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Submission Of: Michael Yabsley

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What is your submission based on? I am making this submission based on my professional knowledge, qualifications or experience or on behalf of a group or organisation
What is your area of professional expertise?
If you are lodging your submission on behalf of a group or organisation, what is the name of the group or organisation?

Your Submission

In your experience, what areas of the bushfire emergency response worked well?
Please refer to the supporting documents.
In your experience, what areas of the bushfire emergency response didn't work well?
Please refer to the supporting documents.
In your experience, what needs to change to improve arrangements for preparation, mitigation, response and recovery coordination for national natural disaster arrangements in Australia?
Please refer to the supporting documents.
Is there anything else you would like to tell the Royal Commission?
Do you agree to your submission being published? Yes I agree to my submission being published in my name
Supporting material provided:
SUBMISSION TO THE ROYAL COMMISSION.docx
CURRICULUM VITAE OF A.doc
GREGORY CLARK AC 2019 General Australian Bio.docx
Mark Burrows CV (original)_200312.pdf

SUBMISSION TO THE ROYAL COMMISSION
INTO NATURAL DISASTER ARRANGEMENTS April 27/20

The undersigned represents and is part of a group of prominent Australians, most of whom have properties vulnerable to bushfire. They include Hon. Michael Yabsley, Dr. Gregory Clark AC, Mr. Mark Burrows AO and others.

Australia's lack of preparation to confront the continuing bushfire crisis is shortsighted; the next time bushfires flare up, as inevitably they must, it will be unconscionable if it is not corrected. As reported generally, our bushfires are happening three times more often than a century ago, while in the same period Australia's population has increased fivefold.

Why was it that our defences against the most recent fires were allowed to be so comprehensively overwhelmed? The answer requires no nuance. We were scandalously unprepared.

Urgently we need a strategy that, together with conventional elements, leads to a level of preparedness that will avoid us being caught off guard again. We should summon technology to the cause. It exists and can provide us with an early warning system (EWS) that can be launched in bushfire seasons. It would be reminiscent of the British radar system that alerted fighter pilots to the presence of enemy bombers during World War 11.

For Australia's purpose, the EWS would operate to sense fires remotely while they are still small enough to be suppressed readily. For years scientists have been developing accurate thermal infrared (TIR) sensors that can manage this. They can be deployed in aircraft, drones or satellites to map vast areas prone to fires. GPS can pinpoint the relevant locations to within a small area.

Dr. Clark, a physicist and former chief operating officer and president of Loral Space Systems, one of the world's largest satellite manufacturers and operators, is confident we could use satellites to detect fires in their early stages. The technology required is available and could be carried on low earth orbiting satellites, at a height of 600 km to 1000 km.

Several satellites would be required, orbiting every two to four hours, mapping the hot spots. Detection accuracy would be enhanced by multi-spectral analysis and algorithms that distinguish between apparent fires and real ones.

Regrettably, Australia doesn't yet have launching capability. For that, New Zealand could be approached.

The sensors in the EWS would detect long-wavelength bands of light (beyond the range of human vision) emitted from Earth, whose intensity depends on surface temperatures. Geologists have used TIR spectrometry for decades in mineral exploration, although its application would be different for fire detection.

It should be possible to establish an integrated EWS consisting of real-time observation by TIR sensors continuously revolving at height over fire-prone territory, a downloading capability to a command and control centre that analyses the data, and a communications system that alerts the firefighters.

Today we have to rely on forecasts and members of the public noticing fires and calling in. Fires outside populated areas are rarely observed at the early stage.

