MINING REHABLITATION:

RAISING THE PRIORITY GIVEN TO SOCIAL OUTCOMES THROUGH PARTICIPATORY PLANNING

Executive summary

The NSW government's discussion paper on mine rehabilitation (November 2017) makes a number of proposals that aim to strengthen community participation in determining rehabilitation outcomes, making it more transparent and empowering.

This essay identifies shortcomings in the proposed policy changes and makes recommendations about how the social impacts of mining activities on communities could be better articulated and addressed through an improved participatory approach.

Summary of recommendations:

1. Take a 'place-making' approach to rehabilitation outcomes.
2. Utilise experts in the field of large-scale landscape design to enable non-standard beneficial uses for post mining landscapes.
3. Establish networks through the stakeholder engagement process which will embed the rehabilitation outcomes in the socio-economic fabric of the community.
4. Widen the scope of impacts considered when defining risks, forecasting mine closure outcomes and developing evaluation indicators.
5. Develop detailed Community Engagement Guidelines for mining and rehabilitation projects.

The development of these recommendations is informed by the case study of mine rehabilitation in Lausitz Germany. The International Building Exhibition's (IBA) work in this region between 2000 and 2010 demonstrates a worked example of participatory planning for post-mining landscapes and communities. The *30 Projects* and *Finale* events were developed through deep participation with the communities in order to re-engage them with their reformed landscapes, and with each other. The case study demonstrates social and cultural complexities that add an important dimension to any discussion of post-mining rehabilitation.

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1 Introduction

The impacts of mining on communities are far reaching, covering economic, environmental, social, political and technological factors. These impacts can be both positive and negative: mining can offer well-paid employment, devastate a landscape, relocate a whole population, influence an election outcome and realise innovation and advancement, all in the one place at the same time. These impacts represent an immense upheaval for a local community.

> *There is an expression that 'the company gets the gold, the community gets the shaft'. The mining company is in business to generate a commodity to market. The wastes generated are going to be left in the community long after the profitable business is gone. So the legacy is in a different place and affects different people than the ones who benefited.*
>
> Paul Robinson (Borschman, 2017)

This paper draws on a case study from Germany, undertaken in November 2017 as part of the Masters of Urban Policy and Strategy. This International Studio focussed on developing a coal exit and renewable energy transition strategy for Berlin – Brandenburg, with fieldwork concentrated in the lignite (brown coal) mining region of Lausitz, located in south Brandenburg, near Germany's Polish border.

Consultation with stakeholders across a broad range of fields in Lausitz showed that the human side of mining and mine closures is never far from the surface. The research team came face-to-face with the heartache of displaced communities, as well as the deep resilience of individuals who had been inspired to see beyond hopelessness.

One key process that helped to facilitate this inspiration is the work of the International Building Exhibition (IBA) between 2000 and 2010. IBA sought to address deficits in the default approach to post-mining rehabilitation, arguing that there is more to rehabilitation than the restoration of landscape.

The first part of this paper discusses the gaps in German rehabilitation regulation that the IBA Lausitz project attempted to address, and details the strategies they employed . The second section draws on this analysis to critique the proposed improvements to mine rehabilitation in NSW, articulated in the *Improving Mine rehabilitation in NSW Discussion Paper (Nov 2017)* and recommend ways in which the proposed approach in NSW can be strengthened.

2 More than a lake: A case study of IBA Lausitz 2000-2010

The International Building Exhibition (Internationale Bauausstellung - IBA) is a German foundation that uses an expert-led, project-based model to catalyse landscape and urban revitalisation. Each IBA project is grounded in the particular historic, social and political conditions of the time and capitalises on the energy of stakeholders to enable reform in both social and design arenas.

Between 2000 and 2010, the IBA engaged in an intensive architect/artist-facilitated process of participatory planning with the communities of Lausitz (also known by its anglicised name 'Lusatia'). The IBA process aimed to go beyond environmental rehabilitation, giving the local communities new tools and skills to feel 'at home' in their reconstructed region.

Mine rehabilitation in Germany: regulation and practice

Germany is highly dependent on imported raw materials (Federal Ministry of Economics & Technology 2010), with the exception of locally available lignite (brown coal) and potash. Successive German Governments have taken a pro-extraction agenda for both of these natural resources, leaving a legacy of widespread landscape destruction across mining regions in Brandenburg, Saarland and the Rhur Valley.

Germany's approach to the rehabilitation of these mines has largely depended on who owned them. The expansive open cut mines of the German Democratic Republic (GDR) have been rehabilitated under a government-led effort that has cost the public billions of Euros. The rehabilitation of privately owned mines has been extremely difficult to enforce, as rehabilitation did not form part of the original permits or the regulatory environment at the time.

New mines in Germany must now be rehabilitated as the final phase in the mining process. This rehabilitation includes surface reconstruction, restoration of the water table, soil stabilisation and soil amelioration. Although rehabilitation is required under law, there are two key uncertainties associated with this requirement. Firstly, mining operators may under-estimate the cost of rehabilitation and make inadequate provisions. Secondly, even if estimates are correct, operators may fail to accumulate sufficient funds during the mining operations to finance the rehabilitation (Wynn and Julve, 2016).

