

Pre- and post-mine land-use trends across the New South Wales and Queensland coal industry

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Abstract

Mining is a temporary land use and there is a need to transition to an acceptable land use after mining ceases. This typically includes grazing or reinstatement of native ecosystems present prior to disturbance (Doley & Audet 2013; Lechner et al. 2016; Maczkowiack et al. 2012). However, no published information exists that informs of the collective plans for the coal mining industry's proposed post-mining land uses.

This study uses publicly available information on pre-mine and proposed post-mine land uses for coal mines in Queensland and New South Wales, Australia. We will discuss what pre-mining land uses are typically identified and how this definition changes post-mining. Terminology used by mining companies to describe their pre- and post-mine land use is also presented. This information will be useful to identify future beneficial land uses as well as support decision-making and policymaking at a landscape level.

Results indicate that agriculture and biodiversity are the most commonly proposed post-mine land uses compared to agriculture being the dominant pre-mining land use. Sites also frequently nominated multiple post-mine land uses, with over 85% of sites nominating between one and three post-mine land uses. Sites tend to increase the number of identified land uses when nominating their post-mine land use compared to the number identified during pre-mining. Results also found limited evidence to suggest that operations are likely to revert to the pre-mining land use, with about half of sites planning to reinstate the pre-mining land use(s), even with additional land uses, after mine closure. Furthermore, it was observed that some mine sites tend not to provide an explicit statement or consider the utility of post-mining land use when detailing the post-mine land use(s).

Keywords: *land use change, mine rehabilitation, mining land use terminology*

1 Introduction

Australia's resources and energy export earnings are forecast to reach a record high of AUD 278 billion in 2018–2019 (Department of Industry, Innovation and Science 2019), making mining one of the nation's highest value land use activities (Minerals Council of Australia 2017). Although Australia derives great economic and social benefit from mining, mining also creates environmental impacts, alters landscapes and brings social changes to communities. Mining is a temporary land use, and in the mining context, sustainability and regulatory obligations dictate the need to transition to an acceptable land use after mine closure. This includes a requirement to create stable non-polluting landforms, carry out progressive rehabilitation, and identify post-mining land uses that benefit local and regional communities (Department of Industry 2016). In Australia, this typically includes grazing or reinstatement of the native ecosystems present prior to disturbance (Doley & Audet 2013; Lechner et al. 2016; Maczkowiack et al. 2012). However, no published information currently exists that informs of the collective plans for proposed post-mining land uses and how they vary across state jurisdictions.

Coal is the most abundant fossil fuel (World Energy Council 2015). Whilst coal deposits exist in every state in Australia (Geoscience Australia 2017), our paper focuses on the coal mining industry of Queensland (Qld)

and New South Wales (NSW) as mining predominantly occurs in these two states. In NSW, coal mines constitute over 66% of all operating mines, with 60% in Qld (Geoscience Australia 2018).

In Queensland, there is approximately 220,000 ha of disturbed land, with an estimated rehabilitation cost of AUD 8.7 billion (Queensland Treasury Corporation 2017). Mining, by its nature, leaves land in a different state from when it started (Bowie & Fulcher 2017) and can leave persistent non-natural landscape features (e.g. open pits, waste heaps, tailings storage facilities) (Doley & Audet 2015). These land use areas, commonly referred to as domains (Department of Resources and Geoscience [DRG] 2013), present significant rehabilitation challenges. Different rehabilitation strategies are therefore needed to ensure chosen post-mine land uses can be achieved. This results in various post-mine land uses nominated for a site.

It is generally understood that mine rehabilitation is completed when the landform is demonstrated as being safe, stable, does not cause environmental harm, and is able to sustain the approved post-mining land use (Department of Premier and Cabinet [DPC] et al. 2017). The most common post-mining land uses achieved include agriculture (grazing and cropping), forestry, lakes (for multiple purposes), recreational areas, areas for nature and habitat conservation, sites for industrial or construction activities, and sites for backfilling other waste materials (Soltanmohammadi et al. 2010). It is general practice that mining companies will progressively rehabilitate mined land once it is no longer required for either extraction or operational purposes.

