

Drone defense systems | A first-mover in a nascent industry | Sydney (Headquarters), Virginia

ASX:DRO (shares) and ASX:DROO (options)

Investor Update | July 2016

*Watch our video [here](#)*

# PROBLEM

- ▶ Affordable consumer-grade drones have become popular around the world but they present unique and frequent threats to privacy, physical security, and public safety in a wide variety of environments including industrial and critical infrastructure, prisons, government facilities, airports, outdoor events and venues, military, homeland security, real assets and executive protection.
- ▶ Commercially-available drones can cost between **US\$30 and US\$30,000**, **are legally available** at conventional retailers and online, and can be lawfully flown in the US and most major countries.
- ▶ **1 million commercial drones** are estimated to have been sold in 2015, and 12 million to be operating by 2020. Commercial drone market is estimated at US\$7 billion in 2015 and projected to grow to US\$12 billion by 2023. Defence and security drone market is estimated at US\$5.9 billion in 2015 and projected to grow to US\$11.1 billion by 2024.
- ▶ **Australia** is reported to have the **second highest incidence of drone sales in the world**, according to The Sunday Morning Herald.
- ▶ Commercially-available drones have:
  - **threatened commercial aircraft**,
  - breached security at airports, outdoor sporting facilities, national borders, public events, etc.,
  - **breached security of VIPs/executives/political figures**,
  - conducted surveillance of government facilities and private figures,
  - been **repurposed for terrorism**,
  - been used for industrial espionage,
  - smuggled drugs into prisons, and
  - conducted warfare in conflict zones.
- ▶ Governments and owners of infrastructure and other real assets are **acutely aware of the threat**.
- ▶ Until recently there has been **no cost-effective commercial detection and defence solution** available to governments and real asset owners.



# THREAT EXAMPLES



## UK should prepare for use of drones in terrorist attacks, says thinktank

Power stations, summits and the PM's car are all potential targets for unmanned aerial vehicles carrying explosives, says Remote Control project



## Fears ISIS could use drones packed with explosives to attack crowds



## US Forces Shoot Down ISIS Drone

American forces bomb an unmanned aircraft piloted by Islamic State terrorists near Fallujah.

By Arutz Sheva Staff

First Publish: 3/18/2015, 8:53 PM / Last Upd

## Drone with radioactive material found on Japanese Prime Minister's roof

By Will Ripley, CNN  
Updated 2:47 PM ET, Wed April 22, 2015 | Video Source: CNN



## ISIS Is Reportedly Packing Drones With Explosives Now

Pictures on Facebook are purported to be a small explosive shot down by Kurdish forces.



## RCMP warned Ottawa last year of possible drone terror threat

Mounties warn the federal government that unmanned aerial vehicles pose a terrorism threat to critical infrastructure in Canada.

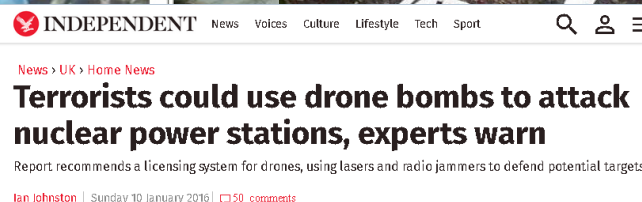


## Small drone crashes near White House despite ban against flights in D.C.



## White House Drone Crash Described as a U.S. Worker's Drunken Lark

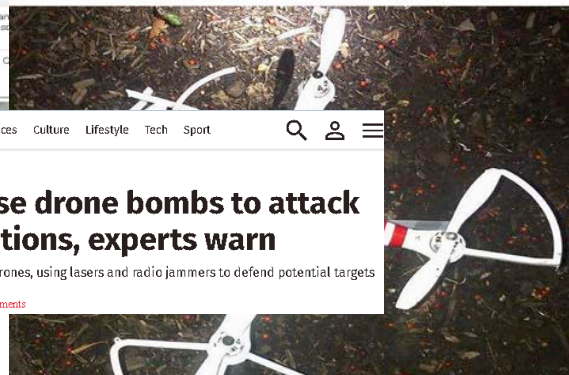
By MICHAEL D. SHEAR and MICHAEL S. SCHMIDT JAN. 27, 2015



## Terrorists could use drone bombs to attack nuclear power stations, experts warn

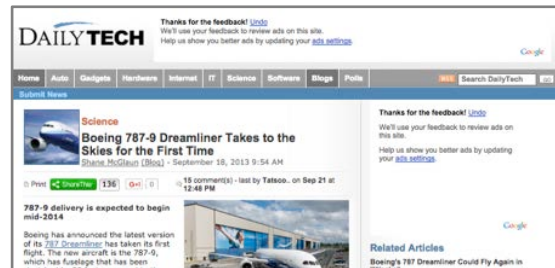
Report recommends a licensing system for drones, using lasers and radio jammers to defend potential targets

Ian Johnston | Sunday 10 January 2016 | 50 comments





# THREAT EXAMPLES (CONTINUED)



## Terrorism

- ▶ Armed Drones Used by Islamic State Posing New Threat in Iraq (Iraq, July 2016)
- ▶ Future terrorist attacks could be carried out by drones carrying buckets of ACID (UK, June 2016)
- ▶ Terrorists could use drones to bomb nuclear power stations (UK, January 2016)
- ▶ ISIS is reportedly packing drones with explosives now (Iraq, December 2015)
- ▶ Drone crashes on the Ellipse, near White House (Washington, October 2015)
- ▶ Counter-terrorism chiefs reported to fear ISIS planning attacks on the West using explosive packed drones to target crowds at major events such as football matches or music festivals (UK, July 2015)
- ▶ US-led coalition forces shoot down an ISIS controlled drone (Iraq, March 2015)
- ▶ Drone with radioactive material crashes at Japanese Prime Minister's residence (Japan, April 2015).