ESTABLISHMENT OF THE EWS

- 1 The Government, either federal or state, or in conjunction (Government), could set up, finance and operate the EWS.
- 2 Alternatively, a public/private partnership could be the vehicle. Any number of combinations would be possible. One could consist of a company (Newco) in alliance with Government.
- 3 Newco would raise the capital required – probably in the range of \$300 – \$500 million. It would acquire the satellites, equip them with TIR spectrometers, GPS devices etc. and contract with Government to provide the detection services.
- 4 A company specializing in satellites, under contract to Newco, would undertake the launching of the satellites and their operation. A number of alternatives exist.
- 5 At the onset of the bushfire season the satellites would orbit over all territory at risk and acquire data indicating the presence of new fires.
- 6 The data would be downloaded to Newco's offices where they would be analyzed and interpreted. AI could be used to reduce costs.
- 7 Where new fires are indicated (and verified by algorithm), their location and size would be transmitted to a central management and control system established and operated by Government.
- 8 Contact has been made with international banks and investment banks specializing in green finance regarding this initiative. The response has been uniformly positive as all consider this investment to be an exciting addition to their business.

A cursory look at the EWS would disclose that its capital and operating costs would be covered many times by the savings occasioned by its significantly earlier detection of bushfires that otherwise would grow into highly destructive ones.

Our group would be happy to answer any questions the Commission wishes to put.

Respectfully submitted

Anthony (Tony) Grey AM

CURRICULUM VITAE OF TONY GREY

Graduated with a BA in History (Hons) and then a Juris Doctor from the University of Toronto, Canada

Practised law with McCarthy Tetrault (a major Canadian law firm) in Toronto for seven years

While on a legal matter in Australia became interested in the burgeoning mining industry there and founded Pancontinental Mining Ltd in 1970, which discovered Jabiluka in 1971.

Emigrated to Australia to build Pancontinental (leaving legal practice), settled in Sydney in 1972

Became an Australian citizen in 1989

Built Pancontinental into a major publicly listed diversified mining house with interests in gold, base metals, rare earth minerals, coal, industrial minerals, petroleum, and uranium. Besides Jabiluka, it discovered and developed Paddington, a gold orebody near Kalgoorlie, and the Wodgina tantalum orebody in WA. It developed the Kunwarara magnesite ore orebody in Queensland.

Founded Pancontinental Petroleum Ltd in Australia and Pancontinental Oil Ltd in Calgary, Alberta, both public companies producing oil and natural gas

Was a member of the Business Council of Australia

Was Chairman of the World Nuclear Association, a world-wide association of uranium producers and consumers headquartered in London (formerly the Uranium Institute)

Was a founding director of the World Gold Council

Was a director of the International Nuclear Law Association

Sold shares in and retired from Pancontinental

Was a director of National Mutual Royal Bank for 4 years

Was Chairman of Kingsgate Consolidated, a producing gold mining company listed on the ASX for 4 years

Was a member of the International Advisory Council of Degussa AG, a large public German metals, pharmaceutical and chemical company for 5 years

Was a director of the Australian Opera for 17 years

Was a director of the Conservatorium of Music in Sydney for 5 years

Was a Trustee of the Art Gallery of New South Wales for 9 years

Was a member of the advisory committee of the Benevolent Society

In 1992 financed and became Executive Chairman of Polartech Ltd., an ASX listed biomedical company developing a revolutionary Australian invention of an opto-electronic means of diagnosing pre-cancer and cancer. The technology received several Australian Government science awards. Retired in 2003.

Past National Chairman of the Brain Foundation, a medical charity offering community services and raising money for research in respect of physical disorders of the brain. Presently Vice Chairman. Involved in the Brain Foundation for over 25 years.

For the last several years, worked as an author of books, articles and essays.

Wrote Jabiluka, a book published in Australia about the struggle to develop the country's vast uranium discoveries in light of environmental and Aboriginal Land Rights Issues

Wrote East Wind, (From Greece to the Great Wall), a book published in Australia about a journey of cultural experience in Greece, Turkey, Iran, Central Asia, Xinjiang and the Silk Road

Wrote Seven Gateways, a book published in Australia about seven places with outstanding spiritual significance, ranging from Aboriginal animism to Buddhism in the Himalayas

Wrote The Tortoise in Asia, a historical fiction story of Roman soldiers who came along the Silk Road after the Battle of Carrhae in 53BCE