Public scrutiny of the performance of mining companies' rehabilitation efforts has never been greater. Recent changes in regulatory policy in both states (DPC et al. 2017; Department of Planning and Environment [DPE] 2017) aim to reduce state financial liability and a timely transition to post-mining land use. A focus of the reforms is for mining companies to explore land use options that could convert mining areas to beneficial economic uses post-mine closure. This may result in providing post-mining employment and economic opportunities for regional communities (DPC et al. 2017) and assist in limiting negative mine closure impacts on communities.

Selection of a post-mine land use is the single most important decision in mine closure planning, as all mine closure and rehabilitation activities should be defined based on the post-mining land use (Asia-Pacific Economic Cooperation 2018). Determination of an acceptable post-mine land use should ideally be identified through the consideration of community preferences, risk, internal business drivers, physical capabilities of the site, costs and benefits, planning schemes, location, and surrounding land uses. Additionally, regulatory policies and legislation influence the post-mine land use decision of a company (Maczkowiack et al. 2012). For example, in Qld the *Rehabilitation Requirements for Mining Resources Activities ESR/2016/18* provides guidance for mining companies to define the post-mine land use with consideration of the rehabilitation hierarchy:

1. *"Avoid disturbance that will require rehabilitation.*
2. *Reinstate a 'natural' ecosystem as similar as possible to the original ecosystem.*
3. *Develop an alternative outcome with a higher economic value than the previous land use.*
4. *Reinstate previous land use (e.g. grazing or cropping).*
5. *Develop lower value land use.*
6. *Leave the site in an unusable condition or with a potential to generate future pollution or adversely affect environmental values."* Department of Environment and Science [DES] (2018a)

Commonly, rehabilitation might include restoring land to its pre-mining land use. In many instances, the pre-mining environment consists of native vegetation with varying levels of agricultural disturbance. Whilst Bastida (2002) identifies that lands should ideally be returned to its optimal economic use, in Australia current mine closure regulation, planning and implementation activities frequently focus only on environmental remediation (Harvey 2016). In more recent years, it is recognised that the aim to restore lands to previous ecosystem functions prior to disturbance is not necessarily optimal (Doley & Audet 2013).

This raises the question: ‘If the rehabilitated land is not optimal to achieve the pre-mining land use, what are possible post-mine land use alternatives?’

Options for post-mining land use are many and varied. Some examples include aquaculture in the USA (Miller 2008); arable land use and the recently completed large-scale underground resort in China (Miao & Marrs 2000; ABC 2018); mining heritage, recreation, aesthetic values, regulating services, educational, cultural heritage and tourism in Spain (Perez-Alvares et al. 2016). Canada provides examples of wildlife habitats, forestry and pasture (Errington 2001), and Germany established recreation, tourism, and environmental conservation land uses through the rehabilitation of mine pit lakes (Ahlheim et al. 2004). The Eden Project in England is well recognised as an example of repurposing a disused mine where environmental education, recreation and scientific purposes are recognised as post-mining land uses (Pearman 2009).

It is important to note that the definition of mine rehabilitation is not interchangeable with post-mine land use. The *Mining Act 1992* (NSW) (New South Wales Government 1992) defines rehabilitation as the “*the treatment or management of disturbed land or water for the purpose of establishing a safe and stable environment*”. The NSW Mining Operations Plan Guidelines state that, at a minimum, “*all rehabilitation should result in an agreed post-mining land use goal that is safe, stable, non-polluting and sustainable*” (DRG 2013). A post-mining land use goal on the other hand is a statement describing the overall goal of the rehabilitation and mine closure process. Rehabilitation objectives and criteria should then be designed to support this goal. To achieve mine lease and rehabilitation bond relinquishment, a mine operation needs to demonstrate achievement of its post-mine land use goal.

When defining post-mine land use, it is crucial to define the utility value or function the land should provide after the cessation of mining (Kazmierczak et al. 2017). For example, simply stating that the site will be rehabilitated to a post-mining land use of ‘agriculture’ fails to descriptively identify the function of the area. A land use classification of ‘agriculture’ has a very broad interpretation. It could mean any type of livestock (intensive or not), cropping, or other agricultural products, that could utilise the area. These different land use functions, all require different levels of rehabilitation planning, rehabilitation methodology and techniques, landform design, execution, costs and time requirement for achievement. As such, it is imperative to consider the utility of the post-mine land use and describe it accordingly to ensure appropriate rehabilitation planning, execution and timely relinquishment.

