

Quarry



The geodesic biome domes at the Eden Project in Cornwall, UK. The project is at an old clay pit that was a working quarry for 160 years.

BRUCE HARVEY: QUARRY REPURPOSING AND REGENERATION

While there are international examples of quarries succeeding in their post-working lives, Australia has generally been behind the curve. Bruce Harvey explains how extractive companies, regulators and communities can collaborate on innovative post-closure uses for extractive sites.



Bruce Harvey discussed quarry regeneration at CMIC 18 in Sydney in September.

Bruce Harvey is the principal of a boutique consultancy resolution88, which specialises in social performance solutions for the extractive industry.

He is also an adjunct professor at the Sustainable Minerals Institute at the University of Queensland, and a guest lecturer at the University of Otago MBA School in New Zealand, teaching a paper called *Leading sustainable enterprises*.

Harvey has more than 40 years' worldwide experience in the mining industry. In his early career he was a geologist, which brought him into contact with land-connected Aboriginal peoples and he helped set up some of the mining industry's earliest native title agreements.

He has spent the past two decades at the forefront of developing social performance as a new professional discipline in the extractive industry. This includes seven years as the global practice leader for communities and social performance at Rio Tinto, where he developed the company's first generation of social

performance governance architecture and its implementation at 130 sites globally.

Harvey's presentation at CMIC 18 (and some of the topics he discusses in this interview) was loosely based on his paper *The eye of the beholder – Utility and beauty in mind closure*. This paper was originally presented at the Mine Closure 2016 conference held in Perth.¹

ADAPTIVE MANAGEMENT

What is the key message you are hoping to impart to the extractive industry?

I believe there is a very big policy mismatch in Australia compared to other countries in the way we approach mine closure. In a nutshell, we are obsessed with environmental remediation at the expense of economic repurposing. Admittedly, there are many mine sites that are far away from dense population centres, so no one can really imagine that they could be economically regenerated into something else. Perhaps this reflects a lack of imagination?

In densely populated countries like South



Korea and Japan, and also many in Europe, any large block of vacant mine land that's no longer being mined is actually very valuable as real estate. Something like 99 per cent of successful mine closures in the world have involved ongoing human and economic occupation of the former mine sites, but Australians just can't seem to clear the fog from their eyes to imagine this.

When I talk about ongoing human and economic occupation, I include the concept of well managed, revenue generating, conservation estate. There are really good examples in Indonesia and other places where such places pay for themselves because they become an effective private or government-funded conservation estate.

A lot of what's happening in Australia is that everyone – the regulators as much as mining people – seems to presume that the only option is to return a mine site to its pristine pre-mining state. Well that's fanciful and impossible, and we have to think about it differently. Miners have effectively reshaped the landscape and there are many purposes to which it could be turned

afterwards, but it's certainly not going to look how it did before.

Now, if you apply that thinking to quarrying, my key message to operators is to think of an old quarry as an asset. If you think of it as an asset, you turn the issue on its head and you can start thinking about what new purpose it could be put to. In fact, it's really exciting; there are former quarry sites throughout Australia that have been turned into incredible parkland, real estate developments and other imaginative purposes, precisely because they are in the midst of a relatively dense population conurbation.

I'm working with a couple of people around that very notion. There is incredible scope with sculpted landscape in an encroaching city environment and, if you don't look at closure as a threat or a liability, you can work with all stakeholders to convince them that it can become an incredible asset for the community for the future.

You've said global factors, not local issues, influence regulations around mine closure.

Can you elaborate further on the impact this has on extractive companies and also on locals within the vicinity of a site?

It's a bugbear of mine that large mining companies – and I believe it's the same in many industry sectors – are obsessed with so-called global issues. They are projecting these issues locally, that may have no relevance whatsoever in the local context.

If you were to do a properly formulated risk assessment and cost/benefit opportunity assessment, then in many particular contexts, issues of biodiversity, carbon emissions, gender or other forms of diversity, and the potential for human rights breaches won't come into it – and yet those are the things that drive many corporate teams in their thinking and the kind of programs they initiate and effectively force upon local people.

However, if you actually sit down with local people and asked them the question – “Well, what are the things that matter to you in your own community and in this context?” – in many instances they come up with a completely different set of priorities to work on.

Are mine closures treated too much as an environmental, not an economic, issue?

There is a great deal of debate going on around mine closure and a lot of the language that's being used is “rehabilitation” and “remediation”. That language to me suggests attempting to take something back to its original state, whereas I prefer the language of “regeneration”. Regeneration involves repurposing - what could it be regenerated as? There's no question that rehabilitation and remediation have an environmental tone, and of course it's vitally important that former mine and quarry sites



The former Kidston gold mine in northern Queensland is being converted into a 250MW pumped storage hydro project.

are made safe, stable and non-polluting before they can even be considered for other purposes. But that's as far as the thinking often goes – to make it safe and attempt to turn it into a facsimile of a natural landscape. The thinking isn't overly biased towards environmental thinking, but there isn't enough trajectory thinking – ie having made it safe, stable, and non-polluting, where do we take it now? There is not enough progression beyond environmental remediation through to economic regeneration.