Wrote articles about the mining industry published in various journals and books

Wrote and gave papers to numerous international mining conferences

Wrote articles published in the Australian Financial Review

Wrote articles for the Financial Review monthly magazine in Australia about places visited

Wrote an article on the Bushfires and several articles on nuclear power published in the Australian

Currently writing essays

Was awarded an AM in the 2016 Australia Day honours

INTERESTS

Writing

History

Theatre

Visual arts

Music

Tennis

Sailing

CLUBS

Royal Sydney Golf Club

Royal Sydney Yacht Squadron

Albany Club (Toronto)

Rand Club (Johannesburg)

Dr GREGORY J. CLARK AC

Dr Gregory Clark has an outstanding career both in Australia and internationally. His experience ranges across a spectrum of industries from IT and communications to media, space and finance. In the commercial area he has been responsible for running large commercially and technically sophisticated operations with large international footprints. In these companies he had P&L responsibility. Development of corporate strategy is a major area of strength for Greg Clark. He has been responsible for strategy and technical roadmap development in some of the world largest companies as well as a number of start-up and small companies. He has strong financial capabilities and experience in financing large projects as well as running his own company advising private equity and other financial institutions on investments in technology companies. Greg Clark has had experience in developing government policy. He has extensive experience in growing companies within a highly regulated environment. Clark has been a Board Member/Chairman of a number of public and private companies across a range of industries from financial to space to media to IT and communications.

Greg Clark has a very strong research and development background. He was a Research Staff Member in the IBM Research Division in New York through the 1980s. He was also Director of Strategy, Telecommunications at IBM Corporate Headquarters in 1990. In early 1991 and 1992 establish a research group for IBM in Australia that won significant international awards and had by 2012 developed into a full laboratory of the IBM Research Division. He has a large research publication list and 13 patents. He is, amongst other recognitions of his contributions, a Fellow of the American Physical Society, a Fellow of the Australian Academy of Science , Technology

and Engineering, a recipient of the Israeli Einstein Medal and a Fellow of the New York Explorers Club. He was awarded the Pawsey Medal for the best Australian scientist under 36 years of age.

In January 2018 Gregory Clark was awarded the Companion (AC) in the General Division of the Order of Australia for to science as a physicist, researcher and academic in the area of technological development and communications, to business an innovator and enabler of emerging technologies and to the promotion of philanthropy. This is the highest civilian award given in Australia.

Currently Dr Greg Clark is a Associate Professor at the Australian National University. He is Chair of the Australian National University Advisory Board on Commercialisation of Science and Engineering. He is Chair of CUDOS an ARC Centre of Excellence involving six National universities and a number of International Universities. He is a Board Member of Questacon, the Australian National Science and Technology Centre, He is also a Board Member of RiAus, the Royal Institution (Australia) and on the Sydney University Science Foundation Board.

In the policy area he has spent nine years, 1991 to 2000, on the Australian Prime Minister's Science and Technology. He also worked closely with Chief Scientist Prof Keith Slayter in establishing the Co-operative Research Centre Program and choosing the first group of CRC's.

More broadly, Clark still maintains strong ties with University and Corporate research groups around the world as well as private equity groups interested in technology companies.

In summary, Gregory Clark is an energetic individual who is highly motivated and a very collaborative colleague.

Addressing more specific aspects of Gregory Clark's background:

After graduating with a PhD in Nuclear Physics at the Australian National University Gregory Clark spent two years as a Harwell Fellow in the United Kingdom. He then spent several years with the CSIRO as a Principal Research Scientist working on the use of nuclear techniques in the mining industry. During this period he spent two years, as a Senior Visiting Fellow, at the Oak Ridge National Laboratory in Tennessee working on the use of nuclear techniques in solid state physics, specifically chip and energy storage technologies.