The purpose of this paper is to provide information about pre- and post-mining land use trends in NSW and Qld coal mining sites. This information will be useful to identify future beneficial land uses as well as support decision- and policymaking at a landscape level. The paper first reflects on post-mine land use in the coal mining industry. Methods are presented in Section 2 and results in Section 3. Section 4 gives a discussion of the results and Section 5 concludes the research.

2 Methods

2.1 The study area – New South Wales and Queensland

Most of Australia’s economic demonstrated resources (EDR) of black coal is located in Qld (61%) and NSW (36%) (Geoscience Australia 2017). The majority of coal mining in Qld occurs in the Bowen Basin. Significant black coal resources are also found in the Surat, Clarence-Moreton and Galilee basins in Qld; however, these are still relatively undeveloped. In NSW, the main EDR of black coal regions are Southern, Central, Sydney, Western, Newcastle and Gunnedah basins, with smaller mining basins at Oaklands and Gloucester. In this study, we assessed all known coal mines in these locations.

2.2 Collection of data

Datasets were created for each state and contain the mine name, location, operation type, operational status, pre- and post-mine land uses, and data sources. In some instances, multiple mines have been consolidated under one approval and are presented as a single record. Both open cut and underground

coal mines, inclusive of those recognised as ‘care and maintenance’, are included in the analysis. Abandoned sites, historic sites or other commodities are not included, nor are projects or other related areas that hold separate environmental licences (e.g. coal handling preparation plants).

Terminology used by mine operators to describe their pre- and post-mine land uses and rehabilitation objectives (where no clear post-mine land use is explicitly stated) were recorded. For example, where a site has stated that rehabilitation aims to achieve ‘the reinstatement of native vegetation’, this has been recorded in the biodiversity category. Terminology was categorised into conservation, biodiversity, agriculture, residential, recreation, water management, industrial, infrastructure, forestry, mining or other (Table 1). The classification categories were based on broad land use considerations and terminology used by coal mining companies in both states. Frequency (count) data were recorded for each category, and sites can have multiple land uses. Where a site’s defined pre- or post-mine land use (including consideration of rehabilitation objectives) was not identified, this has also been captured.

Table 1 Land use classification categories

Category	Land use description
Conservation	Land used for conservation and heritage purposes. Includes state forests or national parks.
Biodiversity	Land used for revegetation (native or not), provision of habitat and corridors for wildlife. Also includes where vegetation is identified but does not discuss the specific use of these vegetation types.
Agriculture	Land used for primary production. Includes cultivation of crops and animal husbandry.
Residential	Land used for residential dwellings for people to live in. Includes private residential options (excludes industrial and commercial opportunities).
Recreation	Land used by people for enjoyment. Can include both public and private leisure activities.
Water management	An area used for the control and movement of water resources (either natural or artificial).
Industrial	Land used for commercial enterprise options for industrial purposes (retail goods and services, business and professional offices, manufacturing and support services to business or industry).
Infrastructure	Land used for physical and organisation structures and facilities (e.g. power lines, rail lines, telephone lines and roads).
Forestry	Land used for commercial enterprise options from managed plantations (either native or introduced species).
Mining	Land used for mining and extractive industries. Can include mineral or gas exploration.
Other	Other land uses that cannot be categorised based on the descriptions above (e.g. crown land, Department of Defence land).

In NSW, there is no publicly accessible register of mining operations. A database was created using information from the Australian Mines Atlas (Geoscience Australia 2018) and further populated using environmental protection licence searches in the public register under the *Protection of the Environment Operations Act 1997* (Environmental Protection Agency 2018). Each mine operation’s pre- and post-mine land use was sourced from the respective mine site’s mining operations plan, development consent, assessment documents or other environmental management plans. This information is publicly available

either on the mine operator's website or by reviewing the Department of Planning and Environment Major Project Assessment portal (DPE 2018).