## Critical Infrastructure

- ▶ More reports of drones over Savannah River Site (US, July 2016)
- ▶ As wildfire season ramps up, nearby drones are becoming a problem again (US, June 2016)
- ▶ Drone hit West Hollywood power lines and caused power outage (California, October 2015)
- ▶ Activists send drone to drop leaflets over **NSA complex** in protest of the agency (Germany, October 2015)
- ▶ Southern Electric warns drones can crash into cables and cause power cuts (UK, January 2015)
- ▶ Drones spotted over several French **nuclear sites** (France, November 2014)
- ▶ Drone crashes near British nuclear shipyard (UK, April 2014)
- ▶ Drone crashes into Bridgeport Harbor power plant (Connecticut, May 2013)



## Airports

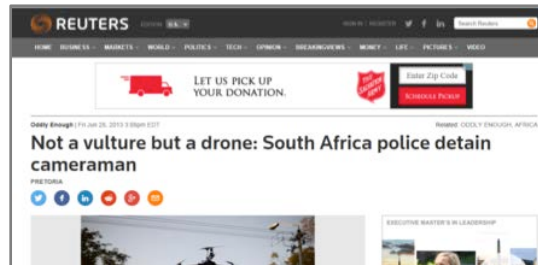
- ▶ Drones and planes in mid-air near misses increase (UK, July 2016)
- ▶ Pilots' union reveals shocking number of near misses between planes and drones (UK, June 2016)
- ▶ Warsaw Airport Suspends Landings Briefly Due to Drones (Poland, June 2016)
- ▶ British Airways plane carrying 137 people on board is struck by drone as it prepares to land at Heathrow (UK, April 2016)
- ▶ Drone near-misses prompt calls for plane strike research (UK, March 2016)
- ▶ Drone within seven yards of jet landing at Heathrow Airport (UK, February 2016)
- ▶ Report shows there have been at least 241 near mid-air collisions between drones and airplanes (New York, December 2015)
- ▶ Recent FAA reports on **hundreds of near-misses** (US, August 2015)

# THREAT EXAMPLES (CONTINUED)



## Stadium and Outdoor Events

- ▶ Drone injures two people in Andover (Massachusetts, December 2015)
- ▶ **Drone crashes into the Sydney Opera House** (Sydney, October 2015)
- ▶ Drone crash at U.S. Open tennis tournament (US, September 2015)
- ▶ Drones Emerging as Security Threat at Domestic Sporting Events (US, January 2015)
- ▶ Drone at soccer match ignites brawl (Serbia, October 2014)
- ▶ Drones over **Star Wars film set** (UK, September 2014)
- ▶ Drone at PNC Park Pirates MLB game (Pittsburgh, June 2014)
- ▶ Drone at Redskins Park (Maryland, May 2014)
- ▶ Triathlete injured in drone incident (Australia, April 2014)



## Executive Protection

- ▶ 'Peeping Tom' concern over drones (Australia, July 2016)
- ▶ California bans paparazzi use of drones to spy on celeb homes (California, October 2015)
- ▶ Hollywood **celebrities** are besieged by paparazzi spies in the sky (California, September 2014)
- ▶ Paparazzi Agency: **Of Course We Use Drones** (California, August 2014)
- ▶ Drone Caught at Nelson Mandela's Hospital (South Africa, June 2013)
- ▶ Code Pink drone outside the house window of US Senator Dianne Feinstein (California, June 2013)



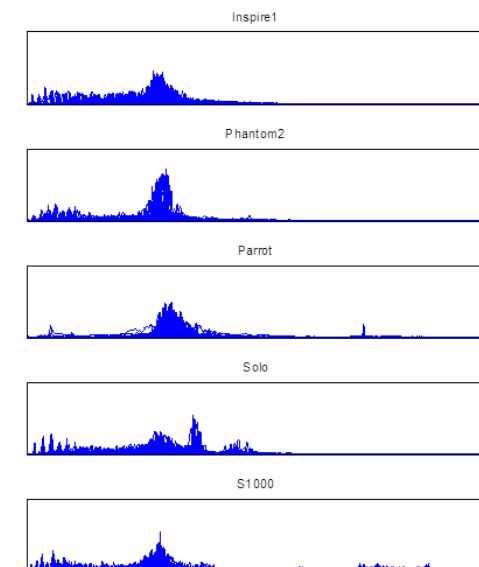
## Prisons

- ▶ Drones, weed and prison: Bloke pleads guilty over plan (UK, June 2016)
- ▶ UK prison buzzing with drone-delivered drug trade (UK, May 2016)
- ▶ Footage shows drone delivering drugs to prisoners (UK, May 2016)
- ▶ Criminals use drone to deliver drugs straight to prisoner's cell window in unique smuggling bid (UK, April 2016)
- ▶ Drone used to **smuggle drugs** in Melbourne prison (Melbourne, March 2014)
- ▶ Drones try to sneak contraband into Georgia (US) prison (Georgia, December 2013)
- ▶ Drone drug drops common at Quebec jails (Canada, November 2013)
- ▶ Attempted smuggling of cellphones by hexacopter into Brazilian prison (Brazil, June 2012)