Germany's *Federal Mining Act 1980* (BBergG) was established to consolidate a self-declared 'confusing mass' of regulation for mining activities (Federal Environment Agency 2017). The focus of the Act is on efficient extraction of mineral resources. Its purposes include: ensuring 'the availability of raw materials…the safety of mining operations and employees'; 'strengthening precautions' against risks to human life, health and equipment; and improving the compensation of 'unavoidable damage'. The Act includes a clause that prohibits the full application of regulations under public law that would minimise the potential for exploration and extraction. This is known as the 'raw material safeguarding clause' and represents a significant loophole for mining operators wishing to exploit resource deposits to their fullest extent.

The *Federal Mining Act* may have streamlined the secure supply or raw materials, but it has fallen well short of resolving social and environmental impacts. Specifically, there are gaps in addressing particulate pollution from mines, subsidence damage to houses, aquifer depletion, barren soils (after re-naturtion), acidification of water bodies, and the resettlement of displaced populations. The loss of one's home is where the Act is at its

most ruthless. In Germany, if a mining permit is given for exploration, the approval for extraction is then tacit. The Act makes provision for the acquisition of land and forced resettlement of residents, but has no requirements for public participation in any aspect of the mine's activities during this phase. This offers little protection to those affected, because the decision to allow the extraction is already in place before the land transfer procedure begins. The result is that local communities are on the back foot from the beginning.

The German Environmental Agency is calling for the Act to be supported by a legal framework that addresses the resource needs of present and future generations whilst observing high environmental standards (Federal Environment Agency 2017). Social 'standards' are not mentioned.

Lausitz: from pits to lakes

The Lausitz region has been home to lignite extraction since the 1840s. The region had historically been very poor, with little economic growth. However, when industrialisation led to expansion of the mining operations, the region's towns began to grow.

Under the German Democratic Republic (GDR) the coal mines were nationalised, and by 1975 Germany was the global leader in brown coal production. However, with the reunification of Germany in 1989 came massive structural change, including the collapse of the East German coal industry and the closure of most of the region's mines. Decades of lignite mining had left the region's landscape scarred and barren. Vast open pits, mountains of overburden and dormant industrial machinery were left frozen in time. On top of this physical and environmental change came the economic impact of crippling job losses and the social impact wrought by forced relocations from villages and farms that had stood for hundreds of years.

In total, mining in Lausitz has led to the destruction of 136 towns, resulting in over 25,000 people being forcibly resettled or evicted.

Figure 1: *Weslow, Lusatia: a restored power station sits amidst the opencast mines, abandoned villages and machine halls, cleared forests.*

In 1994, The German Government established the Lausitz and Middle Germany Mining Administrative Company (LMBV) to recultivate, rehabilitate and transform the post mining landscape of the former GDR. Its focus was on the environmental reclamation of the mined areas, according to an acceptable script of solutions defined and regulated by a centralised agency under the *Federal Mining Act 1982*. LMBV's method of rehabilitation included flooding mine voids to create artificial lakes and canals, cleaning water impacted by increased acidity, re-forestation, and the encouragement of agriculture and clean energy industry.

Figure 2 below shows the enormous scale of LMBV's environmental rehabilitation operations in Lausitz, which includes 140 square kilometres of new surface water across 24 new artificial lakes.

Figure 2: *Map of Lausitz showing the extent of artificial lakes, forestry and agricultural areas and industrial parks implemented by LMBV.*

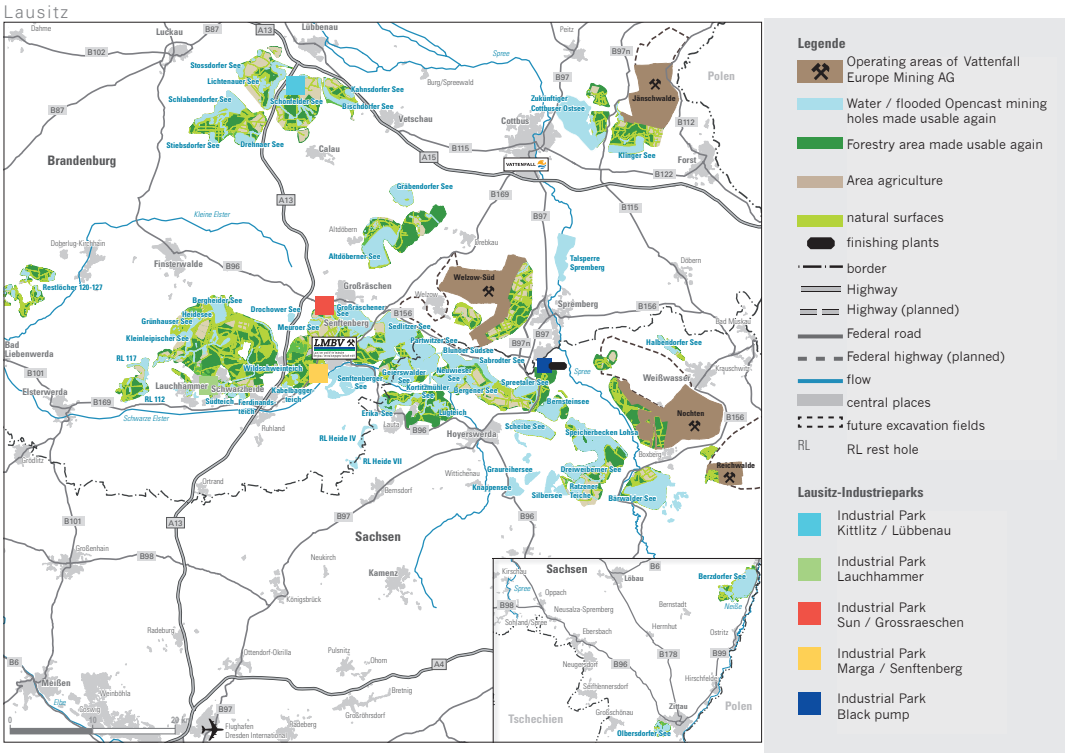


Figure 3 shows LMBV's various rehabilitation methods, mapped to the specific post-mining impacts that they sought to address. It highlights the fact that most of the rehabilitation effort was focused on mitigating negative technological, environmental and economic impacts of the mining, to the exclusion of social and political impacts.