In Qld there is also no publicly accessible register of mining operations. There is a public register of all environmental authorities issued under the *Environmental Protection Act 1994* (DES 2018b). Appropriate mines were identified using this register and cross-referenced with the Qld coal mines and advanced projects publication (Department of Natural Resources and Mines 2017) to ensure all coal mines were captured. Where a mine's pre- or post-mine land use was not identified in the environmental authorities, searches were undertaken of operational mine company websites, government department environmental approval websites (Department of the Environment and Energy 2018; DES 2018c; State Development, Manufacturing, Infrastructure and Planning 2018) and the Department of Environment and Science & Department of Natural Resources, Mines and Energy (2018) online libraries.

3 Results

We identified 61 coal mines in Qld and 65 in NSW, as of July 2018 (Table 2). Of these, not all pre- and post-mine land uses could be identified. In Qld, there are nine mine sites where the pre-mine land use and two where the post-mine land use could not be determined. In NSW, five mine sites' pre-mine land use could not be identified, but all mine post-mine land uses were.

Table 2 Breakdown of mining operation sites and type in Qld and NSW (as of July 2018)

Operation type	Qld	NSW
Open cut	45	32
Underground	8	23
Open cut/underground	8	10
Total	61	65

Results from our analysis identifying pre- and post-mine land uses for mines in NSW and Qld are shown in Figures 1 and 2. The pre-mining land use is dominated by agriculture, with 82% (50 sites) in Qld and 71% (46 sites) in NSW identifying this land use.

The most frequently nominated post-mine land uses are biodiversity (with 48 (79%) sites in Qld and 63 (97%) in NSW) and agriculture (with 74% of sites in Qld and 60% in NSW). All sites in NSW and 98% in Qld have chosen biodiversity and/or agriculture as a post-mine land use. In Qld, one site nominated an industrial post-mine land use.

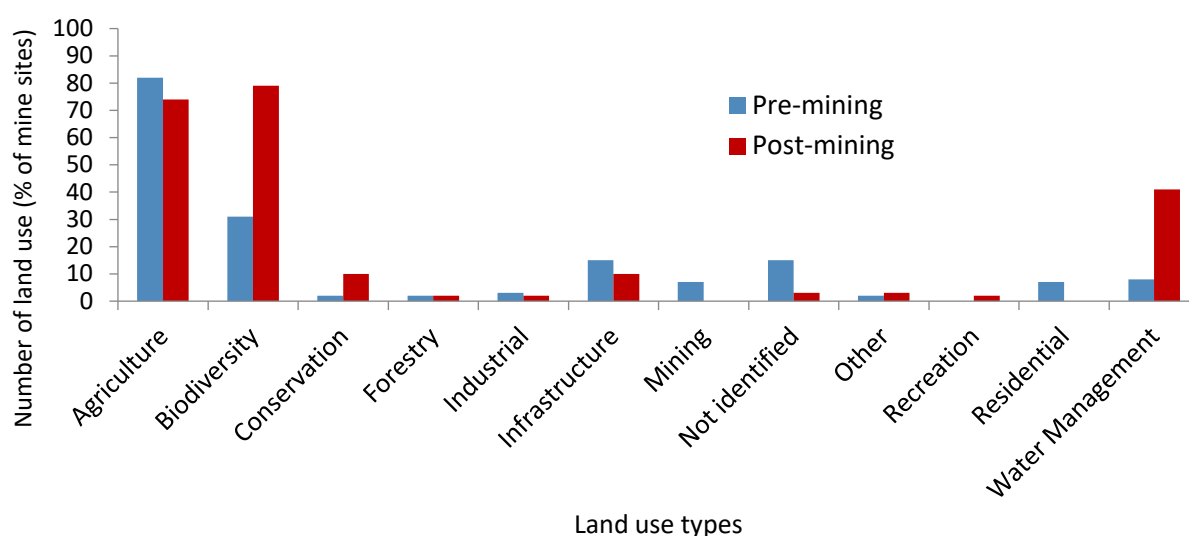


Figure 1 Qld identified pre-mining and post-mining land uses (% of sites), n = 61