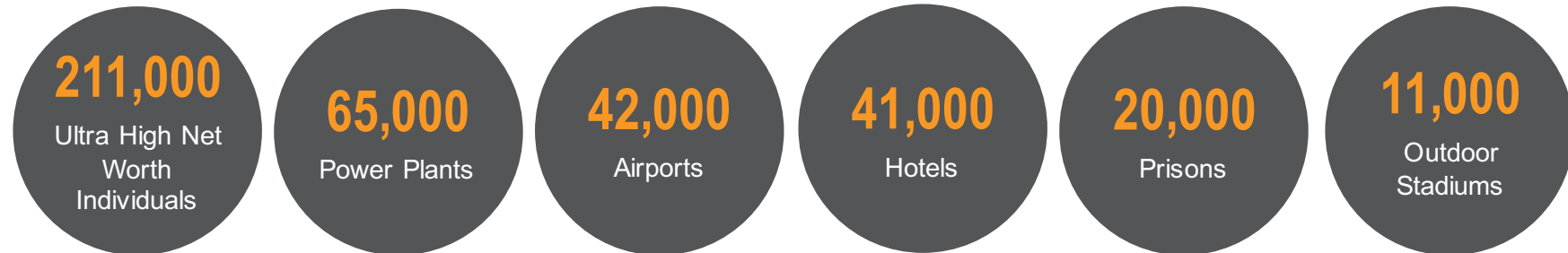
# SOLUTION

- ▶ DroneShield sells its proprietary **hardware**, which is coupled with its unique software – a proprietary database of audio signatures.
- ▶ **Patented system** – currently patented in the US, with a global patent strategy in place.
- ▶ Detects **small unmanned aerial vehicles** (sUAVs or “drones”), enables threat reaction and interception, and accelerates the apprehension and prosecution of violators through real-time alerts and digital evidence collection.
- ▶ Warns installations to the presence of drones through an **enterprise-grade sensor network** (hardware) and alerting architecture (software) that integrates easily with existing security systems.
- ▶ **High detection rates.**
- ▶ The system detects **acoustic signatures** of drones, which are then analyzed by signature database. The signatures are obtained at a US Department of Defense-approved anechoic chamber, and updated regularly.
- ▶ The database excludes false positives (e.g. insects, lawn mowers, industrial noises, etc.) and IDs single and counter-rotating helicopters, quadcopters, hexacopters, octocopters, etc. of varying sizes.
- ▶ Able to detect drones without control links (i.e. on auto-pilot) or that are **invisible to radar** (i.e. small plastic).
- ▶ The hardware is suitable for **both low profile and long range threat installations** (up to 1,000 metres).
- ▶ End-user is alerted immediately through browser-based interface, SMS/email/radio, dry contact relays, or XML and JSON support.
- ▶ **A highly cost-effective solution in the market, and one of very few available to commercial users in the market globally.**
- ▶ Bundled hardware/software service pricing model, resulting in a **recurring revenue stream** for the life of the installation.
- ▶ Distribution channels focus on third party security providers and hardware distributors.



## MARKET

- ▶ Addressable market of over US\$12 billion. Over 300,000 potential customer facilities worldwide in need of 10 - 20 units per installation, including:



- ▶ Vast majority of **real asset perimeters** are currently unprotected (the land perimeter is a fraction of the overall **three-dimensional exposure** to threats, and threats are increasingly coming from the air).
- ▶ Drone market growth: **12 million operational drones** expected by 2020.
- ▶ Also: **other infrastructure, defense installations, national borders, secured sites, manufacturing plants, real estate assets, public events and executive protection.**



# BUSINESS OVERVIEW

- ▶ Australian-headquartered **unique** provider of drone-defense systems.
- ▶ Backed by institutional investors and high profile **defense industry insiders**.
- ▶ Founders are John Franklin and Dr. Brian P. Hearing, ex-Institute for Defense Analyses, DARPA, National Geospatial-Intelligence Agency (NGA), Raytheon, and Johns Hopkins Applied Physics Laboratory.
- ▶ Board, management and advisory board of DroneShield are the **Who Is Who of the U.S. defense industry** and successful ASX small-caps, including:
  - a former **Chief of Naval Research (United States Navy)** and the **U.S. Department of the Navy Chief Technology Officer**,
  - the former **Deputy National Security Advisor for Vice-President Cheney**,
  - a former **Australian Minister for Defence**,
  - the current chairman of the boards of **nearmap Ltd (ASX:NEA)** and **Macquarie Telecom Group (ASX:MAQ)**,
  - a former **CFO of Seeing Machines (AIM: SEE)**, and
  - a former **Commander of the UK Field Army**.
- ▶ Commercially-available low cost drones are a **pervasive problem** worldwide.
- ▶ Proprietary **hardware** backed by unique proprietary **IP / software**.
- ▶ Highly **differentiated from the limited competition**: unique **audio-signature** based detection.
- ▶ Product is being sold **currently** – not just a concept, **unlike competition**.
- ▶ Detects drones that are **invisible to radar, radio-frequency, camera and infrared based systems**.
- ▶ Winner “Best of What’s New” 2015 (Security Division), Popular Science Magazine.



## BUSINESS OVERVIEW (CONTINUED)

- ▶ Protects **infrastructure**, airports, utilities, prisons, stadiums, defence installations, borders, secured sites, manufacturing plants, real estate assets, and public events.
- ▶ **Early-mover** in a nascent industry.
- ▶ An addressable market of over **US\$12 billion**.
- ▶ Rapid growth: **approximately 220 units shipped** since January 2014 when sales commenced.
- ▶ **Inundated** with enquiries.
- ▶ Current price = US\$6,000/annum/sensor. An installation typically requires ~30 units - **cost-effective**.
- ▶ **Over 40 distributors** in more than 30 countries.
- ▶ On the August 2015 Business Insider list of “**25 Hottest Under the Radar Startups in America**” and a Winner of *Popular Science* **2015 “Best of What’s New”** in the Security category.
- ▶ Most installations/clients are confidential. Sales and trials to date include:
  - **Boston Marathon** (2015, renewed in 2016),
  - the accommodation of **the current head of state of a G7 nation**,
  - a high profile US East Coast **airport**,
  - the Office of Homeland Security of a Mid-Atlantic U.S. state,
  - several NATO militaries, and
  - a North American **police department**.