The focus on environmental and economic impacts is reflected in the composition of the professional teams that design and implement the work: mostly environmental engineers, civil engineers and ecologists. The lack of attention paid to the social, and inherently more 'human' impacts, also reflects the lack of community engagement undertaken in order to define the rehabilitation measures. The methods used to address the identified environmental impacts represent the most feasible from a financial and engineering perspective, rather than reflecting any criteria developed in consultation with the community.

Figure 3: Post-mining impacts, mapped to LMBV's various rehabilitation methods.

NEGATIVE POST-MINING IMPACTS IN LAUSITZ				
Social	**Technological**	**Environmental**	**Economic**	**Political**
Loss of significant topographic features and 'sense of place	Loss of opportunity for industry innovation	Deforestation and degraded soils	Loss of employment	Communities resorting to activism when appropriate rehabilitation regulation is not in place
Loss of young/ educated/ mobile population		Final Voids	Loss of demand for related industries	Public expectation that Government will intervene
Redundant workers settlements surrounding the mine		Overburden mounds	Narrow economic base created by dominant mining industry	Union pressure to provide employment options
Loss of hope associated with job loss		Water quality and availability	Restricted access to natural resources such as agricultural land	
Struggling neighbourhoods due to vacant housing		Hazardous pollutants		
Actual or threatened of loss of home leading to poor mental health		Health impacts from industrial pollutants		
Dramatic changes to the social dynamics of a community		Redundant infrastructure		
LMBV rehabilitation methods				
[ ] Re-shaping earthworks	[ ] Cleaning water	[ ] Demolition of mining infrastructure		
[ ] Flooding mine voids	[ ] Reforestation	[ ] Supporting agriculture + clean energy		

Source: The impacts have been consolidated from various research papers and stakeholder interviews (Sullivan, 2016) (Mellguard, 2014) (De la Motte. 2009)

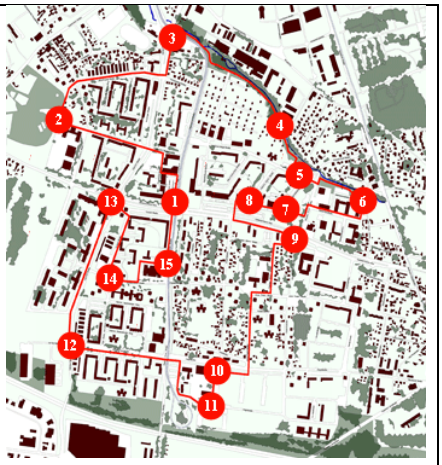
30 Projects for New Landscapes

IBA Furst-Puckler-Land aimed to address the significant social and cultural gaps in the LMBV rehabilitation effort, recognising that the 'clean slate' offered by the new lakes, re-forestation and new solar farms would be as foreign to the residents of Lausitz as the opencast pits had been, unless the locals could be actively involved in re-casting the region's identity.

Thirty projects were developed during IBA Furst-Puckler-Land, each conceived by partnering with specific communities via existing organisations in order to catalyse real social or cultural change. The projects ranged in scale from individual sculptural markers to whole city regenerations. Two project snapshots are provided below in Box 1 ('New life in old flats') and Box 2 ('F60 Visitors' Mine').

Box 1: *New Life in Old Flats*

The city of Sashsendorf-Madlow once housed 30,000 coal workers or their families in pre-fabricated units built by the GDR. In the years following re-unification the apartments were one third empty and the stark, brutalist urban landscape was a difficult place to maintain a functioning neighbourhood. The situation was characterised by a "downward spiral of vacancy, neglect, loss of image and further emigration" (IBA, 2002) The IBA partnered with the State Government, the city of Cottbus and the local housing associations to begin a process of 'gentle renewal' including 15 subprojects. This involved the strategic demolition of surplus apartment towers and the integration of new landscape elements to improve amenity.



The 'City Path' highlighting the 15 subprojects (IBA, 2002)

Box 2: *F60 Visitors' Mine*

The overburden conveyor bridge in Lichterfield is the biggest mining apparatus ever built. Most mining machinery is dismantled as a part of the rehabilitation process. IBA's partnership with regional organisations who together with a newly formed F60 support association, were able to lobby the government to retain the bridge. The LMBV was tasked with making the bridge safe for tourists and in 2011 over half a million people had climbed the 500m long bridge. It stands as an immense monument to the technical innovation involved in the mining operations and therefore forms an important link with the region's identity moving forward.

The view from the top of the F60 looking out over Lake Bergheide

Finale – Paradise 2

Paradise 2 was a program of events developed to integrate the people of Lausitz into their new landscape and publically celebrate its new face and image. The events were a demonstration to the international professional community of the successes of the 30 projects, as well as a way to allow the local community to "speak for themselves, to walk on the stage of their own landscape, and to be at the centre of activities" (Rothe 2010).