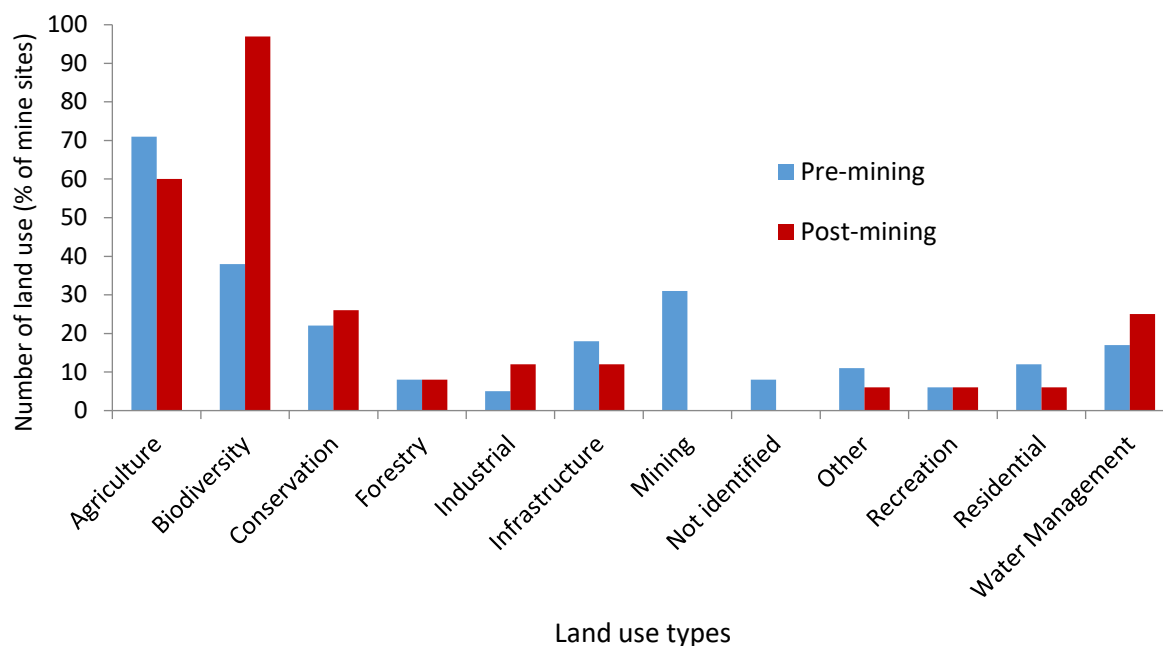


Figure 2 NSW identified pre-mining and post-mining land uses (% of sites), n = 65

Each individual mining site's pre- and post-mining land uses were compared to understand how many sites were reinstating their pre-mining land uses (Table 3). Sites that do not identify any pre- or post-mine land use and sites that identified mining as the pre-mine land use were excluded from these calculations as mining does not occur post closure (40 sites). In Qld, 11 sites (24%) and five sites in NSW (13%) intend to reinstate the same pre-mine land use at closure. Other sites may reinstate the original land use, with the addition of other land uses. Results show that 24 sites (52%) in Qld and 18 (45%) sites in NSW nominated a combination of post-mine land uses that included at least the pre-mining land use.

Table 3 Comparison of pre-mining land use to post-mining land use, n = 126

Scenario	Qld	NSW
Site reinstating the same pre-mining land use (like for like)	11	5
Site reinstating the same pre-mining land use with additional land uses (original + additional)	24	18
Site reinstating new land use (not the observed pre-mining land use)	11	17
Number of excluded sites (pre- or post-mining land use not identified)	11	5
Number of excluded sites (mining identified as pre-mining land use)	4	20
Total	61	65

The number of pre- and post-mining land use was recorded. In Qld, most sites identified one pre-mining land use (26 sites (43%)), whereas in NSW two pre-mine land uses were commonly identified (at 21 (32%) of sites). It was relatively common to nominate two or three post-mine land uses (Figure 3). About 15% of all sites identified four or more post-mine land uses.

