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Research that matters.

Dark side of the boom (NSW)

What we do and don't know about mines, closures and rehabilitation in New South Wales

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Little data is available to the public on the clean-up from the mining boom. State government agencies often lack basic information on how many mines are in operation, with still less published on closures and abandonments.

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Summary

As the mining boom winds down and the mining clean up boom begins, mine site rehabilitation and mine abandonment are emerging as major issues for Australian communities, governments and taxpayers. All stakeholders will need information on the status of mines and their rehabilitation efforts to ensure this is carried out in a way that does not leave taxpayers and the environment with the costs of abandoned mines and poorly rehabilitated sites.

Unfortunately few reliable statistics are available. This report focusing on New South Wales (NSW) and is the first in a series that will compile data from each state's relevant department on numbers of mines that are operating, have suspended operations (often referred to as "care and maintenance"), are being closed and have been abandoned. We also summarise available information on the environmental bonds that miners pay to governments. Results for NSW are based mainly on correspondence with the agency responsible for overseeing the mining industry, the Division of Resources and Energy (DRE). Results are summarised in the Table below:

Table 1: NSW summary

Category	Low estimate	High estimate
Mines in operation	85	109
Mines in care and maintenance	NA	123
Mines closed and undergoing final rehabilitation	1	Unknown
Mine sites rehabilitated and relinquished or sold	1	Unknown
Abandoned mines	112	410
Rehabilitation bonds held	$2.2 billion	$2.2 billion
Estimate of total current rehabilitation costs	>$2.9 billion	Unknown
Estimate of current rehabilitation liabilities for abandoned mines	Unknown	Unknown

A key point to note in Table 1 is that while NSW has around 100 operating mines and 123 mines in 'suspended operations', DRE was only able to name one example of a mine site that has been fully rehabilitated and one other that is potentially in the final stages of closure. Both are small, underground mines. There is no example of a major open cut mine being successfully rehabilitated in the state, yet the state's coal industry plans to leave behind at least 45 open cut voids – large holes that will never be filled.

The stakes are high in Australia's mining clean up boom. The Australian public risks incurring billions of dollars in rehabilitation costs that could either require taxpayer

funding or result in a degraded environment if rehabilitation is not well managed and regulated. This would represent a huge subsidy to the mining industry. The large number of historical and modern abandoned mines compared with the handful of fully rehabilitated sites shows that the mining industry does not have a good record at cleaning up after itself.

The last ten years have seen an increase in public attention paid to mining activity, with community groups and NGOs playing a key role in working with and monitoring the mining industry. Provision of better data on mines in each state, their status and history, would empower the community, the industry and the public service to ensure that sites are properly rehabilitated.

Introduction

The old cliché goes that if you can't measure it, you can't manage it. As Australia attempts to manage the clean-up from the mining boom, it is important to see how the government agencies measure this process.

Australia's government agencies publish a bewildering range of statistics on mining, such as production volumes, revenue, royalty forecasts, capital expenditure and miners employed. Twice a year, the Office of the Chief Economist identifies what mining projects might exist in the future – those at the 'publically announced' stage, those at the 'feasibility stage' and other stages of development or speculation.[1]

While figures on current profits and future projects are easy to get, measurements of the clean-up and rehabilitation of mine sites are far harder to come by. This report compiles this data for New South Wales, to the extent that it exists. This includes:

- Number of operating mines
- Number of non-operational mines in 'care and maintenance' and length of time mines have been in care and maintenance
- Number of mines shut-down and undergoing final rehabilitation
- Number of mines fully rehabilitated with site relinquished back to the state or sold to a third party
- Sum of rehabilitation bonds held and estimates of likely rehabilitation expenses
- Number of abandoned mines.

A copy of the questions sent to DRE is provided in the appendix.

Compared to statistics on the future of mining, or on exploration expenditure in the last financial year, statistics on the number of operating mines or the number of mines in care and maintenance may seem simple. However, they are far more difficult to access. Part of this difficulty is definitional. While the spot price for Newcastle Benchmark thermal coal or the number of tonnes of iron ore shipped through the Port of Darwin are objective, classifying and counting the number of mines in a state requires subjective decisions. Still more complicated are the questions of how many mines are in care and maintenance and how many are being closed.