# COMPETITION

- ▶ Much of the purported **competition** is “**vaporware**” – concepts that have not come out of development or been commercially proven
  - DroneShield has been actively selling its system for over 2 years – since the inception of the industry
- ▶ Both purported and bona fide competition is very limited but also differs for the following reasons:

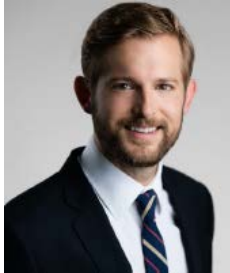
Technology	Comparison	Cost Effective	Range	Highly Accurate	False Alarm Rate	Small Drones	Autopilot Drones	No Current Legal Issues <sup>1</sup>
<i>Radio Frequency (RF)</i>	<ul style="list-style-type: none"> <li>▶ Legal issues (unlawful to interfere with drones in the US).</li> <li>▶ Ineffective on certain types of drones (e.g. those on autopilot).</li> </ul>	✗	✓	✓	✗	✓	✗	✗
<i>Optical and Infrared Cameras</i>	<ul style="list-style-type: none"> <li>▶ Potential to be blocked by trees, bushes or buildings.</li> <li>▶ Moving background (e.g. cars) may create inaccuracies</li> </ul>	✗	✗	✗	✗	✗	✓	✓
<i>Laser and LIDAR</i>	<ul style="list-style-type: none"> <li>▶ Limited range, especially in bad weather</li> </ul>	✗	✗	✗	✗	✗	✓	✗
<i>Radar</i>	<ul style="list-style-type: none"> <li>▶ Active system needs FCC approval and must not conflict from interference with other RF systems (radio, etc.)</li> </ul>	✗	✓	✗	✗	✗	✓	✗
<b>DroneShield</b>	<ul style="list-style-type: none"> <li>▶ <b>Effective acoustics-based technology.</b></li> </ul>	✓	✓	✓	✓	✓	✓	✓

<sup>1</sup> Potential legal issues include interference with other systems (eg radio) or using countermeasures

- ▶ Other acoustics-based competitors are substantially more expensive.
- ▶ Number of “multi-sensor” systems rely on their primary technology only, and use other sensors as a confirmatory mechanism only,
  - for example a camera-based competitor using acoustics with a range of <100 metres to match their camera (DroneShield’s acoustic technology detects up to 1km)

## BIOGRAPHIES | FOUNDERS

### John Franklin, Chief Scientific Officer



**DroneShield's unique intellectual property was originally developed by John M. Franklin and Dr. Brian P. Hearing. Mr. Franklin holds an M.Sc. in Applied and Computational Math from Johns Hopkins University.**

Previously, he was a member of the research staff at the Air and Missile Defense Sector at Johns Hopkins University Applied Physics Laboratory, and Adjunct Research Associate (Science and Technology Division) at the Institute for Defense Analyses.

### Dr. Brian Hearing, Vice President (Research & Development)



**Most recently prior to DroneShield, Dr. Hearing worked for the Office of Director of National Intelligence as a staff member at the National Commission for Review of R&D Programs of the United States Intelligence Community and Deputy Director (Intelligence, Surveillance and Reconnaissance) at the United States National Geospatial-Intelligence Agency.**

Prior to that, he worked as Program Manager – Sensors Systems Business Unit at BBN Technologies (now Raytheon) and Program Manager – Strategic Technology Office at Defense Advanced Research Projects Agency (DARPA). Dr. Hearing holds a Ph.D. from Massachusetts Institute of Technology and has authored or co-authored over 25 classified and unclassified papers and documents, including:

- DARPA/STO BAA 07-52, "Scalable Network Monitoring," FedBizOpps.gov, 2007,
- DARPA/ATO BAA 06-16, "Strategically Hardened Facility Defeat," FedBizOpps.gov, 2006,
- B. Hearing, J. Brinkerhoff, F. Frank, N. Gluck, R. Murch, "Technology Transition: Selected Approaches from Government to Industry," IDA Document D-2996, 2005,
- B. Hearing, V. Andrews, J. Biddle, J. Buxe, O. Oberg, A. Stone, J. Teichman, "Error Propagation in Biomolecular Computation Processes," IDA Document D-3023, 2004,
- Co-author, "Energy Storage for Pulsed-Power in Future Military Systems," JASON Report JSR-03-135, 2003,
- Co-author, "Tactical Infrasound," JASON Report JSR-03-520, 2003,
- Co-author, "Cruise Missile Defense," JASON Report JSR-03-140, 2003, and
- B. Hearing and T. Schilling, "Issues in ABL Lethality," IDA Document D-2704, 2001.



## BIOGRAPHIES | MANAGEMENT

### James Walker, Managing Director and Chief Executive Officer



**An experienced leader in commercialising technology in new markets with extensive capital raising results at Seeing Machines and other early stage companies, such as Hotel Dynamics, Fluorotechnics and Optalert.**

Mr. Walker was most recently the CFO of Seeing Machines Ltd (AIM:SEE), an AIM-listed company that utilises advanced algorithms for detection of driver fatigue and distraction. He is an entrepreneurial and passionate business executive who thrives on commercialising technology and building new global markets, with extensive experience across a wide range of international high growth businesses, including sensor systems, mining technology services, automotive, aviation, biotechnology, hotel telemarketing and security sectors. Through his roles Mr. Walker has completed M&A transactions, IPO listings, follow-on share placements and other capital raisings for private companies as well as ASX and London (AIM) listed companies.

With a strong focus on corporate governance, team development, driving institutional support and shareholder returns Mr. Walker has been able to successfully grow businesses. Some career highlights to date include playing a key role in recapitalizing Seeing Machines with over \$60m raised in three years and the trade sale of Hotel Dynamics in 2002, which was awarded AVCAL's MBO deal of the year.