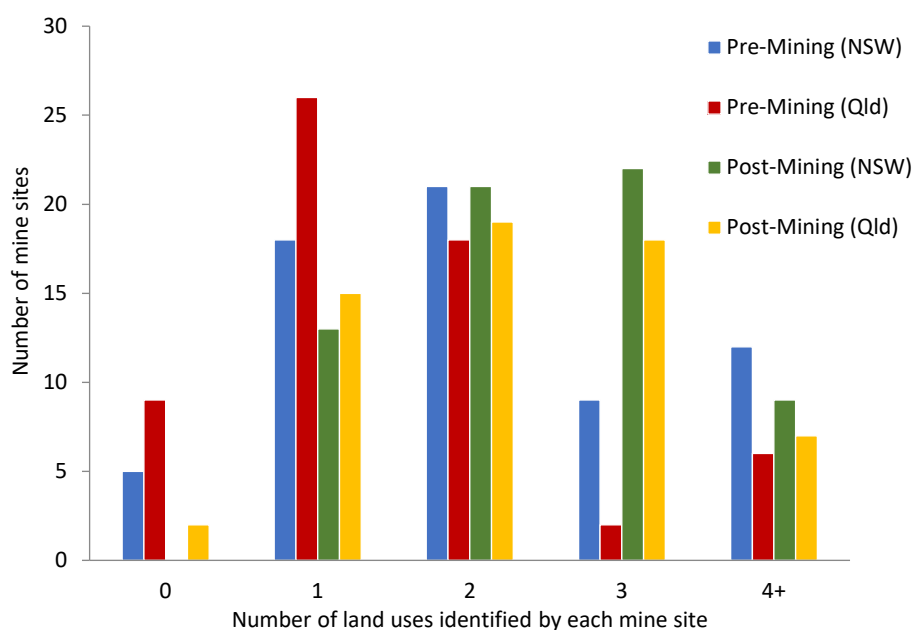


Figure 3 Number of pre- and post-mining land uses identified by each mine site

Details were also recorded to identify changes between the number of identified pre- and post-mine land uses (Table 4). In both states, sites tend to increase the number of land uses types post-mining compared to the number of identified land uses during pre-mining stages.

Table 4 Change in sites' land use types in each state (n = 61 Qld, n = 65 NSW)

Scenario	Qld	NSW
Same number of pre-mine land uses compared to post-mine land uses	13 (21%)	15 (23%)
Number of post-mine land uses increased from pre-mining land use	38 (62%)	30 (46%)
Number of post-mine land uses decreased from pre-mining land use	10 (16%)	20 (30%)

Terminology used by mine operators to describe their pre- and post-mine land uses and rehabilitation objectives (where no clear post-mine land use is explicitly stated) were recorded. The data are presented for pre-mining land use in Appendix 1 and post-mining land use in Appendix 2. On multiple occasions, sites' rehabilitation objectives were used to infer the post-mine land use (as it was not explicitly stated). It was also common for sites to use non-descriptive terminology when detailing post-mine land uses. For example, a site may just state 'agriculture' when describing the post-mine use.

4 Discussion

The most frequently nominated post-mine land uses in both states are biodiversity and agriculture, with over 98% of sites in Qld and 100% in NSW choosing one (or both) of these land uses. In Qld, the influence of policy may provide some insight for this land use dominance. As outlined within the rehabilitation hierarchy contained within the DES (2018a), there is a preference for post-mining land use to be a 'natural' ecosystem, similar to the original ecosystem. However, such hierarchy does not necessarily allow the development of an alternative outcome with a higher economic value than the previous land use (Doley et al. 2012). The requirement for mining companies to investigate beneficial land uses for post-mining land is a consideration of the regulatory reform in both states. As such, we may see changes to the dominance of the current post-mine land uses in the future.

In both states, agriculture is the most common pre-mining land use. There is limited evidence that mine operators are likely to remain consistent with the pre-mining land use, with about half of the sites in each

state reinstating their original land uses (even with additional uses). Some sites have steered away altogether from re-establishing a land use that was present before mining and have instead opted to introduce new land uses. In NSW, 26% of sites and 18% in Qld have chosen not to reinstate a pre-mining land use. It is not uncommon for community members to expect that a mining company will simply put the mine area back to what was once there. It is suggested that if the pre-mining land use was grazing, and the neighbourhood land use is still dominantly grazing, local community expectation is that the post-mining land use should be grazing (Bowie & Fulcher 2017).

Sites tend to increase the number of land uses identified when nominating their post-mine land use compared to the number identified during pre-mining. Sites are made up of land disturbance domains that contain different landscape features. These domains require different rehabilitation strategies and will result in various land uses for each site. At the very least, most sites will maintain at closure a final void, rehabilitated spoil heaps and mineral waste facility (e.g. tailings dam). As such, it is not surprising to see sites commonly choosing two or more post-mine land uses.