[1] OCE (2015) *Resources and Energy Major Projects*, http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Resources-and-energy-major-projects.aspx#

When it comes to data on the end of mine operations – of how many mines have been abandoned or how many have been successfully rehabilitated and relinquished for other use – estimates are not ambiguous so much as but absent. There is very little official, comprehensive, publically available data on mine abandonment or relinquishment in Australia.

What data is available on all aspects of mine rehabilitation in Australia is generally poorly defined and often contradictory. Getting data is difficult, as is getting explanations of what the data does or doesn't represent. While some states provided relatively detailed data in a timely manner, in general the government departments that manage and regulate the mining industry are not well equipped to provide this information to the public. While individual representatives are often diligent and helpful, the departments as a whole do not make important data accessible.

For example, obtaining data on NSW required 18 phone calls and emails to the NSW Division of Resources and Energy over six months. At time of writing, our questions referred to the "Industry Coordination" section still had not been responded to.

As the resources boom subsides and many mining projects come under financial pressure, Australian governments and communities need information to ensure that mine rehabilitation and closure arrangements do not place the public at financial and environmental risk. Currently, much basic information is not available. This report collates what information is available and is hopefully a step towards improving this situation.

New South Wales

Table 1: NSW summary

Category	Low estimate	High estimate
Mines in operation	85	109
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Rehabilitation bonds held	$2.2 billion	$2.2 billion
Estimate of total current rehabilitation liabilities	>$2.9 billion[2]	Unknown
Estimate of current rehabilitation liabilities for abandoned mines	Unknown	Unknown

NSW is best known for mining coal. Newcastle is the world's largest export coal port, exporting 155 million tonnes in 2013–14, sourced from the Hunter Valley, Newcastle coalfield and mines further west.[3] Coal is also mined in the Illawarra and the Lithgow area. In the far west of the state, Broken Hill has a long history of mining as the original home of what is now BHP Billiton. Gold and mineral sands are mined in various areas through the state, particularly around Cobar.

Mining employs 32,500 people in NSW, 0.8% of employment, but accounts for 2.5% of Gross State Product.[4] In 2016–17, the state government expects $1.3 billion in royalties, 1.7% of state government revenue.[5]

The main government agency overseeing mining in NSW is the state Division of Resources and Energy ("DRE"), within the Department of Industry. DRE is responsible for authorising mining exploration and production and keeping the environment safe

[2] This figure is the combined costs of filling in the Mt Thorley-Warkworth coal mine and Maules Creek coal mine voids. There are many other mines in the state for which the liabilities are unknown.

[3] NSW Division of Resources and Energy (2015) *NSW Coal Industry Profile 2014 Vol 2*, http://www.resourcesandenergy.nsw.gov.au/investors/investment-opportunities/coal/coal-profile

[4] ABS (2016) *6291.0.55.003 Labour Force, Australia, Detailed, Quarterly*, http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6291.0.55.003May%202016?OpenDocument and ABS (2015) *5220.0 - Australian National Accounts: State Accounts, 2014-15*, http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5220.02014-15?OpenDocument

[5] NSW Government (2016) *Budget Statement 2016-17 Budget paper No.1*, http://www.budget.nsw.gov.au/__data/assets/pdf_file/0003/128568/2016-17_Budget_Paper_1_-_Budget_Statement.pdf

during exploration and mining activities.[6] On 1 July 2016, the Department for Industry also introduced a Resources Regulator responsible for compliance and enforcement in the resources sector. The regulator is intended to create a formal separation between regulatory oversight teams and industry development teams, and its officers report directly to the Secretary of the Department of Industry.[7]

MINES IN OPERATION

The DRE indicates that there were 109 operating mines in the state as at 31 August 2015: 62 mineral mines, 46 collieries and one petroleum operation.[8]

This information contrasts with figures from Geoscience Australia's Australian Mines Atlas, that there were 85 operating mines in NSW in February 2015 (56 collieries and 29 other mines).[9]

The substantial difference in these figures seems to reflect different definitions and methodologies. Geoscience Australia's methodology appears to exclude some small minerals mines and quarries, and treat different parts of some large mines as being separate. For example, the atlas lists the Mt Thorley–Warkworth mine as two mines, while DRE and other NSW government departments such as Department of Planning and Environment often treat the complex as one mine.

MINES IN CARE AND MAINTENANCE

The DRE indicates that, as at 31 August 2015, there were 123 mines in "suspended operations" (68 minerals mines and 55 collieries).[10]

The DRE did not indicate which of these suspended mines are in care and maintenance and which are unlikely to operate again. The DRE was unable to provide any information on how long these mines have been out of operation. The DRE was contacted multiple times by phone and email for this information, from January to June 2016.

