Date: Oct 22nd 2014

To: Natural Disaster
Funding Arrangements
Productivity Commission
Locked Bag 2
Collins Street East Melbourne
Vic 8003

Dear Commissioners

RE: Draft Productivity Commission, Draft Report, Natural Disaster Funding Arrangements

We are writing to you in relation to the Productivity Commission's (the Commission) Draft Report into Natural Disaster Funding Arrangements (Draft Report), and in particular, the Commission's draft finding and recommendation relating to the funding of mitigation activities.

The work of the Commission on this issue is not only critically important to reducing the financial impact of disasters, but also to ensuring that government takes a holistic approach to risk mitigation, the beneficiaries of which will be the community.

This submission relates directly to bushfire mitigation and the role technology has to play in Very Early Detection, rapid response and ultimately mitigation of the financial and social impacts of bushfires.

On this issue, the Commission's recommendations relating to the role of the Australian Government, both as a policy leader and funding partner are absolutely critical.

Very Early Detection, monitoring and spatial targeting technologies are valuable mitigation tools and we also see them as a central part of the next generation of Emergency Alert; providing significantly improved intelligence gathering and situational awareness capabilities.

However, as a community we can ill afford to have a scenario like that of Emergency Alert where it was only after the catastrophic events of Black Saturday and the loss of 173 lives that governments were motivated to collaborate and implement technology to better protect our communities.

These technologies already exist, they are inexpensive to deploy and operate, they will save taxpayers millions of dollars in disaster response, recovery and rebuilding efforts, and most importantly, they will help deliver the Australian community higher levels of protection.

<u>Summary of EYEfi Submission</u>

1. The cost benefits of investing in bushfire Very Early Detection, monitoring and spatial targeting technology are significant.

2. There has been massive under investment by all governments in the low cost technologies and tools that already exist and can be deployed to support very early detection and mitigation of bushfires – consequently communities and public assets are being put at unnecessary risk.

3. EYEfi strongly supports Draft Recommendation 3.2, particularly as it relates to the recommended increase in funding from the Australian Government for mitigation activities.

4. EYEfi supports a joint funding model for mitigation activities, including one that encourages public private partnerships.

5. The effective deployment of a technology such as EYEfi's, would have a demonstrable impact on the cost of disaster response, rebuilding and recovery efforts.

6. EYEfi asks that the Commission make specific reference in its report to government of the important and cost effective role of technologies in supporting effective mitigation.

7. EYEfi asks the Commission to recommend that the Australian Government establish a joint state and federal funding program specifically to procure and integrate technology that directly enables very early detection and tracking, stronger advance community warnings and improved situational awareness for the emergency services before, during and after a fire event.

8. EYEfi asks the Commission to recommend that the Australian Government take a leadership role on the use of technology in bushfire mitigation and drive cross-border cooperation though its significant funding influence.

Productivity Commission Draft Finding 2.5

The Draft Report found that:

On balance, total mitigation expenditure across all levels of government is more likely to be below the optimal level than above it, given the biased incentives towards recovery under current budget treatments and funding arrangements. However, the extent of the underinvestment in mitigation is not known, and the benefits of significantly increasing mitigation spending have not been sufficiently demonstrated.

EYEfi Submission on Draft Finding 2.5

The total cost of bushfires is estimated at $8.5 billion per annum[1]. Of this approximately $2.55 billion directly relates to response efforts and $1.2 billion relates to the economic losses arising from bushfires[2].

The Victorian Bushfire Royal Commission estimated the total cost of the Black Saturday fires to be in the order of $4 billion, of this:

- Government payments made in direct response to the Black Saturday Bushfires exceeded $500 million.

- Economic losses from the Black Saturday Bushfires are estimated at $1.8 billion dollars, including[3]:

    - more than $300 million is directly attributed to the cost of emergency response efforts

    - more than $600 million is attributed to costs resulting from the damage or destruction of residential properties

    - more than $700 million is attributed to economic losses incurred by the agriculture sector

It is well documented and understood that the first 30 minutes of a bushfire are critical. After the first 30 minutes the impact and costs of bushfire response efforts increase exponentially.

With bushfires, the cost benefits of very early detection are significant.

This was evident most recently with the Aberfeldy fire in 2013 which resulted in the loss of 1 life, 22 homes, and cost upward of an estimated $100m in response efforts. It appears that this fire went undetected for at least 30-40 minutes after initial ignition, but possibly much longer.