Seven events were staged, each at their own IBA project site. Some 7,000 locals played active roles in the events, and over 10,000 German and international visitors attended.

Each event targeted a particular community that had lost something significant as a result of the mines in their regions. An artistic director partnered with different artistic and cultural organisations to develop a celebratory event with each community. Four of these events are profiled below, in Boxes 3 through 6.

Box 3: *Lake Symphony – the landscape is a stage*

On the site of the flooded Meuro open-cast mine, the remnant of the 3,500 residents of the destroyed village of Bückgen joined together in a symphony. The community developed the themes of upheaval of the landscape, impacts on working life and social conditions, and the transformation of the mining region to a tourist destination. They partnered with a composer who turned their words into music.

The following quotes from participants in the performance illustrate the personal significance of what they brought to the event, as well as what they took away:

> *Many people at the time just beat it out of here. We stayed and said: here it will be beautiful again. Through Paradise 2 we perceive the history of our Lusatia much more consciously. That brings a certain pride.*
>
> *My mother worked in the power station at Lübbenau-Vetschau. She was among the last 20 people, who had to go in the mid-90s, and she was broken by that. When I stood on this stage and said, "Kraftwerk Lübbenau" my mother again had a voice.*
>
> *For me what counts are the memories that we 'erased' people of Bückgen carry with us into the future. Our life stories should remain in memory.*

Box 4: *Secret of Schlabendorf*

The people of Schlabendorf lived under the threat of destruction for 31 years. After reunification the village was saved and in 2010 it celebrated its 800th anniversary.

The experience of that emotional upheaval was told through a new composition which the people of Schlabendorf performed in their new harbour landscape. One participant explained:

> *In the barn the story of my mother's escape was told, the story she had told to Hazel before. Hazel recorded the story on tape and set it to music. I'm very grateful for that.*

Box 5: *Departure to New Shores!*

This giant sculpture was made by 5,000 people tracing the circum-ference of Lake Sedlitz with lights.

The sculpture was positioned as a commemo-ration and a new beginning for the people of the villages of Sorno and Rosendorf.

In the voices of two participants:

> *First I lost my birthplace and then I lost my former home to the coal. As I moved to Lieske in 1985, the cavity seemed unearthly to me. These dustclouds, this muck, hardly bearable in storms and wind. Then this evening with the chain of lights, which was so grand.*
>
> *Forty years after the resettlement of Sorno and Rosendorf, a remembrance of us took place on this evening. That reconciled me a little, with all that had happened. We met each other here again after 40 years. Unforgettable.*

Box 6: I open my window for You – A sculpture made of a thousand encounters

Sachsendorf-Madlow is a pre-fabricated housing estate south of Cottbus, built for those who worked in the coal and energy industry. From 37,000 people who lived there in earlier times, around 17,000 remain today.

During Paradise 2 the inhabitants of Sachsendorf-Madlow staged a mass banquet in the middle of a 4 lane road and celebrated their community by bringing out their own food, tables and chairs and joining in music and song.

One participant reflecting on the experience in these terms:

> *The way of working was new and a thrill to me because everything developed gradually and in the beginning nobody quite knew where it would end. The fact that things are allowed to develop brings forth a deep trust in me. It gives me strength.*

Learning from Lausitz

The IBA Furst-Puckler-Land project demonstrates large-scale social and cultural rehabilitation through targeted, deep and long term participatory planning. It stands out as a key case study when considering post mining rehabilitation expressly because it deals with those impacts that regulated rehabilitation often overlooks. It also provides a rich set of approaches that demonstrate how social and cultural renewal can be developed *alongside* physical and ecological rehabilitation.

Several clear approaches for participatory planning emerged from IBA Furst-Puckler-Land's 30 Projects and Finale – Paradise 2 (REKULA, 2005). These have been integral in both articulating and addressing the social and cultural impacts of mining on these communities. The approaches can be defined as follows:

- *Creating public awareness* – The active recruitment of participation by local communities (including their emotional presence and daily involvement).
- *Creating Innovative Organisational forms* – The physical and social scale of the project required a purpose-designed team to provide focussed leadership and extra-ordinary activities uncommon to national or regional planning policy.
- *Creating Networks* – Leveraging the know-how of local administrations, corporations, associations and initiatives ensured the appropriate knowledge and abilities were involved and put in place the groundwork to transfer responsibilities to local actors once the project was complete.
- *Using smaller 'beacon' projects as prototypes to test ideas for the larger landscape* – Both the small and large-scale project proposals were refined in an open dialogue with as many stakeholders as possible.
- *Monitoring and evaluation* – Establishing indicators that benchmark community expectations and can be regularly and transparently communicated.

3 Mine rehabilitation in Australia and NSW

Mining in Australia

Australia's mineral resources are vast and our economic dependence on mining is significant. In 2014-15, the resources sector paid $26 billion dollars in wages and salaries. The following year saw resources and energy account for 51% of Australia's goods and services exports ($157 billion). Direct employment in the resource industry in Australia has doubled since the early 2000's, with approximately 228,000 people now employed in the sector (2015-16). In 2013-14, $11.4 billion in royalties and other taxes helped fund various infrastructure projects and enable the country's society safety net (Australian Department of Industry, Innovation & Science – DIIS, 2016).

Like Germany, Australia has a long history of coal extraction. Australia is the world's largest exporter of black coal. This mining industry alone generates $34 billion in export revenue and directly employs approximately 44,000 people. Queensland is Australia's largest producer of coal (54% share), with NSW making up most of the country's remaining production (DIIS, 2016). Coal production in NSW meets around 80% of the State's electricity needs (NSW Department of Planning & Environment – DPE, no date).