Mr. Walker is a Fellow of the Institute of Chartered Accountants of Australia and has a Bachelor of Commerce degree from the University of New South Wales.

### Oleg Vornik, Chief Financial Officer



**An experienced financier with investment banking and treasury experience at the Royal Bank of Canada, Leighton Contractors, Brookfield, Deutsche Bank and ABN AMRO.**

Mr. Vornik was most recently an energy and industrials investment banker with the Sydney office of the Royal Bank of Canada. Prior to RBC, he worked as an investment banker at Brookfield Asset Management, Deutsche Bank and ABN AMRO in Australia and New Zealand and held the position of a Treasurer at Leighton Contractors.

Mr. Vornik holds a BSci (Mathematics) and BCom (Hons) from University of Canterbury, New Zealand and has completed a business program with Columbia University in New York.

## BIOGRAPHIES | DRONESHIELD BOARD

### Peter James, Independent Non-Executive Chairman



**Mr. James has over 30 years' experience in the Technology, Telecommunications and Media Industries, and has extensive experience as Chair, Non-Executive Director and Chief Executive Officer across a range of publicly listed and private companies. He is currently Chair of ASX-listed companies Macquarie Telecom and nearmap.**

Mr. James has recently completed 12 years as a Non-Executive Director for ASX-listed iiNet, Australia's second largest DSL Internet Services Provider, chairing iiNet's Strategy and Innovation Committee. iiNet was recently been acquired by TPG Telecom for AUD \$1.56b.

He travels extensively reviewing innovation and consumer trends primarily in the US and also Asia and he is a successful investor in a number of Digital Media, e-commerce and Technology businesses in Australia and the US.

Mr. James is an experienced business leader with significant strategic and operational expertise. He is a Fellow of the Australian Institute of Company Directors, a Member of the Australian Computer Society and holds a BA Degree with Majors in Computer Science and Business.

## BIOGRAPHIES | DRONESHIELD BOARD

### Winton Willesee, Independent Non-Executive Director



**Mr. Willesee is an experienced company director. He brings a broad range of skills and experience in strategy, company development, corporate governance, company public listings, merger and acquisition transactions and corporate finance.**

Mr. Willesee has considerable experience with ASX listed and other companies over a broad range of industries in a number of jurisdictions having been involved with many successful ventures from early stage through to large capital development projects. Mr. Willesee holds formal qualifications in economics, finance, accounting, education and governance. He is a Fellow of the Financial Services Institute of Australasia, a Member of the Australian Institute of Company Directors, a Member of CPA Australia and a Chartered Secretary."

### Dr. Samantha Ravich, Independent Non-Executive Director



**Dr. Samantha Ravich is the former Deputy National Security Advisor for Vice President Cheney and served in the White House for 5½ years where she was the Vice President's representative on Asian and Middle East Affairs as well as on Counter-Terrorism and Counter-Proliferation. Dr. Ravich was an early angel investor in DroneShield.**

Following her time at the White House, Dr. Ravich was the Republican Co-Chair of the Congressionally-mandated National Commission for Review of Research and Development Programs in the United States Intelligence Community. Dr. Ravich is now the CEO of A2P, a social data analytics firm, as well as the Principal Investigator on the recently released monograph, "Cyber-Enabled Economic Warfare: An Evolving Challenge." She also serves as an advisor to The Chertoff Group and Freedom Capital Investment Management. She received her Ph.D. in Policy Analysis from the RAND Graduate School and her MCP/BSE from the University of Pennsylvania/Wharton School. Her book, "Marketization and Democracy: East Asian Experiences," (Cambridge University Press) is used as a basic textbook in international economics, political science, and Asian studies college courses. Ravich is member of the Council on Foreign Relations, serves as an advisor to the US Intelligence Community. Dr. Ravich is a frequent keynote speaker on international security, cyber, and the future of intelligence.

## BIOGRAPHIES | DRONESHIELD ADVISORY BOARD

### Hon. Jay M. Cohen, Rear Admiral, United States Navy (Ret.), Member



**Admiral Jay M. Cohen is a former Chief of Naval Research (United States Navy) and has served as the Department of the Navy Chief Technology Officer.**

Admiral Cohen is a graduate of the United States Naval Academy and holds a joint Ocean Engineering degree from Massachusetts Institute of Technology (MIT) and Woods Hole Oceanographic Institution and Master of Science in Marine Engineering and Naval Architecture from MIT. Earlier in his career, he commanded USS Hyman G. Rickover and served on the U.S. Atlantic Fleet before commanding the submarine tender USS L.Y Spear including a deployment to the Persian Gulf in support of Operation Desert Storm.

Admiral Cohen was promoted to the rank of Rear Admiral in 1997 and reported to the Joint Staff as Deputy Director for Operations responsible to the President and Department of Defense leaders for strategic weapons release authority. In June 2000, he became the 20<sup>th</sup> Chief of Naval Research. He served during the war as the Department of the Navy Chief Technology Officer, responsible for the \$2B+/year Navy and Marine Corps Science and Technology (S&T) Program. Unanimously confirmed by the US Senate, he was sworn in as Under Secretary for Science & Technology at the Department of Homeland Security in 2006. Since leaving government, Admiral Cohen serves on corporate boards and is an independent consultant for science and technology in support of U.S. and international defence, homeland security and energy issues and solutions.

### Carol A. Haave, Member



**Carol A. Haave is the former Assistant Secretary for International Affairs at the Department of Homeland Security and the former Deputy Undersecretary of Defence for Counterintelligence and Security.**

She has more than 25 years of working directly with cabinet-level officials providing defence, security, intelligence, counterintelligence and technology advice, and is noted for adapting commercial technology and innovative programs to benefit the military and security officials involved in conflict situations. Responsible for Homeland Security's relationships with all foreign countries, Ms. Haave was directly involved in successful efforts to identify, disrupt and respond to terrorist and other security threats to the United States and its forces. She was the Operations Manager for a \$125 million/year program that built a commercial communications, command and control, and information management system deployed to 33 sites throughout Europe to include Bosnia, along with the first deployment of the Predator UAV that ensured military leaders were privy to the same operational information and intelligence simultaneously.

