Independent Forestry Panel

Public submission

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Topic 1. Sustainability of current and future forestry operations in NSW

Pano AI offers a proven bushfire detection-as-a-service technology that plays a critical role in ensuring the sustainability of forestry operations in Australia and North America. By optimising early fire detection and facilitating rapid response, this technology significantly mitigates the risks posed by bushfires to the long-term viability of forestry resources and the communities it supports. An example of this is its successful deployment in the Green Triangle region, where it strengthens fire management capabilities.

The forestry industry in South Australia is valued at $1.4 billion, with the Green Triangle alone contributing $860 million to the economy. Early detection of ignitions through AI-driven monitoring can prevent small fires from escalating into large, destructive bushfires, safeguarding not only forestry operations but also surrounding communities and ecosystems.

The Green Triangle Fire Alliance oversees the system, which is progressively being rolled out across the region with both private and state government funding. Equipped with 6 megapixel, 360-degree panoramic camera stations, AI, and satellite technology, this system ensures early fire detection, even in remote and rugged terrain. This capability allows forestry operators and emergency responders to react more quickly to fire ignitions, increasing the chance of containment and reducing the cost of bushfire fighting.

The NSW Government has acknowledged the critical importance of protecting the forestry sector. On 31 May 2024, Minister Tara Moriarty announced a $13 million forestry funding package aimed at safeguarding timber supplies in the Murray region. This funding, which focuses on prevention, detection, and rapid response, includes the deployment of towers, remote sensing equipment, and camera technology to detect fires at their earliest stages, preventing their spread and reducing damage.

It is imperative that the NSW Government consider a broader roll-out of bushfire detection technology, particularly as the forestry estate's operational model evolves to include renewable energy assets. The integration of renewable energy generation within and around NSW's forestry estates presents an increased bushfire risk, which must be effectively managed. Implementing advanced detection technologies, like those provided by Pano AI, will be crucial in mitigating this risk and ensuring the long-term sustainability of forestry operations in the state.

Early bushfire detection technology can protect future forestry operations and allows for the protection of its extensive plantations over the lifetime of the asset. The investment in the Green Triangle and more extensively in the USA is testament to the financial viability of the strategic use of this technology.

Topic 2. Environmental and cultural values of forests, including threatened species and Aboriginal cultural heritage values

Pano AI's rapid bushfire detection technology offers vital protection for the environmental and cultural values of forests, particularly for safeguarding Aboriginal cultural heritage and the preservation of threatened species. As bushfires grow increasingly frequent and severe due to climate change, the need for early detection and intervention is more critical than ever. Pano AI's