Mines in Australia range from small owner operators extracting minerals for use on their own property to vast, major mining projects. Government estimates for the number of mines currently operational in Australia range between 460 and 2,944 depending on which counting rules are used (Campbell et al. 2017). The lack of accurate basic data on available through various state and territory governments on mines in operation, closure and rehabilitation is one area of concern in the context of measuring rehabilitation performance nationally (Campbell et al. 2017).

As in Germany, the impacts of mining on Australian communities are significant, especially for those living in the shadow of un-rehabilitated mines. By way of illustration, three different categories of impact include:

- *Health* – The people of Morwell in Victoria's Latrobe Valley lived with the impacts of 45 days of uncontrolled fires burning in the walls of the massive Hazelwood lignite mine in 2014. A subsequent health study (recommended by an independent inquiry into the mine fire) found that Morwell residents were 'seven times more likely to report that a doctor had diagnosed them with a heart attack' than those in a control group (French 2017).[1]
- *Pollution* – On the outskirts of Queenstown in Tasmania, Mt Lyell copper and gold mine had the dubious distinction of leaving the King and Queen Rivers as two of the most polluted waterways in the world. Queensland's Mt Morgan silver-copper-gold mine, decommissioned in 1990, is the state's largest abandoned mine, as well as being one of its most contaminated.
- *Landscape change* – Even without the legacy of contamination to bear, communities living on the edge of open cut coal mines such as those in the Bowen Basin or Hunter Valley are still faced with mountains of overburden that continue to grow by approximately 100-200 tonnes a year. There is an informal expectation among communities that these altered landscapes will be completely restored to

[1] Even with the fire risk now under control, there is the question of what to do with the depleted mine – a 'hole in the ground bigger than … Uluru' (Borschmann 2017). The rehabilitation of a mine this large is unprecedented in Australia.

their former topographies (Borschmann 2017). When final voids[2] like this remain, they are often perceived by the community as a way for mining operators to externalize rehabilitation costs (Senate Standing Committees on Environment and Communications 2017).

- *Social impact* – The indigenous residents of Groote Eylandt (NT) receive short-term employment and 'generous' royalties from the Manganese ore mine. These benefits arguably do not offset the impacts on 'social amenity, loss of land for recreation and traditional practices, anxiety and uncertainty surrounding new mining and impacts on spirituality and sacred spaces' (Boustead 2015).

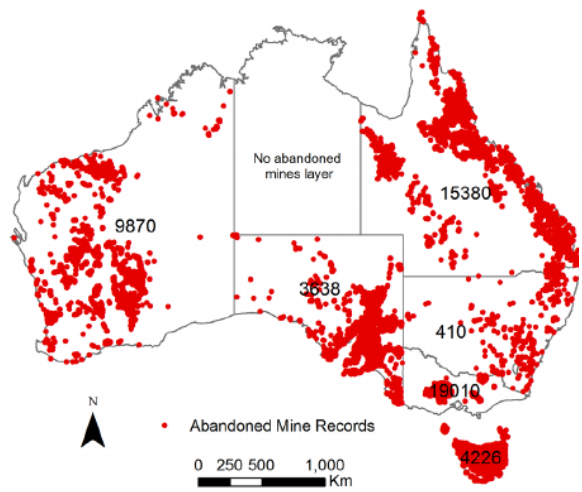
Regulation of mine rehabilitation in Australia and NSW

It is estimated that there are between 50,000-60,000 abandoned mines in Australia (Unger 2014), from 1800's gold rush remains to modern (2013) nickel and diamond mines in Western Australia (Campbell et al. 2017) (Figure 4).

Only 22 of these mines are recorded as having been rehabilitated. No large, open cut mine in Australia has been completely rehabilitated (Campbell et al. 2017).

In Australia the ownership of onshore minerals falls to the states and territories, regardless of who owns the title on the land. It is those governments' role and responsibility to determine and implement the legal and regulatory frameworks necessary to govern the exploration and production of mineral product.

Figure 4: Abandoned Mines in Australia



Source: Research Gate, 2011

Although Australia's first mining laws were enacted in 1851, the processes and approvals around mineral extraction and land rehabilitation were unregulated until 1992 when the *The Mining Act 1992 No. 29* was introduced. This was the first time that impacts on the environment were considered as part of an approval process for mining activity. In the context of these regulations, the 'environment' includes "flora, fauna, fish, fisheries and scenic attractions and features of Aboriginal or geological interest". Social, economic and cultural impacts are not included.

In NSW, mining impacts, rehabilitation commitments and post-mining land use objectives are defined during the Environmental Impact Statement and Development Approval process in accordance with the *Environmental Planning and Assessment Act 1979* (DPE, 2017a). State significant developments (including large mining projects) are submitted to the Department of Planning & Environment (DPE) and are required to consider social impact as part of their overall environment impact assessment. These applications are assessed by the Planning Assessment Commission (NSWPAC) in consultation with DPE. NSWPAC applies consent conditions that give high-level requirements around construction, operation and rehabilitation. Approved developments must then apply for a lease under *The Mining Act 1992*. The lease

[2] Final Voids: where a void is left after mining it is typically refereed to as a 'final void' (NSW Department of Planning & Environment 2017a)

contains detailed operational requirements for the rehabilitation of the mine and requires a security deposit to cover the full cost of rehabilitation. DPE is responsible for enforcing compliance with both the development consent conditions and the mining lease.