The deployment of EYEfi's unique very early detection and spatial targeting technology in the area would have allowed this fire to be detected within minutes of ignition enabling a timely and appropriate response effort. At best it would have allowed the fire to have been extinguished at the first opportunity and therefore preventing a costly response effort, and at worst it would have allowed visual verification of the size, location, progress, direction and nature of the fire, so that an appropriate and informed initial attack be made on the fire to minimize its impact. In both cases it is highly likely that very early detection and spatial targeting technology would have saved one life, 22 homes, 1000's of livestock and millions of dollars in response efforts.

[1] Ashe, Brian, McAneney, K.J and Pitman, A.J. (2009) 'Total cost of fire in Australia', Journal of Risk Research, 12:2, 121 -136
[2] Ashe, Brian, McAneney, K.J and Pitman, A.J. (2009) 'Total cost of fire in Australia', Journal of Risk Research, 12:2, 121 -136
[3] The Victorian Bushfire Royal Commission estimated the total cost of the Black Saturday fires to be in the order of $4 billion

Currently early detection in Australia relies heavily on the fire tower network. While these are effective for the most part, they do have a number of limitations (detailed in the Attachment to this submission) that very early detection and spatial targeting technology can assist with.

Despite this there has been massive under investment by all governments in the low cost technologies and tools that already exist and can be deployed to enable very early detection, stronger and more accurate community warnings and more appropriate response efforts, including as a critical tool for the existing fire tower network operators and emergency services personnel located on the fire ground and in command and control.

The use of risk mitigation technology in a bushfire risk management context should be focused on:

1. Identifying the existence and location of fire activity, and responding to a fire as close to the time of ignition as possible through very early detection tools, and in particular the detection of cloud-to-ground lightning strikes; which represent the largest percentage fire ignition events (and subsequently hectares burned) each year in Australia

2. Monitoring bushfire events in real time as events unfold, to ensure that accurate front line intelligence and situational awareness, improved decision making, timely community warnings, and efficient suppression efforts can be achieved, and in often very remote and difficult operational situations.

EYEfi is a great example of a homegrown, cost effective and proven technology that uniquely delivers these benefits, as was demonstrated on Black Saturday where data captured by the EYEfi SPARC system formed critical evidence cited by the Victorian Bushfire Royal Commission and closely examined by investigators from the Victorian Police task force Phoenix in relation to the Murrindindi-Marysville fire.

<u>Productivity Commission Draft Recommendation 3.2</u>

The Draft Report recommended that:

If the Australian Government reduces the relief and recovery funding it provides to state and territory governments, it should increase annual mitigation expenditure gradually to $200 million, distributed to the states and territories on a per capita basis. The amount of mitigation spending could be adjusted over time to reflect the imputed 'savings' from reduced relief and recovery funding.

Increased mitigation funding should be conditional on matched funding contributions from the states and territories and best-practice institutional and governance arrangements for identifying and selecting mitigation projects. These would include:

- *project proposals that are supported by robust and transparent evaluations (including cost–benefit analysis and assessment of non-quantifiable impacts), consistent with National Emergency Risk Assessment Guidelines risk assessments and long-term asset management plans, and subject to public consultation and public disclosure of analysis and decisions*

- *considering all alternative or complementary mitigation options (including both structural and non-structural measures)*

- *using private funding sources where it is feasible and efficient to do so (including charging beneficiaries)*

- *partnering with insurers to encourage take-up of adequate private insurance and private mitigation through measures such as improved information sharing and reduced premiums.*

<u>EYEfi Submission on Draft Recommendation 3.2</u>

In general, EYEfi strongly supports this recommendation, particularly as it relates to the recommended increase in funding from the Australian Government for mitigation activities.

EYEfi supports a joint funding model, including one that encourages public private partnerships in mitigation activities. This is particularly relevant to EYEfi given our commercial relationship with Telstra and our ability to support a national roll out of our technology on emergency grade infrastructure with a private partner.

Commonwealth Funding for Mitigation Technologies

We also ask the Commission to make specific reference in its report to government of the important and cost effective role of technologies in supporting effective bushfire mitigation.

Disaster recovery is expensive and reactive. The Treasurers Terms of Reference state that the Commonwealth has spent approximately $12 billion in disaster recovery for events since 2009. The majority of this expenditure is used to provide partial reimbursement to states and territories for rebuilding essential public assets, in particular roads and road infrastructure.