As a senior Homeland Security official, Ms. Haave has significant experience with U.S. Borders, Customs and all Homeland Security departments. As a senior official at Defence and Homeland Security, she developed and maintains significant international contacts. Carol has over a decade of DARPA experience, including technology transition and information management. She has served as a Management Analyst at NASA and an Inspector at Summa Corporation.



## BIOGRAPHIES | DRONESHIELD ADVISORY BOARD

### Lieutenant General Robin Brims (Ret.) CB CBE DSO, Member



**General Brims became Commander of the UK Field Army in 2005. He deployed to Baghdad in 2005 to be the Deputy to the Coalition Commander General George Casey.**

Earlier in his career, General Brims was Chief of Staff at Headquarters Northern Ireland and Director Army Plans and Resources in UK Ministry of Defence. In 2000 he was appointed Commander of the Multi-national Division (South West) in Bosnia and in 2001 became General Officer Commanding 1st (UK) Armoured Division which took part in the invasion of Iraq. For his service in Iraq he was awarded the Distinguished Service Order. On leaving Iraq became Deputy Chief of Joint Operations at UK's Permanent Joint Headquarters, before becoming Commander of the UK Field Army in 2005 and deploying to Baghdad for most of 2005 to be the Deputy to the Coalition Commander, General George Casey. On retirement in 2007 he became Rector (Vice-Chancellor) of the University of Kurdistan-Hawler in Northern Iraq. His task was to reorganize the University to make it fit international standards. He handed over to an academic in late 2009 and returned to live in UK. He was appointed Chairman North of England Reserve Forces and Cadets Association in April 2010, and Chairman Council of RFCAs in December 2011. In 2012 he was appointed by the UK Secretary of State for Defence to be Chairman of the External Scrutiny Team which is tasked with reporting on the UK MOD's plan to expand the Reserves.

### Robert Hill, AC, Member



**Mr. Hill is a former Australian Minister for Defence.**

He was a member of the Australian Senate from 1981 to 2006, representing South Australia. He was educated at the University of Adelaide and the London School of Economics, where he gained a Master's degree in Law. Mr. Hill was Leader of the Government in the Australian Senate from March 1996 until his resignation in January 2006. He was Australian Minister for the Environment 1996-98, Minister for the Environment and Heritage 1998-2001 and Minister for Defence from November 2001 to January 2006. In July 2005 the Coalition parties took control of the Australian Senate and Mr. Hill became the first Government Leader in the Senate since 1981 to command a majority in the chamber. In January 2006 he announced his resignation from the Parliament. Mr. Hill was Australian Ambassador to the United Nations for Australia from 2006 - 2009. In July 2009, he was appointed by Prime Minister Kevin Rudd as Chairman of the Australian Carbon Trust. In June 2012, he was awarded a Companion of the Order of Australia.

## BIOGRAPHIES | DRONESHIELD ADVISORY BOARD

### Joanna Riley, Member



**Ms. Riley is the founder and CEO of 1-Page (ASX:1PG), a poster child of U.S. technology listings on the ASX, having listed in 2014.**

Ms. Riley started her career in the International Training and Assistance Unit of the FBI. Prior founding 1-Page, she was the CEO of Performance Advertising, responsible for building one of the leading outsourced sales and marketing firms for two Fortune 500 companies. Ms. Riley earned her BA degree in Foreign Affairs from the University of Virginia where she was a Full Scholarship athlete and a USA Junior National Team rower.

# MARKET COMPARABLES | DRONE PROTECTION

## DRONESHIELD CARRIES TECHNOLOGICAL AND REGULATORY ADVANTAGES

	DroneShield Limited (ASX:DRO)	Department 13 International Limited (ASX:D13)
<b>Product Technology</b>	<ul style="list-style-type: none"> <li>▶ Proprietary hardware and software system detects drones through their acoustic signatures</li> <li>▶ Subscription based software provides regular updates of new drone signature database</li> </ul>	<ul style="list-style-type: none"> <li>▶ Radio frequency blocking technology</li> <li>▶ Secondary products - Cyber security, other RF applications</li> </ul>
<b>Development Stage</b>	<ul style="list-style-type: none"> <li>▶ Sales-ready product with over 60 units sold in 2015</li> </ul>	<ul style="list-style-type: none"> <li>▶ Proof of concept stage</li> <li>▶ Undergoing further R&amp;D and commercialisation</li> </ul>
<b>Time to Revenues</b>	<ul style="list-style-type: none"> <li>▶ Currently selling product</li> <li>▶ ~US\$100,000 revenue in 2015</li> </ul>	<ul style="list-style-type: none"> <li>▶ Performance shares vest on \$1 million of commercial sales within 3 years</li> </ul>
<b>Size of the market</b>	<ul style="list-style-type: none"> <li>▶ Drone security and defence market estimated to be US\$11.1bn by 2024</li> </ul>	<ul style="list-style-type: none"> <li>▶ Drone security and defence market estimated to be US\$11.1bn by 2024</li> </ul>
<b>Drone Market Advantages</b>	<ul style="list-style-type: none"> <li>▶ First to market</li> <li>▶ Can detect drones that are invisible to radar or that lack radio-frequency links</li> <li>▶ Short-range and long-range sensors to meet individual client's needs (up to 1km range)</li> <li>▶ Cheaper compared to competitive products</li> <li>▶ Bespoke solutions for specific client needs</li> </ul>	<ul style="list-style-type: none"> <li>▶ Good range once developed</li> <li>▶ Once developed, able to 'hijack' drone and control flight path (drone interference)</li> <li>▶ Has IP for other verticals (cyber security, telecommunications applications)</li> </ul>
<b>Drone Market Disadvantages</b>	<ul style="list-style-type: none"> <li>▶ Requires multiple sensors to provide greater coverage</li> <li>▶ Potential for external factors (weather, noise) to impact efficacy</li> </ul>	<ul style="list-style-type: none"> <li>▶ Legality issues (illegal in US to interfere with drone flight)</li> <li>▶ Cost</li> <li>▶ Cannot detect drone without RF signature (eg autonomous drones are 'invisible')</li> <li>▶ Potential for false alarms from legitimate RF traffic (cell phones, WiFi, TV and Radio broadcasts, handheld radios, etc)</li> </ul>
<b>Market Capitalisation (undiluted)</b>	<ul style="list-style-type: none"> <li>▶ \$31m (\$8m non-escrowed shares + \$23m escrowed shares)</li> </ul>	<ul style="list-style-type: none"> <li>▶ \$52m (\$14m non-escrowed shares + \$38m escrowed shares)</li> </ul>
<b>Market Capitalisation (incl Performance Shares)<sup>1</sup></b>	<ul style="list-style-type: none"> <li>▶ \$41m (including \$10m Performance Shares)</li> </ul>	<ul style="list-style-type: none"> <li>▶ \$94m (including \$42m Performance Shares)</li> </ul>

