulator

As apposed to the more widely adopted Carbon Nanotubes which are Electrical Conductors opening up new markets



### Piezoelectric Properties

They Generate an Electrical Charge when Stretched or bent ideal for sensing technology.

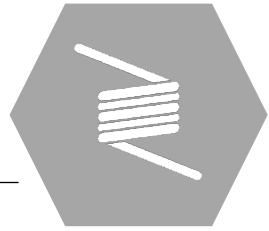
### Unprecedented Thermal Conductivity

7.5 x more thermal conductive than Copper. Increases thermal conductivity of polymers >10x



### Strong Mechanical Properties

100 times the strength of Steel  
30 times stronger than Kevlar.  
50 times Stronger than Industrial Carbon fiber



### Super flexible & Light

They are as light as Carbon fiber  
Can be bent over 90°, 1000's of times without failure, they even self repair



### Radiation Resistant

They absorb neutron atoms making BNNT a revolutionary radiation resistant material for space travel.



### Superior Thermal Resistance

Can withstand temperatures over 900°C in untreated air without degradation.  
> 2 x more Heat resistant than CNT's & Kevlar

# BNNT's are set to dominate the Nanotube Market

## Polymer & Ceramic Composites

Keeping its strength to over 900°C BNNT enhanced composites have superior strength and thermal conductivity

## Quantum Computing

BNNTs hold promise for a variety of uses, from heat sinks enabling next-generation computing

## Piezoelectric

BNNTs will be key to enhanced sensors and robotics including applications in Unmanned Aerial Vehicles, harvesting energy and satellites

## Water Replant & Anti-Corrosion

BNNT polymer composites can be applied as water-repellent textiles, self-cleaning glasses, coatings to help combat corrosion of metal substrates. As BNNTs are water repelling they can be used to sperate oil from water

## Radiation shielding

With unique high efficiency absorption of thermal neutrons BNNTs can be used for neutron shielding materials. Ideal for aviation and aerospace applications

## Electrically insulating

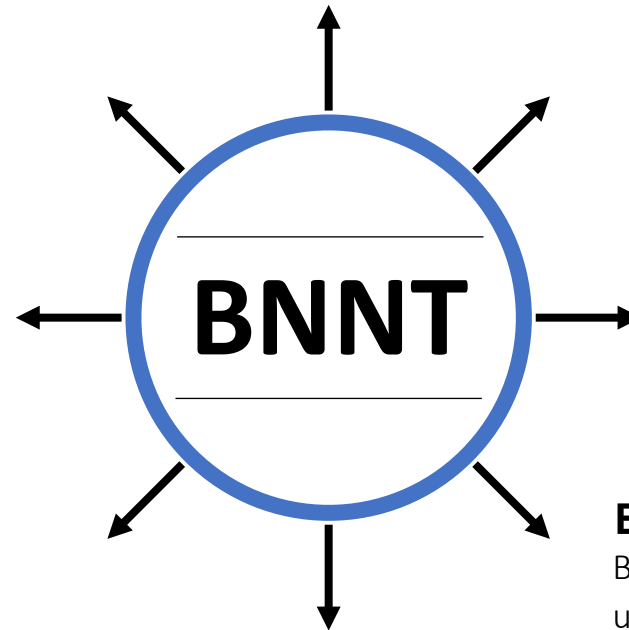
Electrically insulating ultra strong components will be possible with BNNT composites.

## Solar Cells and Battery Technology

Coating organic photovoltaics with BNNT loaded polymer can significantly improve device lifetime. Efficient batteries with faster charging and longer Charge

## Biomedical

BNNTs are not cytotoxic, Consequently they will be useful in nano-textured cellular scaffolding for nerve and bone tissue regeneration, nanoscale delivery structures, and oncology cancer treatments.