Titleholders in NSW further outline their rehabilitation process in a Rehabilitation Management Plan (formerly a Mining Operations Plan). The plan requires the titleholder to outline: their rehabilitation objectives and criteria; proposed rehabilitation plans and schedules; key risks and opportunities; controls and method for control of risk; and monitoring programs to measure performance and compliance against the criteria.

The *ESG3: Mining Operations Plan (MOP) Guidelines* give emphasis to the importance of stakeholder consultation in the process of determining the final landform and preferred land use (NSW Department of Trade & Investment, 2013). Stakeholders include the 'community, the government, affected landowners, shareholders and special interest groups'. When determining the acceptability of the post-mining use the Government will 'assess the acceptability of the post mining land use to the community and other stakeholders'.

Current issues for communities

The mining industry in Australia does not have a good record of 'cleaning up after itself' (Campbell et al. 2017). In 2017 DPE reported to the Australia Institute that NSW alone has between 112 and 410 abandoned mines, up to 109 in 'care and maintenance' and only two mine sites that have been or are being rehabilitated. This sets a low industry standard and means that communities are likely to voice a lack of confidence in mining operators to complete rehabilitation plans effectively (NSWPAC 2017).

The NSW Planning and Assessment Commission has identified a series of worrying trends in major development applications for mining projects, including insufficient information on rehabilitation or post mining land use, as well as inadequate justification for their proposal (NSWPAC 2017).

It is not surprising, then, that the estimates of rehabilitation costs are likely to be insufficient. The DPE holds mining rehabilitation security deposits to cover the full cost of rehabilitation in the case of a default. In 2016 the government held $2.2 billion in deposits to cover 450 mine sites in NSW. To date the Department has never accessed these deposits.

The NSW Acting Auditor General has recently deemed the $2.2 billion to be inadequate to cover the cost of rehabilitating the effected mines (Auditor General 2017). The Auditor General's report identified the following causes of this shortfall:

- The rates and allowances used to calculate costs in the DPE's calculation tool were not up to date (2013 schedule of rates).
- There was not sufficient contingency to cover unplanned closure or long term degradation after 'rehabilitation' achieved.
- There were several costs not covered sufficiently by the department's rehabilitation calculation tool. The report highlighted the insufficient proportion (10%) allocated to project management, considering the degree of stakeholder engagement required to seek agreement on final landforms and land-use with a variety of agencies and community groups throughout the planning and implementation process. The tool also made limited provision for research to inform the most appropriate rehabilitation measures and the detailed design of the rehabilitated final landform and associated components.

Community concerns expressed through public meetings have echoed these formal reviews. Common themes emerging from these meeting include:

- lack of information on rehabilitation post mining (NSWPAC 2017)
- low confidence in the proponent meeting its rehabilitation commitments (NSWPAC 2017)
- poor compliance record and evidence of rehabilitation (NSWPAC 2017)
- the absence of criteria to determine the suitability of final landforms, including final voids and pit lakes (DPE 2017d)
- the absence of criteria to determine the suitability of the management of final landforms (DPE 2017d)
- suspicion around mining operators externalising costs but deeming final landform creation and management 'unfeasible'.

With the backdrop of this regulatory framework and the issues raised, the *Improving mine rehabilitation in NSW Discussion Paper* has an important role to fill in articulating the current context and presenting possible solutions.

4 Improving mine rehabilitation in NSW

The NSW Government issued the *Improving Mine Rehabilitation in NSW Discussion Paper* in November 2017 to seek public feedback on several proposals to improve rehabilitation outcomes in NSW.

Scope

The discussion paper applies to existing and new major (State Significant) mining projects in NSW. State Significant mining projects include large coal, mineral sands and large metalliferous mines. The paper gives an overview of the current regulatory environment for such mines, and makes five proposals for their improvement.

Mining projects are understood in four phases: exploration; assessment; operational and post-closure. The discussion paper makes proposals applying to the assessment and operational phases, and seeks feedback in developing proposals for the post-closure phase. The exploration phase is regulated by DRG (Department of Planning & Environment, Division of Resources and Geosciences) under the *Mining Act 1992*.

The discussion paper makes reference to the roles and responsibilities of two divisions within the Department of Planning & Environment: the Division of Resources and Geosciences (DRG) and the Planning Services Division.

Policy context

The *Leading Practice Sustainable Development Program for the Mining Industry: Mine Rehabilitation* (LPSDP) outlines best practice for the various phases of the mining process (Australian Dept. of Industry 2016). It is not a statutory document but rather sets the National Government benchmarks for rehabilitation practice.

The discussion paper draws on the issues raised and recommendations made in the aforementioned NSW Auditor General's performance audit on mining rehabilitation security deposits (May 2017); several NSW Planning Assessment Commission review and determination reports; public submissions; the *Better mine rehabilitation for Queensland discussion paper*, submissions to the Senate inquiry on *Rehabilitation of mining and resources projects as it relates to commonwealth responsibilities* and the input of other NSW Government agencies.

The discussion paper sits alongside the DRG's 'rehabilitation reform project', which is the Department's response to the NSW Auditor-General's performance audit and is focussed on operational improvements for existing mining projects in NSW.

Although not mentioned in the paper itself, the DPE draft paper on *Community and stakeholder engagement f*or Environmental Impact Assessment and the recently released *Social impact assessment guidelines* for state significant mining are also relevant to the policy scope.

