

Greening Australia Submission in Response to the *Amendment to Mining Regulation 2016*

The NSW Resources Regulator is making operational and regulatory improvements to rehabilitation planning and management on mine sites across NSW. Although progressive rehabilitation is already an obligation in the mining lease conditions, there is a need for stronger requirements for progressive rehabilitation of mine sites, starting early in a mine's lifecycle.

The reforms introduce regulatory tools and set clear, focused requirements for rehabilitation throughout a mine's life, from the mine design stage to closure.

Submitted by Greening Australia

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BACKGROUND

About Greening Australia

Formed in 1982, Greening Australia is the leading environmental enterprise creating healthy and productive landscapes where people and nature thrive. We provide science led, practical on ground environmental solutions.

With teams in 20 locations around the country and more than 170 knowledgeable and expert staff, we are having a measurable and lasting impact on Australia's unique environment through our programs, services and partnerships.

Project Phoenix

In response to the devastating Black Summer bushfires, Greening Australia received funding as part of the Commonwealth's \$50 million Wildlife and Habitat Bushfire Recovery package to build and secure native seed and plant supply for restoration.

Project Phoenix is a 16-month national program designed to improve protection of native habitats, build capacity in the native seed and nursery industry, and deliver a ten-year native seed and landscape restoration strategy for Australia.

CONTEXT

Native Seed Purchasing in Australia

Greening Australia operates Nindethana Australian Seeds, one of Australia's largest and most established seed merchants, providing quality seed for over 70 years. As a trusted supplier to many well known companies such as Alcoa, BHP Billiton and Rio Tinto, much of our seed is used for environmental rehabilitation, where biodiversity and quality is paramount.

Australian Native Seed Sector

The Australian seed sector is poorly understood, lacks sophistication and is not viewed or supported as an industry.

As native seed is a critical piece of environmental infrastructure underpinning a broader amplifying network, without a viable and sustainable native seed sector environmental outcomes, ancillary industries and traditional owner enterprise will remain at risk and be unable to meet future stochastic events or commercial environmental opportunities.

Several key institutional bodies exist to oversee the smooth and fair functioning of markets in Australia, examples include the Australian Competition and Consumer Commission (ACCC) and the Independent Pricing and Regulatory Tribunal (IPART). However, the regulatory architecture

the seed sector has seen to-date has been one more focussed on flora conservation than maximising seed availability, industry development or competitive markets. Yet since legislation prescribes the use of native vegetation for restoration or roadside landscaping etc, it is incumbent on government to address any issues bedevilling the market's ability to supply seed if caused by recognisable market failures or information problems.

Uncertainty due to information problems undermines opportunities for exchange and retards the development of an industry, viz today's cottage industry for native seed.

Expectations are that along with existing demand from restoration projects, mine rehabilitation and infrastructure, significant demand for seed will emerge from landscape-scale restoration projects responding to investable markets for ecosystem services such as carbon bio-sequestration or biodiversity. Demand from the mining sector is set to continue with at least 30 mines of the major companies to be closed by 2045.

Further, going forward, to protect against species and/or ecosystems loss from natural disasters such as bushfire, Australia will, like other countries most notably the United States, have to develop a strategic seed reserve system to ensure at any moment both the availability and quality of seed from at-risk species.¹ This will require still more seed, and a well-functioning seed sector.

Currently the Australian Bureau of Statistics (ABS) does not report data on the native seed industry and as a consequence we currently cannot model or estimate the economic consequences of the sector, nor the knock-on consequences for an underperforming sector on other sectors.

The ecological restoration sector often depends upon native seed as a critical input, and while no official data on Australia's ecological restoration industry exists, preliminary study in the United States reveals the ecological restoration sector employs ~ 126,000 workers and generates ~ US\$9.5 billion in economic output annually. Indirectly, it supports an additional ~95,000 jobs and US\$15 billion in economic output.

THE SEED MARKET

The market for native seed emerged in large part due to environmental legislation which requires projects such as mines, agriculture and capital works, to minimise, protect, restore and/or offset the native vegetation lost to by their activities.

While in some areas a vibrant seed industry exists, notably Western Australia, there are several factors influencing against the ability of suppliers to handle the complexities required to supply seeds when and where required.