# BNNT Applications Under Research Globally

- Metal Polymer & Ceramic Components
- Transparent material for Defence, Automotive & Aviation
- Thermal conductive & electrical Insulating semiconductors
- Sensors
- Long-lasting batteries
- Efficient solar panel arrays
- Supercapacitors
- Hydrogen storage
- Desalination.
- Water purification
- Fire retardant clothing & materials
- Cancer and cellular regeneration therapies.
- 3D Printers
- Bullet proof clothing & glass
- Temperature-tolerant vibrational dampeners.
- Composites for unmanned aerial vehicles.
- Tough coatings
- Bright LEDs
- Radiation shielding
- Neutron detection
- Rugged aerospace components
- Biomedical scaffolding for nerve & bone tissue regeneration
- Targeted drug delivery
- Cancer treatments.
- Computer component shielding heat, electricity & radiation
- Screen protection glass
- Polyurethane-modified Bucky paper composites
- Reinforced aluminium
- Nanoelectronics where heat dissipation is critical.
- Nano transducers
- Nano Bio sensors.
- Fillers in metal/ceramic composites high temperatures.
- Optoelectronic devices,
- Lithography applications
- Antifouling surfaces.
- Aerospace components
- Applications in Dentistry.
- Fire retardant cabling
- Satellite structure & shielding
- Light weight armour
- High temperature components
- Spintronics or spin-based electronics
- Orthopedic implant applications

# Partnerships Solving the Problem



Deakin University, BNNT Technology and PPK Join to construct the world's first commercial scale BNNT manufacturing facility which can produce in a continual process large volumes of high quality BNNT at temperatures under 1,600°C using new globally patented technology. Until now BNNTs have been produced in small production quantities in batch processes at temperatures over 5,000°C making BNNTs expensive and difficult to procure and to compete commercially.

# PPK BNNT Background

- | Deakin University has developed a technology for manufacturing BNNT in volumes previously unavailable.
- | BNNT Technology Limited has a 20 year exclusive license and global patents to manufacture BNNT.
- | JV Research agreement with Deakin University, BNNT Technology Limited and PPK has been signed:
  - includes an initial six BNNT application projects for research into new technologies and materials.
  - all projects have a 2 to 3 year time horizon
  - Deakin University provides existing IP, researchers, resources and equipment
  - BNNT Technology Limited provides BNNT for research and commercial purposes
  - PPK provides management services to oversee the projects and commercialise new technology products
  - Sufficient financing in place to fund R&D for all six application projects

# Six New BNNT Application Projects

16 October 2019 PPK Signs JV Agreement with Deakin University

01

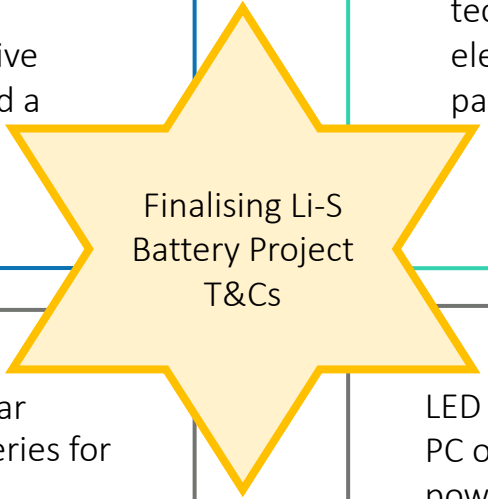
**Li-S Batteries** – A new type of battery with faster charge rates and increased battery cycle life based on Lithium Sulphur (Li-S) using BNNT as both an integrated protective insulation layer and a component in composite anodes

02

**Thermal Conductive Materials** – develop new thermally conductive and electrical insulating materials and related preparation technologies for electronic device and packaging purposes.