[6] NSW Division of Resources and Energy (2016) *About us,* http://www.resourcesandenergy.nsw.gov.au/about-us

[7] NSW Division of Resources and Energy (2016) *Resources Regulator for NSW,* http://www.resourcesandenergy.nsw.gov.au/about-us/news/2016/resources-regulator-for-nsw

[8] Correspondence with the Division of Resources and Energy, 30 September 2015 and 20 June 2016.

[9] Geoscience Australia (2016) *Australian Mines Atlas,* http://www.australianminesatlas.gov.au/mapping/downloads.html

[10] Correspondence with the Division of Resources and Energy, 30 September 2015.

SHUT-DOWN, FINAL REHABILITATION AND RELINQUISHMENT

The DRE's data on how many mines have been closed and had their final rehabilitation completed is not readily available. In response to this request the DRE wrote:

> In regards to the number of mines that have been successfully signed-off, DRE does not have an existing database that [easily] collates this information together. Whilst this information would exist as part of DRE's records, work is underway to collate this information into a database to make this information more accessible.[11]

DRE noted that "very few mines have closed since the introduction of modern rehabilitation policies", although it indicated that progressive rehabilitation is expected even of mines in care and maintenance.[12] The only examples of closure provided were Glencore's New Wallsend Mine (closed and relinquished) and Yancoal's Tasman Underground Mine (closed, but rehabilitation still being monitored).[13]

New Wallsend was a small underground coal mine that closed in December 2002. The Tasman Underground Mine ceased production in the September Quarter of 2013, despite receiving approval to expand in March 2013. Yancoal annual reports also state that the site has been rehabilitated, but also:

> Development approvals were received in 2013 for the Tasman Extended project and the Abel Modification … Yancoal will consider the appropriate time and market conditions to commit to developments.[14]

This suggests that while the site has been rehabilitated to some extent, the company still has the option to develop an expansion and is not working to complete rehabilitation in order to relinquish the site.

A key point here is that while NSW has around 100 operating mines and 123 mines in 'suspended operations', DRE was only able to name one example of a mine site that has been fully rehabilitated and relinquished and one other that is potentially in the final stages of closure. There is no example of a major open cut mine being successfully

[11] Correspondence with the Division of Resources and Energy, June and September 2016.
[12] Correspondence with the Division of Resources and Energy, June and September 2016.
[13] Correspondence with the Division of Resources and Energy, June 2016.
[14] Yancoal (2013) *Yancoal Australia Ltd Annual Report 2013*, http://www.yancoal.com.au/content/Media/FINAL%2013314_Yancoal_AR13.pdf

rehabilitated in the state, yet the state's coal industry plans to leave behind at least 45 final voids that will never be filled.[15]

The NSW Minerals Council website states:

> The final stage in mining is mine closure and lease relinquishment, when mining equipment is decommissioned and removed and rehabilitation is completed. A mining lease is only relinquished when all legal obligations have been satisfied and the appropriate end land use has been achieved, in line with the rehabilitation plan laid out before mining begins.[16]

When contacted multiple times between April and May 2016 by The Australia Institute, the Minerals Council was unable to provide information on how many mines have achieved final closure in the last 5, 10 or 20 years, or provide an example of a major former mine area being relinquished.[17]

MINE ABANDONMENT

In 2011, the NSW Auditor-General found that there are "many thousands of hectares of degraded and contaminated lands", and that "that the few million dollars allocated annually to this program are substantially inadequate" to cover the liability.[18] The Auditor-General concludes that:

> the Derelict Mine Program may represent the largest category of contamination liability for the New South Wales Government.[19]

A further audit in 2014 by the NSW Auditor-General estimated that there were 112 derelict mine sites on Crown Land and:

> Amongst the 38 high risk sites, [Department of Industry] is aware that seven large scale derelict mines on Crown land are potentially high risk to the environment and public health, and may need to be notified to the EPA. These

[15] Walters (2016) *The Hole Truth: The mess coal companies plan to leave in NSW*, http://downloads.erinsights.com/reports/the_whole_truth_LR.pdf

[16] NSW Minerals Council (2016) *Rehabilitation and Mine Closure,* http://www.nswmining.com.au/environment/rehabilitation-mine-closure

[17] Correspondence with the NSW Minerals Council, May 2016.