¹ While the botanic gardens have conservation seed banks for species protection, the increased severity of bushfires means focus on ecosystems has become a challenge, and restoration seed banks are required for landscape-scale conservation/restoration.

With significant investor-driven demand for seed to undertake landscape-scale restoration projects for ecosystem services, such as carbon bio-sequestration or biodiversity, the manner in which seed is collected will become increasingly important. The scale of these projects are unprecedented and experts in the field are already identifying critical risks in the supply-chain of seed.

There exists widespread concern that the environmental sustainability of the sector's primary approach to sourcing seed, namely wild-harvesting, is neither scalable nor sustainable, because it lacks adequate enforcement preventing it from being overharvested.²

The seed market's capacity to scale sustainably will be a function of the adequacy of its regulatory framework and the availability of systems to coordinate buyers and sellers to suitably incentivise the sustainable management of the resource.

The vast majority of seed is sourced from wild remnants, however Western Australia is ahead of the rest of the country when it comes to regulating the native seed harvesting because of the scale of wildflower harvesting that has happened already. WA collects significant data on commercial harvesting that other jurisdictions do not and tracks this data. It doesn't track the trade of the seed but ascertain whether there is a shortfall in the availability a species The Department of Biodiversity Conservation and Attractions captures and analyses flora harvest key data on seed harvesting in its Flora Industry Data Management System (FIDMS).

“An adequately regulated system of flora harvesting provides a useful economic incentive for active conservation of flora resources, far and above the threats of penalties for clearing native vegetation.”

- WA Department of Biodiversity Conservation and Attraction

A market where the traded environmental resource is at risk of exploitation to the point of collapse, is not functioning as an efficient market since the welfare derived from the resource is not being maximised intergenerationally. In the case of the Australian seed market, where most of the seed is sourced from remnant vegetation, there is an absence of appropriately defined property rights or market signals to incentivise remnant sustainability.

Markets are transformative mechanisms that have often evolved organically to maximise value created from transactions. Markets are defined by specific conventions and processes that shape the way buyers and sellers transact.

Market failures exist in imperfect markets where the price does not serve to drive coordination among buyers and sellers in a manner which is welfare-maximising. This occurs essentially because the price signal becomes mis-informative. In the seed market, the classic case is where a buyer treats the 'price' of a seed lot as though that was enough information, neglecting critical data on purity (vs weed content, chaff), and viability, or provenance. This leads to a

² Western Australia is a notable exception where there is greater scrutiny over commercial harvesting of plant material – in large part due to the wildflower export sector.

perverse outcome whereby good quality seed collector product is undercut by poorer standard product which leads to welfare loss for all in terms of ecosystem outcomes.

There is evidence of mining companies using market power to drive prices to challengingly low levels while at the same time ethical collectors are competing with unscrupulous ones selling seed of inferior standard or picked unsustainably. This "race to the bottom" can drive law-abiding collectors out of the market and discourage sustainable harvesting practices to cut costs, and severely limit investment in the sector.

In an imperfect market, resources are systematically misallocated because participants do not have adequate information, and they can be incentivised to cheat. The usual effect of an imperfect market is that astute traders take advantage of the situation, and the less astute are 'burnt', meanwhile others will not participate at all.

By employing some principles of economic logic however, the Australian seed market could be configured to enable more competitive market to help drive productivity of the sector, producing greater seed both in variety and volume without jeopardising on the environment

ECONOMIC FACTORS IMPACTING ON NATIVE SEED SUPPLY IN AUSTRALIA

ISSUES FACING THE SECTOR

There is no substitute for native seed in maintaining biodiversity, yet procuring and trading seed in Australia is challenging, and the absence of supply can frustrate ecological restoration objectives.

The need for a strategic approach to ensuring seed availability is becoming increasingly more critical, especially as climate change threatens ecosystems and challenges restoration projects.

Australia's most recent national native seed survey revealed frequent shortfalls in species variety, demand and price uncertainty being cited as key causes.³ Such shortcomings of a seed market can have incalculable downstream consequence on restoration outcomes. Currently, no system to document unfilled seed orders exists, nor are there moves to establish one.

The proportion of species currently available for purchase is unknown.

A golden rule of Australian revegetation practice has been *The Right Tree in the Right Place for the Right Reason*. The USA's Native Seed Strategy motto is: "*The right seed, in the right place, at the right time*". Both of these precepts not only require knowledge of the historical indigenous vegetation but critically, access to a sufficient supply of seeds of the species which have adapted over time to the specific local soil and climatic conditions.