Proposed interventions

The Discussion Paper proposes four regulatory reforms for the Assessment Phase and one for the Operational Phase, as set out in Box 7.

Box 7: The five proposals set out in the Improving Mine Rehabilitation in NSW discussion paper

1. Adopt policy principles to guide the regulation of mine rehabilitation

Establish a transparent regulatory framework according to principles that ensure quality rehabilitation is delivered and the community is both informed and engaged.

2. Develop a policy framework for the assessment of final voids

Deliver final voids and void pit lakes only where they represent an opportunity to provide benefit or the minimization of impact to the community (unless 'not feasible')

3. Improve consideration of rehabilitation and closure in the early days of mine planning

Inclusion of detailed information about rehabilitation and mine closure in development application. Possible inclusion of alternative options developed in consultation with the community in Scoping report.

4. Ensure rehabilitation requirements are clear and enforceable

Developing development consent and mining lease conditions which set clear, measurable and enforceable requirements about rehabilitation outcomes.

5. Ensure that the regulatory processes that occur once a mine has been approved are transparent and deliver consistent rehabilitation outcomes

Streamlines regulatory coordination across assessment, operations and post closure stages.

The proposals can be read in full at http://www.planning.nsw.gov.au/Policy-and-Legislation/Under-review-and-new-Policy-and-Legislation/~/media/3ED8A09787204746A0646B05EC503A29.ashx

Critique of the Discussion Paper

a) The proposed improvements are a well-considered step forward for rehabilitation regulation in NSW.

The DPE has responded well to the concerns of the public articulated in the Planning Assessment Commission's report regarding access to information and poor compliance with agreed rehabilitation outcomes. The proposals also address the communities' desire for criteria to determine the suitability of final landforms.

Several aspects of the proposals illustrate an increased requirement for participatory planning and, to a lesser extent, a greater consideration and prioritisation of social impacts and outcomes. Key examples include the following:

- *Proposal 1* – **Maximise social benefit** – Maximising social, environmental and economic outcomes for the locality and region is defined as a policy principle, and sets an expectation that a social impacts will be assessed and addressed.
- *Proposal 1* – **Engage with the community on rehabilitation outcomes** – Detailed descriptions of mine rehabilitation are required to be developed through a process of community engagement in the assessment phase. Post-mining uses must 'give regard' to community views. Both of these imply community input into the rehabilitation outcomes.
- *Proposal 2* – **Explore broader options for final voids** – The community desire for a broader range of possible outcomes for final voids is acknowledged through the inclusion of other 'beneficial uses' in the options framework.
- *Proposal 2* – **Assess final voids with a clear criteria** – The establishment of an assessment criteria for final voids will include the minimisation of community impacts.
- *Proposal 2* – **Social costs are factored into assessment criteria** – The assessment of social costs being 'too high' could be grounds for refusal.

- *Proposal 3* – Consideration of local values – The requirement for early community engagement to understand local values and inform the design of rehabilitation outcomes will assist in defining social and cultural impacts and prioritising how these are addressed.
- *Proposal 4* – Clear and enforceable outcomes – Making the rehabilitation outcomes conditioned in the development consent and mining lease clearer and more enforceable will give the community confidence that their expectations will be met.
- *Proposal 5* – Accessible information – Improved public access to information on rehabilitation performance, Rehabilitation Management Plans (RMPs) and strategies required by the Development Consent and Mining Lease will allow communities to be more informed about the outcomes and performance of mining operations.
- *Proposal 6* – Better communication – Better communication between departments, agencies, proponents and communities regarding decision making relating to the RMPs, Development Consent and mining lease conditions will ensure stakeholders are informed.

b) More attention to addressing social impact through rehabilitation outcomes is required in the proposed improvements

When situated in close contact with existing communities, the scale of State Significant mining projects tends to dominate local economies, landscapes and regional identity. Although the large-scale environmental impacts of mining are well-understood, and rehabilitation caters to the physical aspects of those impacts, the social impacts often remain unaddressed (Odell, Scoble, Bullard, 2011).

The discussion paper identifies social benefit as a key criteria when defining rehabilitation outcomes and post-mining land uses. However, with the exception of establishing 'local values' when preparing the development consent, it provides little guidance on how, and in what other stages of the process, social impacts or benefits will be defined or measured. The DPE's recent guidelines on undertaking social impact assessment as part of an Environmental Impact Assessment are helpful in fleshing out some of these gaps, and should have been referenced in the Discussion Paper (DPE 2017b).

There is a need to bring together the articulation of social impact (through the SIA) and the generation of rehabilitation outcomes. These processes appear disjointed in the current regulation and are not addressed in the proposed improvements.

Four specific recommendations in relation to social impact are set out below, with each recommendation followed by a brief discussion and justification.

Recommendation 1: Take a 'place-making' approach to rehabilitation outcomes

If rehabilitation were to be understood through the lens of 'place-making' which thinks beyond the edges of the pit, this would give greater hope that these new landscapes would be 'owned' by the community in the long term. This approach is demonstrated through the IBA Lausitz 30 Projects, most notably in the renewal the Sachsendorf-Madlow prefabricated workers town. While the Government's rehabilitation organisation dealt with the vast open cast pits and redundant infrastructure, the IBA work in this

town acknowledged the neighbourhood dysfunction that was occurring through the resulting demographic shifts.