We believe that the effective deployment of a technology such as EYEfi's unique very early detection and spatial targeting capabilities would have a demonstrable impact on the cost of disaster recovery.

In our opinion, very early detection would have a demonstrable positive economic, social and environmental impact on the 25% of all bushfires started by lightning and for the 15% of all bushfires that are deliberately lit.

Accordingly, it is absolutely critical that investing in technology is recommended as part of the solution to reduce the cost burden of disaster response, rebuilding and recovery efforts.

Bushfire mitigation technologies such as EYEfi's, that integrate very early detection, monitoring and spatial targeting, will save lives as well as enabling the enhanced intelligence gathering and situational awareness necessary to achieve early intervention, reduced response times, more timely and accurate community warnings and improved decision making.

We therefore ask the Commission to recommend that the Australian Government establish a joint state and federal funding program specifically to procure and integrate very early detection and spatial targeting technology into the suite of emergency management tools.

Doing so will significantly reduce the costs of bushfire response efforts, as is contemplated by this inquiry and expected by the Federal Government.

Australian Government Leadership

The Treasurers submission to the Productivity Commission rightly recognises that the States, Territories and local governments are responsible for disaster management. However, given the important role of very early detection and situational monitoring of events in protecting communities, it is critical that there is consistent approach applied to the deployment of these tools.

On this point in particular, it is critical that the Federal Government take a leadership role on these issues – as it did with implementation of Emergency Alert. In the absence of a legislative authority to implement such measures, we ask the Commission to recommend that the Commonwealth drive this cross-border cooperation though its funding influence.

We would welcome the opportunity to discuss this with you further and we look forward to the opportunity to present this submission to the Commission at the upcoming public hearings.

Kind Regards

Simon Langdon
CEO and Founder
EYEfi Pty Ltd

Bruce Esplin AM
Emergency Services
Commissioner, Victoria, 2000-2011

ATTACHMENT – OPPORTUNITIES TO IMPROVE THE OPERATION AND CAPABILITIES OF FIRE TOWER NETWORKS AND OPERATORS

There are large areas of the bush where fire activity can go undetected for an extended period of time and sometimes up to several valuable hours.

Existing monitoring methods utilised by Emergency Services such as fire towers, the public, government personnel, aircraft and satellites do not cover all scenarios. While the primary fire towers provide the best method of early detection for the most part, there are some challenges that prevent them from being effective all of the time. EYEfi SPARC presents a unique opportunity to integrate with and improve the operation of the fire tower network.

a) **Operational hours** - Fire tower operators [personnel] only man the towers during daylight hours eg. typically 8am-8pm, but often less.

   ✓ EYEfi SPARC can operate 24 x 7 x 365 days a year.

b) **Absence of the operator** - Weather, the environment, fire activity, or even sickness [or absence due to fatigue management etc] can prevent the tower operator from being able to access the tower and do their job safely.

   ✓ EYEfi SPARC can be accessed by any authorised user and from almost any location, including by other fire tower operators or control centre personnel.

c) **Loss of Productivity** - In some cases, fire tower operators are removed from towers [or cannot access towers] for days or up to several weeks due to the above; directly impacting both their ability to continue to perform their job and provide specialist advice when absent from the tower and subsequently their income.

   ✓ EYEfi SPARC enables operators (or other personnel) to continue to do their job safely, from a remote location such as a control centre or at home.

d) **Location method** – Fire tower operators use triangulation to determine the location of a fire, requiring a minimum of two, but ideally three overlapping views. On some occasions, only one perspective on a fire is available and sometimes no direct line of sight at all.

   ✓ Any individual EYEfi SPARC camera in the network can be utilised to determine the location of a fire, within seconds and without the need for any other frame of reference or triangulation

e) **Impairments to vision** - Weather, cloud, smoke or the terrain can impede an operator's visual line of sight, making it difficult [or sometimes impossible] to determine the location of a fire; decreasing the accuracy and increasing the time taken to determine the fires' location.

   ✓ EYEfi SPARC enables an operator to utilise one or more cameras in the network to determine the location of fire, and to remove the guess-work in that scenario

f) **Early fire-starts** - Fire tower operators are primarily in-place to detect and locate smoke. [Lightning strikes are the cause of 26% of all fire starts and responsible for 46% of all hectares burned each year]. Lightning strikes that occur during the day can be assessed [by fire towers or aircraft] once they have progressed and a plume is visible. Those early starts that occur during the night are not able to be visually assessed for their impact on the ground until first light, when a plume may be visible to a tower operator and often many hours after ignition. In both cases, knowing the exact location of the strike in order to make observations and verification of its impact during the early gestation period and prior to a plume appearing is very challenging and often impossible.