03

**Metal Composites** – develop 3D printing synthesis technology for BNNT-metallic alloy composites.



Mobile Phones / Solar Battery Packs / Batteries for Portable Devices

LED chips, smart phones, PC or notebooks with power supply, battery packs

Industrial and aerospace applications requiring high tensile and thermal resistance qualities



# Six New BNNT Application Projects

16 October 2019 PPK Signs JV Agreement with Deakin University

04

**Reinforced Transparent Armor** – develop manufacturing processes for incorporating BNNT into transparent materials to enhance ballistic performance without increasing weight or thickness.

Stronger transparent materials for use in medical, space, military, auto and industrial safety Markets

05

**Reinforced Polymers** – develop blends of BNNT with polymers to create new industrial uses. BNNT demonstrates superior binding qualities for Polymers

Develop new classes of polymers with unique mechanical and thermal capabilities

06

**Reinforced Ceramics** – improve mechanical properties of brittle ceramics by blending with BNNT.

Improve existing ceramic products and develop new class of ceramics with unique mechanical and thermal capabilities

28th October  
PPK signs binding MOU to acquire 45% of CIB

# PPK Technology Timeline

In less than 12 months PPK has significantly advanced the potential to produce and commercialise BNNT and BNNT new technologies through strategic partnerships.



## March 2019

PPK Acquires 50% of BNNT Technology Limited



## October 2019

JV Agreement Signed with Deakin University and \$8.5M Capital Raising



## October 2019

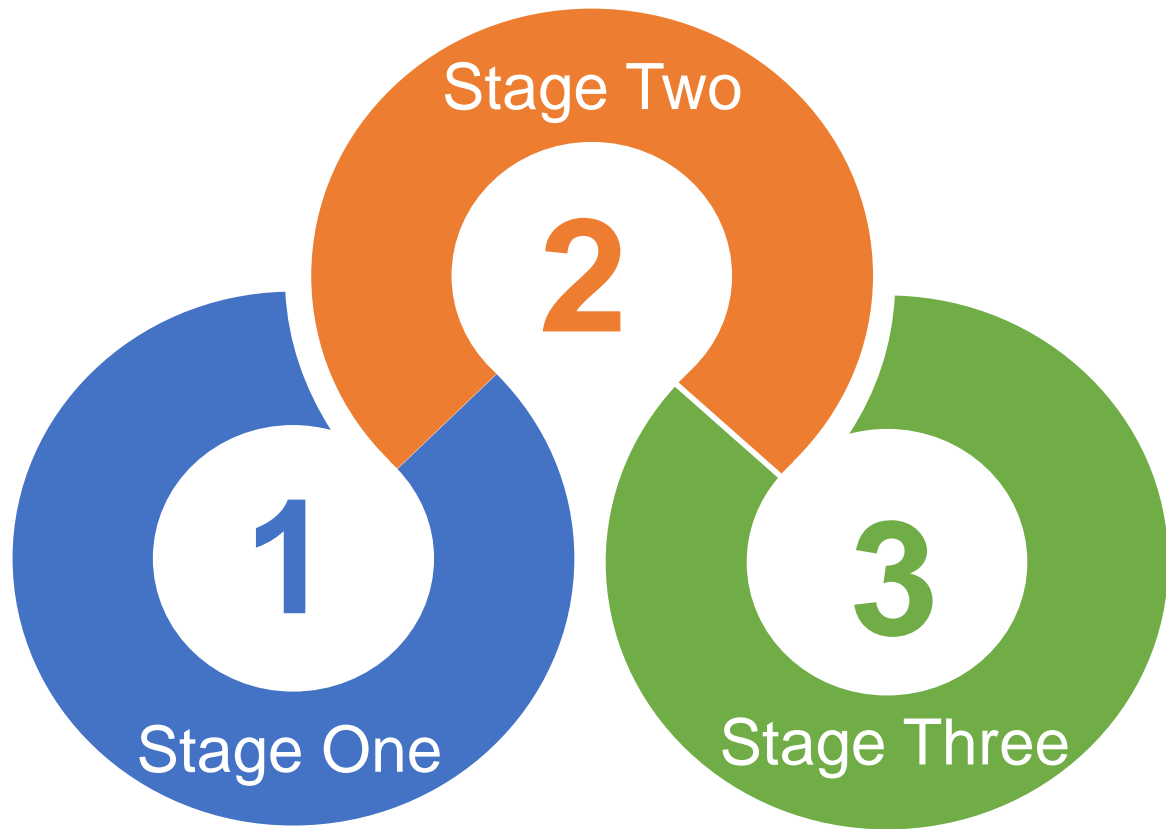
Binding MOU with Craig International Ballistics (45% equity for \$5.00m)