Clark was recruited into the IBM Research Division based in Yorktown Heights, New York. Here his research was in the area of ion beam interaction and their use for modifying material particularly those used in the electronics industry. Simultaneously Greg Clark was responsible for an experiment that put an upper limit on the mass of the neutrino an experiment of wide significance as it was thought, then as now, that the mass of the neutrino could explain the most of the missing mass in the universe. During this period Clark was asked to come to Australia as establish a research and development presence for IBM in Australia as part of the Australian Government Offsets Program. This was very successful resulting in the establishment of a research centre, based at Melbourne University that a decade later grew into one of the five IBM Research Division Laboratories around the world. The program, amongst other achievements, was awarded a UN Environmental Award through the Australian Institute of Marine Science for work modelling the flow of water through the Great Barrier Reef and associated mangrove swamps. After returning to Yorktown Heights Clark assumed in addition to his Research Division responsibilities the role of Director of Telecom Strategy at Corporate Headquarters.

From IBM Gregory Clark was recruited into News Corporation. At News Corporation Clark was President of Technology, responsible for

all News Corporation technology and technology companies around the world. He was a Member of the News Corporation Executive Board. His responsibilities included all technology to deliver pay TV to tens of millions of subscribers in five continents, technology to bill customers and collect revenue, technology to avoid piracy take the networks from analogue to digital. He grew many News Corporation technology companies to significant values and listed a number on various exchanges. For example, one Clark start-up at News Corporation, NDS, recently sold to Cisco for \$5.4 billion. He was responsible for taking all Fox Television and Twentieth Century Fox Studios digital, the first TV network and movie studio to do this in the USA.

At Loral Space and Communications Clark as COO and President, ran the world's largest commercial satellite manufacturer and second largest satellite operator delivering satellites and satellite services in a highly regulated environment to governments and corporations in every continent. At Loral he was responsible for all subsidiaries, such as Globalstar, Orion, SatMex, Skynet etc. A number of these subsidiaries were listed on NASDAQ and the NYSE.

Clark was from 2001 until 2006, Vice Chairman and Chief Technology Officer of Knowledge Universe a private company funded by leading technologists that invested in and operated companies in the technology, education and health industries.

In 2005 Clark started his own advisory firm, Clark Capital Partners, advising private equity on technology investments. He sold this firm in 2012.

In the governance area, Clark has just completed 10 years on the ANZ Banking Group Board where he chaired the Board Technology Committee and sat on the Risk Committee and the Human Resources Committee. He has been on and is on a number of other public boards in Australia, Europe and the US.

PERSONAL DETAILS

DATE OF BIRTH

[REDACTED]

ADDRESS[REDACTED]
[REDACTED]
[REDACTED]

PHONE[REDACTED]
[REDACTED]
[REDACTED]

EMAIL

[REDACTED]

EDUCATION1966 - BSc (Hons, 1st Class) University of Tasmania
1968 – PhD Physics, Australian National University

EMPLOYMENT HISTORY

2006 to present	Associate Professor, Australian National University
2004 to 2011	Principal, Clark Capital Partners
2006 to 2015	Chairman, KaComm Communications Pty Ltd
2001 to 2006	Vice Chairman and CTO, Knowledge Universe Corporation

1998 to 2001	President and Chief Operating Officer, Loral Space and Communications
1993 to 1998	President, News Technology Group, News Corporation and Member, News Corporation Executive Committee, Los Angeles, USA
1991-1992	Director of Strategy, IBM Corporate Headquarters – New York, USA, Director of Technology, IBM Australia
1980-1993	Research Staff Member IBM Thomas J Watson Research Division - New York, USA
1973 to 1980	Principal Research Scientist, Division of Mineral Physics, CSIRO
1976 to 1977	Visiting Principal Scientist, Oak Ridge National Laboratory, United States Atomic Energy Agency
1969 to 1972	Harwell Fellow, United Kingdom Atomic Energy, Harwell, UK

MAJOR AWARDS AND HONOURS

1979	Pawsey Medal for Most Outstanding Young Australian Scientist, Australian Academy of Science
1981 to 1992	Eight major IBM Corporation awards
1988	Fellow, American Physical Society
1989	Fellow, New York Explorers Club
1991	Fellow, Australian Academy of Technological Sciences and Engineering
2001	Australian Centenary Medal
2005	Einstein Medal, Israeli Government Bragg Fellow, Royal Institution (Australia)
2012	The Pearcey Foundation Hall of Fame
2018	Companion (AC) in the General Division of the Order of Australia Australia's Highest Civilian Award