Recommendation 2: Utilise experts in the field of large-scale landscape design to enable non-standard beneficial uses for post mining landscapes

Neither the *Mining Act 1992* or the Australian Government handbook on Mine Rehabilitation require mining sites to be returned to their original state once mining is complete (Australian Government, 2006). The scale of the landscape changes wrought by mining operations present an opportunity for something other than re-establishing the pre-existing safe and ecologically sound landscape (Kirsh, Hine and Amizlev, 2015).

Those disciplines for whom large scale urban and landscape design is familiar (landscape architects, urban planners, visual artists) should be required as key participants in the facilitation of community engagement and throughout the design process from options scoping to post-completion evaluation.

Recommendation 3: Establish networks through the stakeholder engagement process which will embed the rehabilitation outcomes in the socio-economic fabric of the community

The IBA Lausitz projects leveraged local networks of existing organisations and initiatives to embed the rehabilitation projects into the local community and foreshadow the transferral of responsibilities once the mining rehabilitation operators work was complete. This is distinct from the financial support given to community projects as 'trade offs' for adverse impacts, and instead implies a strategic analysis of the socio-economic structure of a community and the integration of the rehabilitation process within it.

Recommendation 4: Widen the scope of impacts considered when defining risks, forecasting mine closure outcomes and developing evaluation indicators

The current *Leading Practice sustainable Development Guidelines* for mine closure and rehabilitation present rehabilitation as a 'biophysical process'. Unless there is a fundamental shift in the way the impacts of mining are understood then there is a risk that, while we may continue to improve the way we manage environmental rehabilitation, social and other impacts will remain externalised.

Risks, outcomes and evaluation indicators must be explored thoroughly using a mechanism that ensures social, technological, environmental, economic and political impacts are considered and incorporated.

c) The role, level and influence of community engagement needs to be more clearly defined

Participatory planning is an accepted process used to balance and clarify multiple interests and preferences (Kaza, 2006) across public agencies, business, industry and the public (Kaufman, Ozawa and Shmueli, 2014).

Participatory planning does not 'guarantee the justice of either the process or material outcomes' (Healy, 2003:115) and its effectiveness is vulnerable to the actors and arenas that are and are not included in the process (Hillier, 2000). In order to effectively plan for and get the most out of a participatory planning process, it is necessary to

understand both the 'goal' of the engagement and the 'promise' being made to the participants. This is currently unclear in the discussion paper.

The spectrum of public participation developed by the International Association for Public Participation (IAP2) provides a useful framework for determining what level of engagement will be necessary to achieve outcomes that truly maximise social, environmental and economic benefit (IAP2 Australasia 2016). Based on the information included in the discussion paper, it appears that most of the proposed community engagement interventions fall within the lower levels of engagement – *inform* and *consult*. This is mapped in Figure 4.

Figure 4: The level of engagement of the proposed interventions

	IAP2 Public Participation Spectrum				
	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
Engagement activities proposed in the discussion paper	(Promise to) Maximise social benefit				
	Engage with community on rehabilitation outcomes				
	Explore broader options for final voids				
	Assess final voids with a clear criteria				
	Social costs factored into assessment criteria				
		Consideration of local values			
	Clear and enforceable outcomes				
	Accessible information				
	Better communication				

While the proposal to 'engage with community on rehabilitation outcomes' could straddle the levels between inform and collaborate, the paper itself gives little indication that the public will be given licence to make any real decisions in the final rehabilitation outcomes. If this is the case, then it needs to be made clear in the regulatory framework.

Recommendation 5: Develop detailed Community Engagement Guidelines for mining and rehabilitation projects

Victoria has a detailed guideline in place applicable across all phases of the mining process, whereas NSW has only the *Guidelines for community consultation requirements for explorations* produced by the Department of Industry and covering only the exploration phase.

There is a need for clear community engagement guidelines specific to rehabilitation projects in NSW. While the DPE has developed *draft community and stakeholder engagement guidelines* for the preparation of an EIS, these do not deal with the delicate process of working with a community to define rehabilitation outcomes (DPE 2017c).

A new guideline would assist mining operators in designing a participatory planning framework that enables the community to truly collaborate in the development of outcomes that impact them in the long term.

5 Conclusion

We are thankfully living in a different era of mining activity than that of the 20th century. Rehabilitation is now a regulated phase of the mining process in Australia, as it is in Germany.

Unfortunately our 'best practice' guidance on rehabilitation in Australia is still focussed narrowly on addressing the environmental impacts of mining, leaving the social (and other) impacts poorly articulated and insufficiently addressed.

The work of IBA in Lausitz Germany demonstrates the capacity for a focussed, purpose-designed approach to both draw out those unheard social impacts and restore and reclaim the 'territories' that had been lost or destroyed in their wake.

The significant role of IBA Lausitz was that it sat *alongside* the environmental restoration work of the LMBV. It did not assume superiority over it, but rather saw the LMBVs work as the essential foundation on which to build the social engagement and restoration that was so needed.

The NSW Improving mine rehabilitation in NSW Discussion Paper makes several important proposals to improve the way communities are informed about rehabilitation outcomes, and consulted with to inform mine design, rehabilitation and closure outcomes. It also proposes principles that would require post-mining uses to be of maximum social, environmental and economic benefit to the local communities and region.

When strengthened with a more holistic consideration of impacts, a place-based approach to rehabilitation and clearer guidance on community engagement aims and processes, the proposed improvements to mining regulation will go a long way towards ensuring better outcomes for impacted communities in NSW.

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