<sup>1</sup> Excludes Options

Market Capitalisation Values are as at 15 July 2016

Sources: DRO market research

# MARKET COMPARABLES | DRONE COMPANIES

DRONE DEFENCE CLOSELY FOLLOWS DRONE MANUFACTURING, WHICH HAS EXPLODED IN SIZE WITH SUBSTANTIAL CAPITAL INJECTIONS

	DJI (Unlisted)	Parrot SA (EPA: PARRO)	3D Robotics, Inc (Unlisted)	Yuneec International (Unlisted)	Airware (Unlisted)
<b>Flagship Models</b>	<ul style="list-style-type: none"> <li>▶ Phantom 1,2,3,4</li> <li>▶ Inspire</li> </ul>	<ul style="list-style-type: none"> <li>▶ Bebop 1,2</li> </ul>	<ul style="list-style-type: none"> <li>▶ Solo</li> </ul>	<ul style="list-style-type: none"> <li>▶ Typhoon Q500, G</li> </ul>	<ul style="list-style-type: none"> <li>▶ Operating system for drones</li> </ul>
<b>Market Valuation</b>	<ul style="list-style-type: none"> <li>▶ Reported to be in discussions for a capital raising valuing the company at US\$10bn<sup>1</sup></li> <li>▶ US\$105m raised in 2 rounds                             <ul style="list-style-type: none"> <li>– US\$75m in May 2015 (implied US\$8bn valuation)</li> <li>– US\$30m in May 2014</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▶ EUR€378m (market capitalisation)<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▶ US\$99m raised in 4 rounds                             <ul style="list-style-type: none"> <li>– US\$14m in Apr 2015</li> <li>– US\$50m in Feb 2015</li> <li>– US\$30m in Sep 2013</li> <li>– US\$5m in Nov 2012</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▶ US\$60m raised in Aug 2015</li> </ul>	<ul style="list-style-type: none"> <li>▶ &gt;US\$40m raised                             <ul style="list-style-type: none"> <li>– 6 rounds, with the last one in Apr 2015 (undisclosed value)</li> </ul> </li> </ul>

<sup>1</sup> <http://www.forbes.com/sites/ryanmac/2015/04/14/worlds-largest-drone-manufacturer-dji-seeking-to-raise-at-10-billion-valuation/#451265d977db>

<sup>2</sup> As at 15 July 2016

Sources: CrunchBase, DRO market research

No fundraising data publicly available for other popular manufacturers such as Shenzhen Hubsan Intelligent Co., Ltd (Hubsan), Blade, Cheerson, SenseFly, Syma Toys, UDIRC, Walkera



## TRADING PERFORMANCE AND CAPITAL STRUCTURE



## CAPITAL STRUCTURE

DroneShield has raised \$7 million, in a significantly oversubscribed offer, through the issue of 35 million shares at A\$0.20 per share via an Initial Public Offering on the ASX.

Shareholders	Shares	Performance Shares <sup>1</sup>	Listed DROO Options <sup>2</sup>	Unlisted Options <sup>3</sup>	% Ownership (Undiluted)
Existing Shareholders	100,000,001	45,000,000	-	-	74.1%
IPO Shareholders	35,000,000	-	35,000,000	-	25.9%
Options issued to Directors, Management and Advisory Board	-	-	-	21,450,000	-
Lead Manager Options	-	-	-	10,000,000	-
<b>Total</b>	<b>135,000,001</b>	<b>45,000,000</b>	<b>35,000,000</b>	<b>31,450,000</b>	<b>100.0%</b>

Enterprise Value		
Market Cap	15 July 2016 (23c / share)	\$31.1m
Cash	As at IPO	(\$7.0m)
Debt	As at IPO	\$0.2m
<b>Enterprise Value</b>	Excluding options	<b>\$24.3m</b>

<sup>1</sup> Performance Shares:

- Tranche 1 of 15 million of performance shares will vest upon the Company achieving a 30 day volume weighted average price (VWAP) exceeding A\$0.30 and securing twenty (20) individual installations of the DroneShield technology and infrastructure by paying customers within 24 months of the listing date.
- Tranche 2 of 15 million of performance shares will vest upon the achievement of \$7 million of cumulative revenue or \$2.5 million of annual revenue in any given twelve month period within 36 months of the listing date.
- Tranche 3 of 15 million of performance shares will vest upon the achievement of \$3 million of cumulative earnings before interest and taxes (EBIT) or \$1 million of annual EBIT in any given financial year, within 36 months of the listing date.