PUBLICATIONS & PATENTS

- 130 plus peer reviewed papers in physics, micro-electronics, computing and communications
- 80 plus internal IBM publications
- 13 patents

CURRENT PUBLIC COMPANY BOARDS

- NextDC Pty Ltd
- Clark has previously been on a number of other public boards including: ANZ Banking Group, NDS (Chairman), GlobalStar (Chairman), LeapFrog, SatMex, James Hardie, Babcock and Brown Capital. He has also been on the Board of a number of non-listed companies including Knowledge Universe (Vice-Chairman).

SERVICE CONTRIBUTIONS

Contributions to Australian Science and Technology Policy:

1988-1991	Member, Australian Science and Technology Council
1992-1997	Member, Australian Prime Ministers Science and Engineering Council
1991	Member, Initial Co-operative Research Centre Selection Committee
1994-1996	Member, US Delegation US-Japan Committee on Media and Telecommunications
2006	Member, NICTA Review Board



Mark Burrows AO has enjoyed a long and distinguished career in investment banking both in Australia and the UK. Commencing as an analyst with Baring Brothers & Co in London, in 1982 Mark co-founded the iconic Australian investment bank, Baring Brothers Burrows & Co. In 1999 he was appointed the Managing Director / Deputy Chairman of ING Barings in London. In 2004, Mark joined Lazard as a Managing Partner and in 2006 was appointed Lazard Australia's inaugural Chairman. Mark returned to investment banking in 2011 as Vice Chairman of Credit Suisse's Global Investment Bank.

During his extensive investment banking career, Mark has been the principal financial advisor to some of the most significant and transformative corporate and government transactions in Australia.

In London Mark was involved with the Argentinian Sovereign Default and more laterally, the emerging role of Green Finance.

Mark has served as a Non-Executive Director on several Australasian public companies including Chairman and Deputy Chair of Brambles, Fairfax Media and Telstra.

Since the Rio Earth Summit in 1992 Mark has been an advocate of Private Sector involvement in sustainable development. His early involvement in the B20 and the development of the G20 Sustainability Group, the early Forests Summits in Asia and Africa, led Mark to focus on aligning financial systems with sustainable development outcomes. Mark is the Special Advisor to UNEP (United Nations Environment Programme), based in Nairobi and Geneva, and UNEP fi. He is the Senior Advisor to the Climate Bond Initiative in London. Since 2017 to 2020 Mark was a Senior Advisor to Macquarie Bank, a leading global investment bank on climate finance and renewable energy. Mark has a long involvement with CIFOR in Jakarta (the World's leading forestry research group) with respect to the Global Landscapes Forums. He is a Council Member of the Asian Board of TNC (The Nature Conservancy, the world's largest environmental NGO). Working with these institutions Mark is seeking to develop market driven financial instruments, with universal taxonomy, to better channel capital into the green economy. This particularly applies to the problems of attracting green finance at scale for landscapes and climate related adaptation. Mark has been at the forefront of proposing changes to the regulatory framework for global financial institutions particularly around regulated capital to further these initiatives.

Mark has made significant contributions to the advancement of Australian Public Policy. He led the development of Australia's national uniform corporate law, which resulted in the creation of the Australian Securities and Investment Commission (ASIC). Mark has also been widely recognised through his role as the co-author of the Report on the Framework on the Australian system of Compulsory Superannuation (\$3 trillion asset class). Amongst many cultural appointments, Mark was the Chairman of the Sydney Theatre Company for a decade of change and renewal.

Mark is a dendrologist, an occasional writer for the Australian Financial Review and the Adjunct Professor of Finance at Sydney University Business School. He is a frequent participant at global climate, green finance and sustainability forums.

March 2020