[18] NSW Auditor-General (2011) *Auditor-General's Report: Financial Audit Volume 6*, p 13, http://www.audit.nsw.gov.au/publications/financial-audit-reports/2011

[19] NSW Auditor-General (2011) *Auditor-General's Report: Financial Audit Volume 6*, p 13, http://www.audit.nsw.gov.au/publications/financial-audit-reports/2011

are Conrad, Woodsreef, Captains Flat, Sunny Corner, Ottery, Cowarra Gold and SCA Cobar.[20]

This contrasts with a 2011 study identifying 410 abandoned mines across the state, although this may include sites not on Crown Land.[21]

While some of these mines were abandoned many years ago, others have operated into the 1980s and 1990s. For example, the Woodsreef asbestos mine mentioned above operated up to 1983.[22]

Derelict mines represent a serious and ongoing liability for the NSW community and there is a risk that many of the current mines in care and maintenance or otherwise "suspended operations" could also become the responsibility of the state. The final voids currently planned also represent a long term environmental and potential financial risk to the state.

BONDS

According to the DRE, all current mines, even if they are in care and maintenance, have "full 100% security coverage in the event they may default to the state".[23] DRE reports that as of July 2016 the NSW Government holds approximately $2.2 billion in security deposits to cover potential rehabilitation liabilities.[24]

This figure is small relative to some of the costs that might be involved in rehabilitation, depending on the standards of rehabilitation required. For example, it would not cover the costs of filling in the voids created by two coal mines – Mt Thorley-Warkworth and Maules Creek, which would cost $2.1 billion and $813 million respectively. Other mines would likely also cost hundreds of millions for the voids to be filled.[25]

[20] NSW Auditor-General (2014) *Report to Parliament: Managing contaminated sites,* p 24, http://www.audit.nsw.gov.au/news/managing-contaminated-sites

[21] Unger et al (2012) *Mapping and Prioritising Rehabilitation of Abandoned Mines in Australia*, p 262, https://www.researchgate.net/publication/236900961_Mapping_and_Prioritising_Rehabilitation_of_Abandoned_Mines_in_Australia

[22] Minerals Policy Institute (2016) *Woodsreef*, http://www.mininglegacies.org/mines/nsw/woodsreef/

[23] Correspondence with the DRE, September 2016.

[24] Correspondence with the DRE, September 2016.

[25] Proponent estimates compiled in Walters (2016) *The Hole Truth: The mess coal companies plan to leave in NSW*, http://downloads.erinsights.com/reports/the_whole_truth_LR.pdf

The DRE stresses that filling the void is not a requirement of the development consent of these mines,[26] but these figures serve to emphasise the immense potential costs involved with these mines relative to the size of the bonds that the state has collected.

[26] Correspondence with the DRE, September 2016.

Conclusion and recommendations

The stakes are high in Australia's mining clean up boom. The Australian public stands to incur billions of dollars in rehabilitation costs through either use of taxpayer funds or a degraded environment if rehabilitation is not well managed and regulated. This would represent a huge subsidy to the mining industry. The large number of historical and modern abandoned mines compared with the handful of fully rehabilitated sites shows that the mining industry does not have a good record at cleaning up after itself.

The last ten years have seen an increase in public attention paid to mining activity, with community groups and NGOs playing a key role in working with and monitoring the mining industry. Provision of better data on mines in each state, their status and history, would empower the community, the industry and the public service to ensure that sites are properly rehabilitated.

Appendix

Initial contact with state government departments was based around the following questions:

1. How many operational mines are in the State?
2. Can you provide a breakdown of what these mines are producing?

3. How many mines are currently in care and maintenance? Of these, how many went into care and maintenance in the last:
    (a) 5 years
    (b) 10 years
    (c) 20 years
    (d) 30 years

4. How many mines have closed and are undertaking final rehabilitation? How many began this process in the last:
    (a) 5 years
    (b) 10 years
    (c) 20 years
    (d) 30 years

5. How many mines have had rehabilitation completed and been relinquished back to the state or sold to third parties for other use? How many in the last:
    (a) 5 years
    (b) 10 years
    (c) 20 years
    (d) 30 years

6. How many mines have been abandoned without full rehabilitation? How many in the last:
    (a) 5 years
    (b) 10 years
    (c) 20 years
    (d) 30 years

7. How much is being held in rehabilitation/environmental bonds?
8. Can you provide an estimate of current rehabilitation liabilities in the state?