The Revenue and EBIT targets are in relation to the DroneShield System (the acoustic drone detection system).

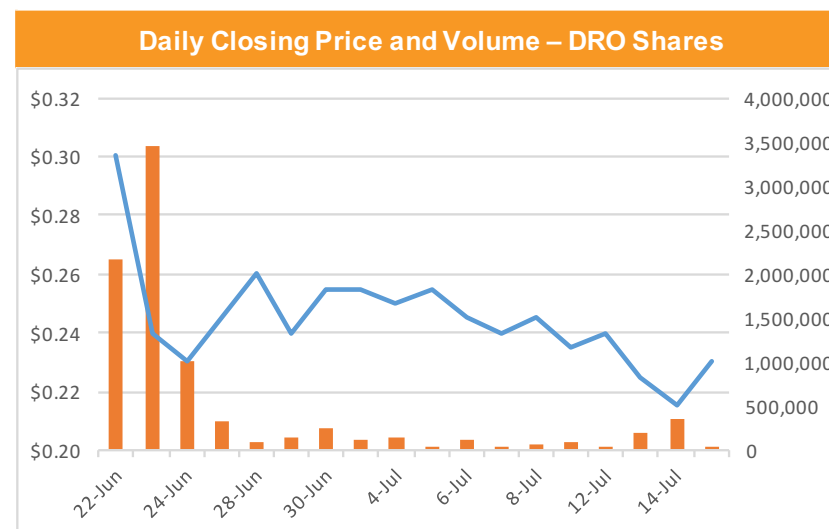
<sup>2</sup> Listed DROO Options: Exercisable at 22 cents on or before 14 Jun 2018.

<sup>3</sup> Unlisted Options:

- 19,700,000 Unlisted Options issued to Directors and Management are exercisable at 30 cents each with various expiry dates ranging between 14 June 2019 and 22 June 2022. Of these Options, 12,400,000 are subject to various vesting conditions relating to length of employment with the Company and all of them are subject to escrow restrictions until 22 June 2018.
- 1,750,000 Unlisted Options issued to the Company's Advisory Committee are exercisable at 30 cents each on or before 14 June 2019. These options have fully vested and are not subject to any escrow restrictions
- 10,000,000 Unlisted Options issued to the Lead Manager of the IPO are exercisable at 22 cents on or before 14 June 2019, and are subject to escrow restrictions until 22 June 2018.

# TOP SHAREHOLDERS AND TRADING PERFORMANCE

Top Shareholders (as at 15 July 2016)			
Shareholder	Holdings	% Undiluted Capital	2 year Restriction
Long Hill LLC	55,000,001	40.74%	yes
Eagle View funds <sup>1</sup>	20,830,844	15.43%	
Dr Brian Hearing	17,550,000	13.00%	yes
John Franklin	14,850,000	11.00%	yes
R and K Dinkel	4,500,000	3.33%	yes
Lawrence Rosenfeld	4,500,000	3.33%	yes
Azoth LLC	2,250,000	1.67%	yes
Chesapeake Capital	1,500,000	1.11%	
West Meadow LLC <sup>2</sup>	1,350,000	1.00%	yes
BNP Paribas Noms	1,250,000	0.93%	
Junhart Pty Ltd	500,000	0.37%	
HSBC Custody Nominees (Australia) Ltd	397,250	0.29%	
Nomex Nominees Pty Ltd	253,656	0.19%	
Kirri Cove Pty Ltd <sup>3</sup>	250,000	0.19%	yes
Christie James Funds Management Limited <sup>4</sup>	250,000	0.19%	yes
Kingfire Pty Ltd	250,000	0.19%	
Paul Broad	250,000	0.19%	
Anthony Maple-Brown	250,000	0.19%	
Brendan Martin	250,000	0.19%	
<b>Total</b>	<b>126,231,751</b>	<b>93.51%</b>	



## Key Observations

- Shareprice has traded consistently above the issue price, closing at 23c / share as at 15 July 2016
- DRO options have closed at 4.2c as at 15 July 2016
- Total shareholder return since IPO to 15 July was 7.2c, or 36% over a period of approximately 3 weeks
- Over 74% of the register is restricted shares which cannot be traded for 2 years post IPO
  - Only 34.5m shares out of 135m (approx 26% of the total shares outstanding) may be traded

### Notes:

<sup>1</sup> Includes all entities related to Eagle View

<sup>2</sup> Related entity of Dr Samantha Ravich

<sup>3</sup> Related entity of James Walker

<sup>4</sup> Related entity of Peter James



## PROGRESS YEAR TO DATE AND BUSINESS PLAN EXECUTION

Month	Milestone
February 2016	US patent issued by USPTO – “Drone detection and Classification Methods and Apparatus”
April 2016	DroneShield engaged to protect Boston Marathon for second consecutive year
May 2016	Release of new product system v1.5
May 2016	Release of a new product – Onsite Processor
June 2016	IPO

### Use of Funds / Key Deliverables

- Key engineering and sales hires
  - Engineering effort focussed on scaling of the existing technology, and integration with complementary technologies
- Customer trials and installations across segments and geographies
- Partnership/acquisitions of complementary technologies for drone detection and countermeasures
  - Countermeasures to be marketed to customers who are legally able to use them
- Continuing relationship development and strategic additions to the global distributor footprint and joint marketing/customer demos
- Continuing scaling and streamlining of the manufacturing processes
- Continuing to position DroneShield as the incumbent in the drone security industry
- Mid-term objective – an exit to a defense or civil defense industry player, electronics / detection manufacturer or a large distributor.





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