

Conference Proceedings – Speaker Transcript

Constraints to using fire as a land management tool in the Hunter Valley mining industry

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I will start by paying respects to the traditional owners of this Gadigal country, to all the NCC members and sponsors, thanks for putting this on, and welcome to all the people attending.

My topic is looking at the constraints of using fire as a land management tool in mining, biodiversity offsets, Council lands and National Parks.

I'm passionately interested in land management from my backyard to broad landscapes. It started at an early age. I'm from a farming background, and I really understood and appreciated the great efforts of the farmers and the passion they have for their land, including my father and my family. Land management outcomes are very diverse, as diverse as the land managers themselves. Managing land usually means managing land health, maximising productivity and increasing resilience. Fire as a land management tool impacts resilience, health and productivity.

Farming communities use fire regularly. They use it for stubble burning, for nutrient cycling, for encouraging green pick for forage and for weed control, pest and disease management. There's an apparent confidence in using burning off and there has been for generations in the farming industry and obviously beyond that. It's a respected land management tool and conducted with respect, using experienced people and teams. Timing, soil moisture, weather conditions are all critical factors and as is the available fire control resources which I will refer to throughout this as capacity.

What I'm essentially describing is that in some circles fire is an accepted and perceived safe land management tool.

The fire in the Australian landscape is regular, frequent, and required. The Australian landscape and its biodiversity have been shaped by fire. I'm postulating that wildfire has been occurring in this country for hundreds of thousands of years. The continent has been cooling and drying, and I would suggest there was once huge broad scale, unimaginable sized fires running across the nation on ancient fire paths, shaping the landscapes, selecting vegetation and biodiversity.

Controlled fire started let's say 40,000 years ago by Aboriginal land managers. Controlling fire, building on those formed ancient paths and further shaping the vegetation structure, the species biodiversity and essentially enhancing land productivity for their needs.

200 years now of the Western/European land management has probably reduced the amount of managed controlled fires and coordinated fire management, and as a result again shaping the vegetation structure and biodiversity.

Summarising this, the landscape scale fire management affects vegetation structure and biodiversity. It affects land productivity and it affects land health. I drew up this little chart to demonstrate a spatial temporal scale (slide 5). There is a thin red line in there that's representing the European Western fire management regimes, obviously the dark blue's the Aboriginal land management, and then what I'm suggesting is your wildfire uncontrolled. What I'm demonstrating is that the cultural burning has had time to influence adaptation and evolution in the Australian landscape.

When I mention the word bushfire the first feelings are, it's risk, it's threat, it's a hazard, it's an emergency, it's alarming, and justifiably so, there's been horrific losses demonstrated through the media regularly. The changing climate, global warming and the greenhouse effect is bringing severe weather condition changes. It's bringing storms, floods, more frequent and prolonged drought, unpredictable changes will occur in fire behaviour. A lack of understanding of this fire behaviour and this perception of risk and loss has reduced the acceptance of using fire as a land management tool. But the fire-dependent landscape has not changed and native landscape still needs a fire to express its biodiversity.

What is risk? I think it's a measure of acceptance, I think it's a quantifiable measure and I think it's a manageable factor. It means different things to different stakeholders.

As an Environmental Consultant I'm exposed to mine rehabilitation and monitoring, I'm exposed to natural resource management, biodiversity offsets and protection, and I'm also a Bushfire Planning and Design Consultant. Those skills cross over as I engage in my career. Subsequently I have a broad access to a range of land managers with diverse opinions and responsibilities and it's not just mining, it's Councils, it's State Government, it's Defence, it's developers, and what I call reluctant land managers (which are people who receive a management responsibility over a land as a by-product of other actions, they're essentially not willingly engaging in land management).

I've taken this opportunity to interview a selection of land managers and look at the contrasting understandings, looking at the possible solutions to using fire in the landscape. To fit with this conference I streamlined my study down to land restoration in the way of rehabilitation which is creating an ecosystem from new or restoration which is improving an existing ecosystem.

For rehabilitation, the minimal expectation of land rehabilitation is to rehabilitate to a functional landscape. This is a landscape that is safe, stable, self-sustaining and has equivalent productivity. Now this is an expectation from the regulator, and it forms the basis of consent conditions and specifically with regards to mine closure or release criteria. It's also an expectation from the local, national and global community. A safe and stable landscape is a landscape that will not pollute or erode, a landscape that will be the foundation of productive land use post-rehabilitation. Self-sustaining and equivalent productivity in a functional ecosystem refers to the grazing capability or the native vegetation formation and the flora and fauna habitat. It also means a resilient ecosystem that has the capacity to withstand the pressures of climate change and associated disasters including fire, flood and drought.

How does a land manager demonstrate long term ecosystem functionality and resilience? For example, we do studies on rehabilitation where we're looking at woody debris and it's a correlation with fauna re-colonisation, and it shows a positive relationship. So in my mind the woody debris on a mine rehabilitation site is an important critical asset for demonstrating fauna and flora resilience. Being an asset, asset protection is required (perhaps controlled cool burns on a mine site more frequently would

protect the asset from a severe wildfire which would essentially burn it to dust). It's not only the woody debris.

Nowadays, it's quite a recent change, the New South Wales Biodiversity Offsets Policy is allowing rehabilitation to be valued as part of a biodiversity offset portfolio for major projects. This places significantly higher expectations on the value and the rehabilitation outcomes. It targets ecological restoration in rehabilitation. That is, rehabilitating land to its previous ecological state or improving it. I believe the demonstration of resilience to controlled fire should be a measurable parameter being in the soil condition, the vegetation type and flora and fauna responses to fire. As far as I know this is not specifically quantified.