technology can help reduce the impact of fires on sensitive ecosystems and culturally significant landscapes, ensuring the preservation of both biodiversity and heritage.
The rich cultural heritage of NSW forests, including Aboriginal sacred sites, rock art, and ancient landscapes, faces immense risk from uncontrolled fires. Many of these areas hold deep spiritual and cultural significance for First Nations peoples, and their protection is paramount. By providing real-time, AI-driven fire monitoring, Pano AI enables early fire detection, allowing firefighting resources to be swiftly deployed to protect these culturally important sites.
Preventing fire from damaging these sites supports the preservation of Aboriginal cultural identity, ensuring future generations maintain their connection to the land and its heritage.
In terms of environmental protection, NSW forests are home to numerous endangered and threatened species, many of which are highly vulnerable to habitat destruction from bushfires. Species such as koalas, mountain pygmy possums, numbats, and critical flora like the ancient Wollemi Pine depend on intact ecosystems for survival. Pano AI's advanced monitoring technology detects ignitions in real time, enabling early intervention and containment. This prevents fires from escalating into large-scale events that could devastate habitats and wipe out populations of these endangered species. The swift detection of bushfires allows firefighting efforts to be better coordinated, improving the chances of protecting biodiversity hotspots and preserving the delicate balance of these ecosystems.
The technology is also suited to the protection of critical flora and fragile ecosystems, such as Alpine Fjaeldmarks and Fontainea sites, which are often in remote or hard-to-reach areas. Pano AI's 6 megapixel 360-degree panoramic cameras and satellite-linked AI systems are designed to monitor these rugged terrains, ensuring that fires are spotted long before they reach a destructive scale. This proactive approach helps maintain the integrity of these ecosystems, which are vital not only for the species that inhabit them but also for maintaining the broader environmental health of NSW forests.
Protecting forests from fire damage helps preserve the natural landscapes that are deeply connected to the identity and culture of Indigenous communities. For Aboriginal people, forests are more than just ecosystems; they are living cultural landscapes, rich with stories, traditions, and ancestral knowledge. Bushfire detection technology ensures that these cultural sites, including sacred grounds and hunting territories, remain intact and free from destruction.
The deployment of rapid bushfire detection systems is essential for ensuring the long-term viability of NSW's environmental and cultural assets. By detecting fires early, Pano AI's technology enables a timely and well-coordinated response, minimising the damage to both the environment and culturally significant areas. This is a critical step in preserving the forests' ecological and cultural richness for future generations, aligning with broader goals of environmental sustainability and cultural preservation.
Incorporating this technology into forestry management practices demonstrates a commitment to protecting the rich cultural and environmental heritage of NSW's forests, ensuring that these vital resources are safeguarded against the growing threat of bushfires.

Topic 5. The role of State Forests in maximising the delivery of a range of environmental, economic and social outcomes and options for diverse management, including Aboriginal forest management models

State forests are vital to achieving a balance between environmental, economic, and social objectives. They are central to biodiversity conservation, carbon sequestration, and timber production, all of which support local economies while providing critical ecological services. However, the increasing threat of wildfires presents a major challenge to the sustainable management of these forests, with devastating consequences for both the environment and the

state's timber resources. To meet this challenge, cutting-edge technologies like Pano AI's rapid bushfire detection system are essential.

Pano AI's technology uses artificial intelligence (AI) and machine learning to detect bushfires early and provide real-time situational intelligence, enabling rapid response before fires grow out of control. This early detection capability is crucial to preserving the delicate balance NSW State Forests must maintain between ecological health and economic productivity. By addressing the bushfire risk swiftly, Pano AI can help protect the biodiversity and carbon storage capacity of forests, while ensuring that timber resources, a critical economic asset for regional communities, remain safeguarded.

Bushfires have the potential to devastate vast areas of forest, leading to the loss of irreplaceable biodiversity, the destruction of habitats, and the depletion of valuable timber stocks. When a wildfire is detected in its early stages, as Pano AI's system can achieve, firefighting efforts are more effective and less costly. Rapid containment prevents large-scale damage, protecting the ecological value of forests while preserving the economic benefits of timber production, which contributes billions of dollars to the NSW economy and supports thousands of jobs. This protection of timber resources is crucial for industries such as construction and manufacturing that rely heavily on sustainable forestry.

Fire prevention reduces the costs associated with firefighting efforts and post-fire recovery. Traditional firefighting methods are often expensive and labor-intensive, especially when fires have already grown to a large scale. Early detection allows for quicker, more targeted responses, reducing the amount of resources required to contain a fire. This not only minimises the financial burden on firefighting agencies but also shortens the time forests need to recover and return to productivity, which has direct economic implications for the timber industry.

In addition to protecting the timber supply, state forests also generate economic value through tourism, recreation, and carbon offset markets. Bushfires can damage the natural beauty and biodiversity that attract tourists and recreational visitors, leading to declines in tourism revenue for nearby communities. By preventing these fires from occurring, Pano AI helps maintain the economic benefits that forests provide to local tourism industries.

From an environmental standpoint, early fire detection also plays a critical role in maintaining ecosystems. By preventing widespread fire damage, Pano AI helps ensure that these habitats remain intact, allowing species to thrive and ecosystems to function as carbon sinks that mitigate climate change. This is essential for NSW's commitment to reducing carbon emissions and maintaining the ecological resilience of its forests.