## November 2019

Finalising Battery Project T&Cs with Deakin Energy

# PPK Technology Process



## **Stage One - Validated**

The bulk creation of base material in a unique form that is ready for conversion into BNNT. Previously this was only created in small quantities in laboratory conditions

## **Stage Two - Validated**

The safe and efficient semi-automated transfer of base material from Stage 1 to Stage 3 in a specific chemical environment. Previously this was a manual operation;

## **Stage Three - Testing**

The conversion of base material into BNNT in a continuous batch process using newly designed equipment. Previously this was a manual operation

# PPK – BNNT Update

Ongoing testing of the BNNT production processing settings continues:

- Provides greater understanding of the parameters and critical set points to achieve higher volumes
- Initial design of the automation functionality has been completed and being tested
- Engineering designs for modular approach for scaling up production process methods is underway
- Introducing new furnace technology for more accurate heat control to allow more frequent testing of production variants

Producing small quantities of BNNT with various processes:

- Stockpiling for application development and early sales
- Determining optimum quality and output from current processes

Complete final equipment design for next BNNT plant construction which is underway

# PPKME - MINING EQUIPMENT

**PPK**  
GROUP LIMITED



# PPKME Financial Update

- PPKME has signed a 3-year fixed price contract for parts and services with one of its largest customers and agreed terms for a further fixed price contract with another of its key customers
- Thermal coal prices have fallen by ~32% this calendar year
- Major customers reviewing surplus operating spend and capital budgets due to fall in coal prices
- Short term impact on PPKME
  - YTD revenues above budget but not by as much as the reported August results
  - YTD EBITDA now slightly below budget
  - Budgets were ramping up to Christmas due to:
    - new product being released in October, will now occur in December
    - positive impact of new contracts expected in October, should now occur in early 2020

# PPKME Innovation Update

## Battery electric personnel transporter

- March 2020 - diesel powered proto-type to be completed
- June 2020 – tested and configured for customers requirements, ready for sale
- June 2021 – retro-fit for battery electric engine

## Planning to retro-fit CoalTrams with a battery electric engine June 2021

## Introduction of ceramic filters

- Initial testing on CoalTram completed, significantly cleaner than any other filter
- Further testing in progress

## Our three largest customers are partnering these projects

# Disclaimer Important Notice

This presentation has been prepared by PPK Group Limited (“PPK” or the “Company”) based on information available to it as at the date of this presentation. The information in this presentation is provided in summary form and does not contain all information necessary to make an investment decision.

This presentation does not constitute an offer, invitation, solicitation or recommendation with respect to the purchase or sale of any security in PPK, nor does it constitute financial product advice or take into account any individual’s investment objectives, taxation situation, financial situation or needs. An investor must not act on the basis of any matter contained in this presentation but must make its own assessment of PPK and conduct its own investigations. Before making an investment decision, investors should consider the appropriateness of the information having regard to their own objectives, taxation situation, financial situation or needs, and seek legal, taxation and financial advice appropriate to their jurisdiction and circumstances. PPK is not licensed to provide financial product advice in respect of its securities or any other financial products. Cooling off rights do not apply to the acquisition of PPK securities.