We encountered difficulties in finding information about the number of mine operations and the identification of pre- and post-mine land uses, as there is no public register of mine operations in either state. In Qld, the task was made more difficult because most mining companies provide very limited public information on environmental management, as there is no legislative requirement to do so (as there is in NSW). In both states, approval documents do not always identify the sites' post-mine land use, which required the information to be sourced from other documents (Section 2.2). Consultation and building trust between mining companies and community may be made harder without access to such information. Public information on proposed post-mine land uses can assist in the identification of future alternative land uses as well as support decision-making and policymaking.

In some instances, sites' rehabilitation objectives were used to infer post-mine land uses. Without a defined post-mine land use, this can lead to unsuitable development of rehabilitation criteria, ineffective decision-making, negative financial implications, risks and delays to mine closure, as well as potential liabilities to the public. The description of the post-mine land use should be an explicit statement and be aligned with the utility value of the rehabilitation. In describing a post-mine land use (Appendix 2), mining companies, in many instances, used non-descriptive language that failed to account for the potential use of the rehabilitation or mine site as a whole. For example, having a post-mine land use of 'bushland' fails to identify a potential use. Potential uses may include ecosystem services, aesthetics, biodiversity values, cattle grazing, forestry, recreation, carbon sequestration or scientific values, for example.

5 Conclusion

In conclusion, the most common post-mine land uses in the coal mining industry of NSW and Qld are agriculture and biodiversity compared to agriculture being the dominant pre-mining land use. Sites also commonly nominated a combination of post-mine land uses, with over 85% of all sites nominating between one to three post-mine land uses. Results found limited evidence to show that operations are more likely to remain consistent with the land use present at pre-disturbance, with only about half of all sites reinstating pre-mining land use(s), even with the addition of others. Several sites are proposing new land use(s) to those observed pre-mining land use. Furthermore, it was observed that mine sites tend to use non-descriptive language and may not consider the utility value of the rehabilitation when detailing the post-mine land use(s).

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Appendix 1 – Terminology used to describe pre-mining land use categories

Category	Terminology – Qld	Terminology – NSW
Conservation	Conservation	Heritage items; conservation; state forest; special area; nature conservation
Biodiversity	Natural vegetation; bushland; native vegetation; open forest; remnant vegetation; regenerated vegetation; fauna habitat; remnant woodland communities; regrowth vegetation	Natural vegetation; remnant native vegetation; bushland; biodiversity values; regrowth vegetation; open forest; regrowth woodland; woodland; koala habitat; native bushland; native woodland
Agriculture	Grazing; commercial grazing; dairy farming; agricultural grazing; improved pasture and cropping with irrigated crops; low-intensity cattle grazing on unimproved pasture; sowing of improved pastures for grazing; grazing and cultivation; low-density cattle grazing; agriculture; stock routes; dryland cropping; beef cattle; native and improved pasture; pastoral activities; tilled cropping land; cropping and opportunistic livestock grazing	Farmland – agricultural (orchards, alpaca stud, cattle, goat and sheep grazing); irrigation systems; agricultural land for grazing; stock agistment; crown land under grazing licence; dairy beef and beef cattle grazing; cropping (lucerne hay, wheat, maize, sorghum, wine grapes, cut flowers, turf and forage crop hay); horse industry and merino wool production; vineyards, olive plantings; mushroom composting facility; intensive grazing; vegetation communities; natural forest; dryland grazing, cropping; agriculture – low; agriculture – high; low-intensity grazing; improved pastures; grazing pasture; fodder crop production, beekeeping; agriculture production; cattle grazing on natural pastures; livestock
Residential	Rural residential; house and shedding; light grazing; occupied residences	Farm sheds and buildings, poultry sheds; private property items (residents, waste water systems, water tanks, swimming pools, tennis courts, etc.); village; residential development; mine-owned and privately owned residences; small rural and rural–residential holdings; housing
Recreation	–	Recreation area; recreation (4WD); spelling and training of harness horses
Water management	Farm dam; back creek system; alluvial flood plains; river and tributaries; ephemeral watercourse	Farm dams; water catchment; lake; bay; river and brook; water management and borefield