In addition to environmental and economic outcomes, Pano AI's technology can support cultural and social goals, particularly in Aboriginal forest management. Indigenous communities have long practiced cultural burning, using controlled fires to manage the land, reduce fuel loads, and promote biodiversity. AI-driven fire detection systems like Pano AI can enhance these traditional practices by ensuring that cultural burns remain controlled and do not escalate into damaging wildfires. This fusion of modern technology with ancient wisdom promotes both ecological sustainability and cultural preservation, ensuring that Indigenous land management practices continue to play a role in the future of forestry.

Integrating AI-driven fire detection systems like Pano AI into state forest management is a key strategy for enhancing the ability of these forests to deliver on environmental, economic, and social objectives. By preventing fires from destroying forest ecosystems, timber resources, and cultural heritage, Pano AI ensures that state forests remain resilient and productive. This technology offers a powerful tool for safeguarding the long-term sustainability of NSW's forests, ensuring they continue to provide a wide range of benefits for communities, industries, and ecosystems alike.

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Topic 6. Opportunities to realise carbon and biodiversity benefits and support carbon and biodiversity markets, and mitigate and adapt to climate change risks, including the greenhouse gas emission impacts of different uses of forests and assessment of climate change risks to forests

Pano AI's rapid bushfire detection technology presents significant opportunities for the NSW Government to protect forestry assets, enhance carbon and biodiversity markets, and mitigate the risks associated with climate change. By providing early detection and rapid response to bushfires, Pano AI helps safeguard forests' ability to sequester carbon and maintain biodiversity, both of which are crucial in addressing climate challenges.

State forests play a key role in carbon sequestration and preserving biodiversity. However, the increasing frequency and intensity of bushfires, driven by climate change, threatens these critical functions. Bushfires release vast amounts of greenhouse gases (GHGs) into the atmosphere and damage the natural carbon sinks that forests provide. Fires also disrupt ecosystems, putting biodiversity at risk and undermining the long-term health of forest environments. In this context, Pano AI's advanced fire detection system offers the NSW Government a practical and scalable solution to protect forests from the growing threat of bushfires.

Pano AI uses artificial intelligence and machine learning to detect bushfires at their earliest stages, providing real-time data that enables swift suppression. This early intervention is crucial for preventing large-scale fires that release stored carbon back into the atmosphere. For example, the 2019-2020 Australian bushfire season saw over 830 million tonnes of carbon dioxide released, reversing decades of climate change mitigation efforts. With Pano AI, the NSW Government can help reduce such emissions by quickly identifying and responding to fire ignitions, stopping fires before they cause widespread damage.

In addition to preserving carbon storage, Pano AI plays a vital role in protecting biodiversity. NSW forests are home to a wide range of species, many of which are vulnerable to habitat destruction from bushfires. For example, the 2019-2020 bushfires led to the widespread destruction of habitats for species like koalas, which are already classified as vulnerable. By preventing fires, Pano AI helps protect these ecosystems, ensuring that forests continue to support the diverse flora and fauna that depend on them. This not only maintains the ecological functions of forests but also strengthens their role as biodiversity hotspots.

Protecting forests from bushfires also unlocks opportunities in carbon and biodiversity markets. These markets provide economic incentives for preserving forests, as they reward efforts to maintain carbon sequestration and biodiversity conservation. By safeguarding forests through fire prevention, Pano AI enhances the value of NSW's state forests in these markets. This creates alignment between forest management, economic goals, and the state's climate objectives, offering a win-win for the environment and the economy.

Pano AI's fire detection technology provides the NSW Government with a powerful tool to protect carbon sequestration and biodiversity. By preventing destructive bushfires, the system ensures that state forests continue to function as critical carbon sinks and biodiversity reserves, supporting the state's efforts to mitigate climate change and deliver long-term environmental and economic benefits.