Fastbrick Robotics

- Fastbrick Robotics is a frontier technology company, and is revolutionising the construction industry through robotic technology

- FBR’s Hadrian X will vastly improve the speed, accuracy and safety of global brick construction

- In a world first, proof of concept for fully automated, course by course 3D printing of a brick structure has been achieved
The opportunity

- There are over 300 billion bricks laid around the world every year
- The global construction industry is one of convention and custom – methods haven’t evolved
- There is a massive shortage of bricklayers – moreso than any other trade
- Labour inefficiencies, wasted materials and poor communication account for annual industry losses of a staggering $120 billion globally
- The serious issue of housing affordability continues to test governments and policy makers around the world
The addressable market

- Independent global market assessment completed by BDO Consulting
- Global addressable market of ~$100 - $200bn
  - Most attractive markets: Australia, UK, USA and Canada ~$12bn
- Market inefficiencies create competitive advantages:
  - Time sensitivities due to climate
  - High material and labour costs
  - Labour shortages
  - Human error/inaccuracy
  - Stringent OH&S regulation

Australia ~$2.3bn + Canada ~$370m + USA ~$4bn + UK ~$5.5bn = Key Markets ~$12bn
The Hadrian X revolution
The Hadrian X Commercial Prototype
Faster, cheaper, safer and more accurate construction

- The Hadrian X will revolutionise the construction industry
- Building with advanced robotic precision streamlines the rest of the construction process
- The Hadrian X will maximise efficiency and affordability of brick construction with minimal wastage
- Multiple trades can work simultaneously by building to plan, not to measure
- The Hadrian X is a complete game changer, and will bring about a new commercial ecosystem for residential construction
The Hadrian X Commercial Prototype
Faster, cheaper, safer and more accurate construction

- Minimal human interaction required
- Ability to work day and night, 7 days a week
- Design capability of up to 1,000 bricks per hour*
- Universal brick compatibility up to 500mm x 250mm x 250mm
- Omni-track laser alignment system corrects dynamic interference and vibration to 0.5mm accuracy of CAD design
- 30m robotic arm allows completion of all brickwork from a single position on site
- Truck mounted and self powered

*Standard Brick Equivalents

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The Room Construction Milestone
Functions & Technology Successfully Demonstrated by the Hadrian 105

✓ Robotic de-hacking bricks from pallets
✓ Fully automated from pallet to slab without human interaction
✓ Accurate brick placement and dynamic pressure control
✓ Remote brick processing monitoring system
✓ Proprietary laser guidance system with automatic positioning and dynamic interference compensation
✓ Construction adhesive application system

• 1.6m(w) x 2.4m(l) x 2.4m(h) room built from CAD design
• 330 maxi bricks (equivalent to 2.2 standard bricks)
• Bricklaying rate ~200 bricks* per hour
• Door and window openings, manual lintel placement

*Standard Brick Equivalents
Summary

- Large addressable global market ~$100 - $200bn
- International patents secure FBR’s competitive position
- Development of commercial prototype fully funded – Hadrian X
- CAD/CAM design systems can now be utilised to create efficiencies that were previously impossible
- Competitive advantage – time, cost, quality and safety of construction
- Addresses a dire skills shortage as well as the housing affordability crisis
- Supported by government and major industry partners inc. Brickworks Limited (ASX.BKW)
Corporate Overview

**Key Personnel**

**Mike Pivac – Executive Director and CEO**
- Airborne Electronic Systems specialist
- Extensive experience in Business Operations Management, Workplace Training and OH&S

**Mark Pivac – Executive Director and CTO**
- Aeronautical/Mechanical Engineer and Founder of Fastbrick Robotics

**Shannon Robinson – Non-Executive Director**
- Corporate lawyer and corporate advisor
- Director of Spookfish Limited (ASX.SFI), Yojee Limited (ASX:YOJ) and Equator Resources Limited (ASX.EQU)

**Gabriel Chiappini – Non-Executive Director**
- Chartered accountant and corporate consultant
- Director at Sunbird Energy (ASX.SNY), Global Geoscience Limited (ASX.GSC), Scotgold Resources (ASX:SGZ) and Black Rock Mining (ASX.BKT)

**Key Share Data**

**Ordinary Shares on Issue** 663m
**Options on Issue** 80m
**Cash in Bank** $3.85m

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1. Includes 150,000,000 shares subject to 12-24 month escrow from November 2015
2. Excludes 499,999,998 Performance Shares. Performance Shares to vest in 3 even tranches upon achievement of major commercial milestones.
3. Includes 75,000,000 options exercisable at $0.02 on or before 12 November 2019
4. Cash as at 30 June 2016
## Working Smarter
### Improving the efficiency and safety of brick construction sites

<table>
<thead>
<tr>
<th>Traditional Site</th>
<th>Fastbrick Site</th>
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<tbody>
<tr>
<td>Overtime – Risk of cost-overruns</td>
<td>Hadrian works to a precise schedule, following CAD design</td>
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<tr>
<td>Fatigue/Injury – High risk</td>
<td>Hadrian lifts majority of heavy items, and removes the burden of manual labour</td>
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<tr>
<td>Resourcing &amp; wastage – labour/materials</td>
<td>Material/labour costs accurately estimated for brick construction and other trades</td>
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<tr>
<td>Other trades build to measure after completion of the brickwork</td>
<td>Multiple trades can work simultaneously by building to plan, not to measure</td>
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<tr>
<td>Human error – Risk to project timeline, delays other trades, safety concerns</td>
<td>Zero errors in brick construction, laser-guided pinpoint accuracy</td>
</tr>
<tr>
<td>Hours of operation – work hours typically limited to daylight</td>
<td>Hadrian works 24/7</td>
</tr>
<tr>
<td>Weather/Seasonal Factors – Need to consider the health and safety of human workers</td>
<td>Rain, hale or shine. No tools down</td>
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Priority Markets – UK and North America

- UK, USA and Canada identified as priority international markets
- Climatic conditions favour quick construction techniques
- Favourable language, government, currency factors
- Total addressable market for FBR ~$8.0 - $9.5bn
- High bricklaying margin in UK presents compelling market opportunity for FBR ~$3.21 per brick with 1.81Bn bricks laid in FY15 (65% residential)
- Southern region of the US has highest propensity to use brick
- 80% of the cost of brick construction in the UK, US and Canada is attributed to manual bricklaying labour* 

*Average derived from total industry revenue in Australia and the UK, 2010 – 2014.
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