Then I looked into land restoration - that's your biodiversity offsets essentially. It's habitat management for flora and fauna in perpetuity. Perpetuity, who knows how long that is? (I think it's 23 years now). In New South Wales the Biobanking Offset Agreement includes identification of appropriate fire regimes. These are the fire regimes that have been identified (slide 15) for different vegetation types. This is calculated and the costs retained within the Biobanking Agreement Trust. In New South Wales currently there's greater than 60,000 hectares of biodiversity offset areas either retired or currently available and it's increasing every day. In Hunter Valley and Queensland mine leases often include areas of land much greater than 10,000 to 20,000 hectares of residual land, land that they've acquired through their mining lease. Often disturbed land use, grazing, and these have the capacity for restoration. Councils also have parcels of land that they need to manage. They may need to manage it for threatened species, often weed infested areas and they require fuel management as they pose a risk to neighbouring properties and assets.

There's an increasing amount of land that could require fire control, or controlled fire, for ecological and risk management. With this biodiversity offset burning principle without the prescribed fire interval biodiversity will suffer and therefore, bringing it back to a financial point, the development consent would not achieve its maintain or improve requirement and thus not meet its consent conditions. So, essentially what's happening now is that a controlled burn for biodiversity offsets is compulsory, it's actually written into consent conditions.

I talked to some land managers, quite a few. They were all aware of using fire as a beneficial land management tool. Again the responses are as diverse as the interviewees.

Financially a great benefit was observed in early release of your rehabilitation and meeting your mine closure and release criteria earlier. Essentially what you're doing is releasing your landholding costs, such as biodiversity offsets and rehabilitation, at an earlier time. Therefore, you don't have the added costs associated with taxes, rents, rates, ongoing weed and pest management, and you get your security bond back for your rehab. So there's a real incentive to look at opportunities to speed up that process.

Another key factor was protecting the community. It was understood that broad scale fuel hazard reduction reduces the risk of wildfire across the landscape using mosaic burn pattern to break up the fire continuity and providing our wildfire control advantages, so protecting assets.

Protecting natural assets was also highly regarded. Land managers understood the values there and also for weed, pest and disease management.

What was not widely understood was how fire could have beneficial effects on the soil chemical, physical and biological properties such as nutrient cycling and nitrogen and carbon sequestering.

So what are the constraints? What's the cost of conducting and planning and designing a burn and how does this quantify against resilience of the land? What's the cost of monitoring? Land managers need to know where their financial return is and is it viable, that's a fact.

Capacity, where's the capacity? Have the Rural Fire Services got enough capacity to manage all these fires that are becoming compulsory?

Risk, the perception of risk, burning or not burning, what is the risk? Which risk is greater, Uncontrolled fire or a controlled burn losing control, and the litigation that follows. Public perception versus conditional requirements is something that I'll look into in the future.

Then specifically with coal mining it's the combustion of the carbonaceous material inside rehabilitation areas, and potential for subterranean fire which is difficult and costly to manage.

I will summarise now with the solutions. I can see the benefits of using fire in the landscape. I'm not directly responsible for the landscape management, but by informing land managers of the benefits, identifying the constraints and seeking practical viable solutions, there could be scope for regularly and confidently using fire in land restoration. The solutions could be in designing or identifying a methodology to quantify land resilience; seeking financial reward and also improved public perception in the way of protecting a community from wildfire; demonstrating good biodiversity outcomes; there may be scope for receiving credits through management of carbon and greenhouse gasses.

Essentially my closing statement is to ask: Is there a growing industry in conducting controlled fire? Is that an industry that we're looking at for natural resource management?

Questions from audience

Q - Can you explain what sort of insurances are needed as a consultant? How would you cover every scenario to have a consultancy actually conducting these burns?

DP - I don't think a consultancy should necessarily be conducting such burns. Capacity should be in the land restoration crews. There was the example yesterday of the guys that were trained by RFS – at Bundjalung was it? The Rural Fire Service was in a position of training land managers in correct and safe methods of fuel reduction using fire. As a consultancy I think you would provide the planning then give that to a recognised or experienced, certified, accredited fire contractor.

Q - Did you mention there's a growing industry though of conducting these fires?

DP – No, I mentioned there could be. I think that we're looking for employment opportunities coming into the future, community capacity building. There are a lot of other factors playing at this that fire would be a high demand on personnel and experience and training. So there could be an opportunity to build an industry in controlled fire management and it comes right back to the public perception - do you mind seeing smoke and a little bit of ash on your clothes.

Q - Just two quick points, sort of an answer and a question. Why do you think it's not a role for consultancy because there are consultancies out there and they are looking like they're doing a really good job and they're actually putting in the burns.

DP – Well essentially that's the sort of contractor I was referring to then, yeah.

Comment from Graeme Brown (representative of the Farmers Association on the Bushfire Coordinating Committee). Dan there is a process, I wear another hat, I'm on the CCC Committee of the Newcrest Mine at Orange and they have a lot of offset country so that offset country is included in our risk plan process at the BFMC level, so that there is a process. In fact how Newcrest are handling it, and this is maybe an advocate for you, is that they've actually trained up 60 of their staff to assist us as volunteers putting out local fires and they will be used in time to manage these offsets.

DP – That's great and I hope the training starts leaning towards lighting the fires as opposed to putting them out potentially - that's where I'm going with that.