"Australia is a substantially market-based economy. The more efficiently markets function as an allocation mechanism in the economy — by setting prices that align

³ Natural factors, climatic variation etc can affect seeding behaviour also but this is not.

demand and supply and facilitate exchange — the closer Australia can get to peak productivity.”

- Productivity Commission

It is in the public interest that the market for the right seed is made as economically efficient as possible.

However, the current market structure is under-developed and combined with this, does not allow for the efficiency required to coordinate its seed resources to deliver on the objective: the right tree in the right place for the right reason *and at the right price*.

Australia has unique and diverse ecosystems that host a wide variety of flora – in excess of 26k species – and as such, coordinating commercial availability is complex.⁴

Mechanisms that overcome complexity and reduce transaction costs exist elsewhere in our economy.⁵

Governments play a major role in making the rules that are essential to establish confidence and thus make markets work well. These market rules — providing consumers and workers with necessary protections, managing market power (particularly that inherent in public infrastructure), determining the incentives for innovation, and for skill formation and factor mobility — are not set and forget. They need regular attention to ensure that the system remains competitive, while at the same time providing the coordination needed where collective action is required to address common problems such as setting standards”.

- Productivity Commission

CREATING THE SUPPLY SIDE – A PROCUREMENT AUCTION

As part of Project Phoenix Greening Australia is exploring if the expansion of the native seed market to meet projected demand could be initiated by designing and piloting the supply-side of the market. This strategy is proposed because there are likely to be commercially experienced buyers of seed (i.e. mining companies, developers etc.) who have commercial experience, but the suppliers of seed are more likely to be less-commercially experienced (i.e. individual suppliers, indigenous suppliers, landholders with native vegetation).

The supply-side of the market can be designed as an auction of seed supply contracts. There are two components of this auction:

The auction –The supply-side effectively becomes a *procurement auction*.

⁴ Some species are threatened and these are managed by state Botanic Gardens however these seeds or species are not available commercially.

⁵ For example, the biodiversity offset exchange mechanism in NSW matches buyers with sellers optimising several factors while doing so. Purchasers of seed need to specify things such as seed picker licence number, species, region, quantity, purity, and time of delivery etc.

- **Step 1: Establish metrics** - The first step is to define the metrics that are used to communicate the needs of the buyers to suppliers. This involves establishing a standardised system that communicates information about the: *type* of seeds (varieties); the *quality* of seeds (viability, weed content, etc.); and *quantity* metric (e.g. kgs).
- **Step 2: Design the auction** - Auction theory is applied to harness competition between suppliers, ensure prices are fair, minimise collusion, facilitate aggregation or division of orders (the lumpy item problem). The auction allocates *contracts* to grow/collect/make available seed according to specifications. The auction could allocate contracts where immediate supplies are needed and contracts that specify a requirement for seeds at a time in the future. Decisions about the frequency of auctions would be part of the auction design process.
- **Step 3: Design the contract** – This involves designing a standard supply contract including the incentive structure.
- **Step 4: Pilot the auction** – A pilot could be established by identifying a number of businesses needing supplies of conservation seed and a number of suppliers of conservation seed.

Demand-side – Buyers of seed would be asked to identify the *type, quality* and *quantity* of seed required and would identify a secret reserve price (the maximum price they would be willing to pay). Demand would then be aggregated across all buyers to identify the *total quantity* of each *type and quality* of seed needed.

Supply-side - Once the demand for seed (revealed to the market maker) builds, the market maker would schedule an auction by informing suppliers of seed about the market requirements. The auction would be opened to accept bids from suppliers who would specify the type, quantity, location, timing and price at which they can supply seeds.

Rank bids - Once bids are received, they would rank the bids (lowest price to highest for all types) to create a bid curve (a supply schedule) from lowest price to highest price. The prices paid to seed growers would depend on the auction design (i.e. pay-as-bid, uniform-price etc.)

Settlement - Settlement would follow the allocation of seed supply contracts to buyers according to the terms of the contract. Contracts for future supply of seed would include some up-front payment and a payment of supply. Contracts for immediate supply would have a different contract in which payment is made on exchange of the contract. The market maker would then implement its quality process and reputation building system.