Although reasonable care has been taken to ensure that the facts stated in this presentation are accurate and that the opinions expressed are fair and reasonable, no representation or warranty, express or implied, is made as to the fairness, accuracy, completeness or correctness of the information, opinions and conclusions contained in this presentation. To the maximum extent permitted by law, none of PPK, its directors, officers, employees and agents, nor any other person, accepts any responsibility and liability for the content of this presentation including, without limitation, any liability arising from fault or negligence, for any loss arising from the use of or reliance on any of the information contained in this presentation or otherwise arising in connection with it.

The information presented in this presentation is subject to change without notice and PPK does not have any responsibility or obligation to inform you of any matter arising or coming to their notice, after the date of this presentation, which may affect any matter referred to in this presentation.

The distribution of this presentation may be restricted by law and you should observe any such restrictions.



# Disclaimer Important Notice

## Forward looking statements

This presentation may contain certain forward looking statements that are based on the Company's managements' beliefs, assumptions and expectations and on information currently available to management. Such forward looking statements involve known and unknown risks, uncertainties, and other factors which may cause the actual results or performance of PPK to be materially different from the results or performance expressed or implied by such forward looking statements. Such forward looking statements are based on numerous assumptions regarding the Company's presents and future business strategies and the political and economic environment in which PPK will operate in the future, which are subject to change without notice. Past performance is not necessarily a guide to future performance and no representation or warranty is made as to the likelihood of achievement or reasonableness of any forward looking statements or other forecasts.

## No Representations or Warranties

To the maximum extent permitted by law, PPK and its directors, officers, employees, advisers, agents and intermediaries accept no responsibility or liability for the contents of this Presentation and make no recommendation or warranties, express or implied, concerning PPK or any investment in PPK. No representation or warranty, express or implied, is made by any person as to the fairness, accuracy, reliability, adequacy, validity, correctness or completeness of the information, opinions and conclusions contained in this presentation. To the maximum extent permitted by law, PPK and its directors, officers, employees, advisers, agents and intermediaries do not accept any responsibility or liability including, without limitation, any liability arising from fault or negligence on the part of any person, for any loss arising from the use of this Presentation or its contents or otherwise arising in connection with it.

# PPK Group Limited

## HEAD OFFICE

Level 27, 10 Eagle Street, Brisbane QLD 4000, Australia

+61 (0) 7 3054 4500

[info@ppkgroup.com.au](mailto:info@ppkgroup.com.au)

[www.ppkgroup.com.au](http://www.ppkgroup.com.au)

## TECHNOLOGY COMPANIES

### **BNNT Technology Limited**

Level 27, 10 Eagle Street, Brisbane QLD 4000, Australia

+61 (0) 7 3054 4500

[office@bnnt.com.au](mailto:office@bnnt.com.au)

### **Craig International Ballistics Pty Ltd**

Level 27, 10 Eagle Street, Brisbane QLD 4000, Australia

+61 (0) 7 3054 4500

[info@ballistics.com.au](mailto:info@ballistics.com.au)

### **Li-S Energy Pty Ltd**

Level 27, 10 Eagle Street, Brisbane QLD 4000, Australia

+61 (0) 7 3054 4500

## PPK MINING EQUIPMENT

### **Tomago Facility**

13B Old Punt Road, Tomago NSW 2310, Australia

+61 (0) 2 4964 5400

[info.equipment@ppkgroup.com.au](mailto:info.equipment@ppkgroup.com.au)

### **Port Kembla Facility**

Lot 1 / 201 Old Port Road, Port Kembla NSW 2505,  
Australia

Telephone: +61 (0) 2 4207 3000

### **Mt Thorley Facility (PPK Firefly and Rambor)**

25 Thrift Close, Mount Thorley NSW 2330, Australia

+61 (0) 2 6574 6500

[info.firefly@ppkgroup.com.au](mailto:info.firefly@ppkgroup.com.au)

[info.rambor@ppkgroup.com.au](mailto:info.rambor@ppkgroup.com.au)