   ✓ EYEfi SPARC provides very early detection, tracking and advice relating to lightning strikes and optionally, plumes; enabling the very earliest detection and visual assessment of the impact of these events.

g) **Fire tower coverage** - While fire towers have been strategically placed around the state to provide suitable coverage and overlapping views, there are some critical areas that have inadequate coverage eg. The Thompson Dam catchment and Mt Baw Baw area.

   ✓ EYEfi SPARC can be located on existing fire towers and on Telstra's significant footprint of communications and mobile tower networks across Australia, to augmenting current detection methods and tower networks.

h) **Situational assessment** - Once detected and depending on each individual situation, ground crews are often first deployed to accurately locate and assess the size and nature of the fire in order to determine an appropriate response effort. In many cases this can take a significant amount of time before crews can be in a position to assess the fire, particularly in remote areas.

   ✓ EYEfi SPARC enables operators to leverage a broader network of towers to gain an entirely new perspective and visualisation on fire related activity and events.

i) **Ongoing monitoring** – Depending on the above and in particular the weather conditions, smoke, cloud etc, keeping an accurate track of fires can be difficult and in many cases alternative detection methods outlined earlier are insufficient, inaccurate or rendered unusable, for example;

   - Fire tower operators are subject to the challenges outlined above sometimes making it difficult to provide accurate and ongoing monitoring [particularly where there is a dependency on overlapping views] and will inevitably be evacuated from the towers, preventing them from being effective in the ongoing monitoring of fires

   - Satellites do not operate in real-time, passing only every few hours and suffering from environmental and accuracy issues

   - Aircraft are often challenged by weather, wind and other environmental issues, preventing their deployment or their available proximity to the fire

   ✓ As demonstrated during Black Saturday and in the days and weeks that followed, EYEfi SPARC provides an important suite of tools that enable operators to continue to detect, track and monitor fire activity before, during and after a major incident or fire event, in ways not currently possible using other methods.

j) **Other Challenges** - Many fires are deliberately lit [25% in Victoria and significantly increasing in 2012/13] by people entering remote bushland areas in vehicles; of which there is currently no system of record to capture, monitor or alert authorities or emergency services personnel in real-time to a suspect vehicle's movements, known arsonists, or general vehicular activity.

   ✓ EYEfi cameras can be deployed in the road network in and around high fire risk areas, utilising license plate recognition providing real-time alerts to authorities of potential or known arsonists, and as a system of record of those vehicles that enter and exit these areas; further mitigating the risk of arson related fire ignitions from occurring.

k) **Communications, sharing of information and Smartphone technology** – The dynamic and remote nature of many fires makes it challenging for duty officers and command centre staff [or anyone not in the actual fire tower or at the fire ground] to form a shared view and appreciation of any given situation, making it difficult for decision making, response efforts and effective warnings to be issued to the community. Ensuring messages reach those most in harms' way remains a challenge, particularly in remote areas where existing telephony and radio networks may not have coverage.

   Further to this, extracting and leveraging contextual and useful intelligence from the arbitrage of information generated when emergency events occur, particularly from social media feeds and the broader public, is presenting a whole new set of challenges to government authorities.

   ✓ EYEfi's cloud based spatial video solution is a multi-jurisdictional, multi-agency situational awareness platform that enables the early and precise detection of fires so that

emergency services can collaborate, rapidly mobilise resources, inform the community and mount an appropriate and effective initial attack.

- ✓ EYEfi's latest development, Spatialeye, puts the unique power of EYEfi's spatial targeting capability into the hands of emergency services personnel (on the ground, air or at sea) and the general public, by turning the Smartphone into a position targeting, intelligence gathering and sharing device.

  Successfully tested in 2013/14 and due for release in 2015, Spatialeye will play an important role in bridging the digital divide between the community, our digital natives and government; significantly improving and expanding on the intelligence gathering network and capabilities of authorities, by allowing the crowd to play an even greater role in observing and determining the location of fires, flood, road accidents or any other type of incident within their extended surrounds, and being able to share this intelligence through social media platforms, digital messaging networks and with government agencies and authorities.

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