Category	Terminology – Qld	Terminology – NSW
Industrial	Light industrial trucking workshop; cattery/kennel boarding; industrial; electrical substation and power easement	Industrial; commercial and business establishments; light industrial; mine gas power generation; power generation; rail and road transport
Infrastructure	Haul roads; rail; access tracks; Peak Downs Highway; water pipeline; gas pipeline; railway; road; telecommunications, cleared easements; farming infrastructure (tracks, stockyards and sheds)	Public utilities: roads, tracks, water pipelines, gas lines, electricity, telecommunications; public infrastructure, ethane pipelines; water supply canal; railway; mining infrastructure; airstrip; radio broadcasting towers; transmission line; public road; maintenance tracks
Forestry	Timber extraction; rosewood for fence posts	Forestry; forestry and firewood harvesting
Mining	Coal mining; coal exploration; mineral extraction; CSG production	Approved mining; mining; extractive industries; open cut mining; mining-related purposes; quarrying
Other	–	Public amenities (schools, worship, cemeteries); Department of Defence land; crown land

Appendix 2 – Terminology used to describe post-mining land use categories

Category	Terminology – Qld	Terminology – NSW
Conservation	Nature conservation; conservation area; corridor conservation; native conservation	Conservation outcomes; conservation; native vegetation conservation; biodiversity conservation; bushland (voluntary conservation area); environmental conservation; environmental protection; long-term protection; compensatory habit; nature reserve
Biodiversity	Self-sustaining natural vegetation or habitat; native ecosystem; self-sustaining native vegetation; vegetation cover that provides habitat; vegetation cover similar to surrounding areas/reference sites; riparian zones; self-sustaining vegetation communities; specific vegetation communities; wildlife corridors; wooded grassland; grassland with intermittent trees; native habitat (regional ecosystems); fauna habitat; endemic vegetation community; native bushland; grass community; wetland	Native bushland; woodland/open forest; pasture and scattered trees; ecosystem function; biodiversity offsets; self-sustaining ecosystem; native forests; biodiversity values; riparian forest; grassy woodland; native vegetation; pre-mining native vegetation communities; habitat value and ecosystem connectivity; movement corridors; native woodland; enhance ecological linkages; biodiversity outcomes; woodland vegetation communities; rehabilitated bushland; provide habitat; bushland; endemic woodland habitat; native corridor network to promote regional fauna movement; riparian creek vegetation; woody vegetation; specific vegetation communities as outlined; wildlife corridor; ecological function; self-sustaining vegetation; native bushland and mixed native grasses; ecosystem function; ecological sustainable land management practices; biodiversity native habitat; trees for general habitat; emulate the pre-mining environment; enhance biodiversity
Agriculture	Cattle grazing; grazing on native and improved pastures; suitable for grazing; cattle and sheep grazing; grazing land; grazing pasture; light grazing; sustainable grazing; agriculture; economically viable agriculture; low-intensity grazing; good quality agricultural land; bush grazing	Pasture suitable for cattle, horses, agricultural lands, grazing, pastoral; agricultural outcomes; grazing pastoral; sustainable agriculture; grazing land; occasional cropping; pasture
Residential	–	Existing residential; dwellings
Recreation	Recreation	Recreation; recreation (state conservation area); passive recreation

Category	Terminology – Qld	Terminology – NSW
Water management	Water storage; diversion/levee; creek and floodplain; filled to support surrounding land use; void water supply; water body; sediment dams; intermittent cattle watering holes; watercourse beds and banks; wetland; diversion	Stock water dam/supply; voids filled with water; provide habitat for animals; pit lake; wetlands; aquatic habitat, water supply value, ecological function; water catchment; creek diversion; water supply
Industrial	Industrial land	Retained industrial/light industrial infrastructure and roads; light industrial; transport; future exploration/mining purposes; power generation; transport
Infrastructure	Retained infrastructure; infrastructure; roads/tracks as access upon agreement with landholder; landholder retained infrastructure	Infrastructure required by landholder; Retained Industrial/light industrial infrastructure and roads; electricity transmission line easements
Forestry	Hardwood plantation	Forestry; commercial forestry; agroforestry
Mining	–	–
Other	Wind breaks; useful to Aboriginal people	Buffer lands; environmental educational purposes; visual amenity; crown land; visually consistent with surrounding area

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