You've said part of the problem with mine closures is a holistic, not an "adaptive management", approach. What is adaptive management? And why is the holistic approach favoured over it?

It's misplaced regulatory expectations, to be honest. When I say "holistic", what we really mean is long-run central planning. If you are opening a mine now to run for 20, 30 or 40 years – more than a human generation – and you are insisting that the operator locks in the final closure plan with all its detail 30 or 40 or 50 years out, that's ridiculous. That's not how we do things. How can we possibly imagine what the options are 30, 40 or 50 years out? That said, running a mine with a sense of how you want the final landform to appear is fine; that way you run the mine differently, quarries would be the same. You might cut the benches in a different schedule, you might dump waste rock in a different place and process it in a different way, you might do progressive rehabilitation.

However, when you have a look at the level of detail that new projects are being required to provide for the final closure transition, it's

absolutely nonsense. In fact, it's anti-science because that's not the way that science works. In science, as we go along, we adjust and experiment at the margins and try new things, and new technology and new ideas emerge. We set out multiple working hypotheses and we explore and we adapt what we are doing with what we are learning as we go. That's what I mean by an adaptive management approach. We work best when we work using adaptive management, not long-run central planning.

What do you consider to be a successful mine closure scenario?

Number one – and I keep coming back to it – is, of course, the site has to be safe, stable and non-toxic. Having achieved that, the ideal outcome is to operate the site as an ongoing economic asset that continues to generate employment and revenue. If you are close to population centres, you have a better chance of succeeding.

For instance, the Eden Project in Cornwall [in the UK] was once a clay quarry and is now one of the world's greatest botanical gardens – the result of remediation, rehabilitation and regeneration as constructed ecosystems. In fact, the Eden Project is the biggest enterprise and the largest single employer in Cornwall. It generates more money than it ever did as a quarry and it's a delightful cascade of alien ecosystems. It's a landscape that humans have engineered, and they've fashioned it and populated it with ideas and concepts from all over the world.

Now I love hanging gardens, waterfalls and rocks, but beyond that the possibilities are virtually endless. For instance, a quarry in an urban centre has the potential to be

transformed into an outdoor education/ adventure playground with incredible retail development opportunities. One can imagine rock climbing, zip lining, recreation paths, bike trails, a children's maze, abseiling, bungee jumping; the possibilities are phenomenal. I get excited just thinking about what could be done and how it could generate revenue in a sustainable way. While we can't use the term "in perpetuity", we can imagine how such a site would generate more money over a longer period of time than it ever did as a quarry. With a really imaginative approach and getting everybody on board, it can be turned into a long-term asset for everybody.

You've said there is great potential for this "global mine regeneration market", which has been successfully implemented in Japan and South Korea, to be exported abroad. Do you foresee such a market taking hold in Australia?

Absolutely, even more so for quarries, which are usually associated with denser population concentrations. The real estate is, for the most part, real property, not leasehold or government land, and so it's got real tradeable value.

Even in mining, if you use your imagination, you can regenerate even the remotest of mines. One project that really impresses me at the moment is the old Kidston gold mine in north Queensland that operated last century. It has two pits at different elevations, it's in the monsoon belt, it's on the electric grid, it's in a wind corridor and so the company Genex is essentially turning it into a buffer battery within the north Queensland grid.

Wind turbines are located on waste

dumps to capture the wind; the water from the bottom pit is pumped up in periods of high wind, or when they can buy off-peak electricity off the grid, and then during the day, at peak demand, when prices are high, the water will run back down through a turbine and put high margin power back into the grid. I mean, what an extraordinary, imaginative thing to do – to create a buffer battery that helps stabilise a regional electrical grid.

SOCIAL PERFORMANCE

What is “social performance”? Why should it be treated with the same importance as safety or environmental performance in an extractive operation?

“Social performance” is a term that is more likely to resonate with operators and mainstream employees than terms like “community relations” and “community investment”. Performance language is designed to capture the attention and enthusiasm of the whole operation, all the people in mainstream roles, not just the fringe dwellers in so-called liaison roles. Everyone in a mining operation works on a performance basis and they are judged everyday on their operational, safety, financial and environmental performance, so why wouldn’t it be the same with “social performance”? Our best operators think and achieve in terms of performance. We don’t have environmental or safety relations, so why should we have community relations? Of course, forming good relationships is a critical element of it, but my preference for the term “social performance” is to professionalise and elevate the activity to the same level of importance that the other functional divisions in a mine or quarry site have – and to emphasise it’s everyone’s accountability, not just the person designated as the liaison officer.

Does “social performance” encourage buy-in from managers and employees at quarries and mines? Should they be promoted as the “face” of the operation from the outset, given they are responsible for ensuring the operation has as minimal effect on the neighbouring community as possible?

The general manager of any operation has accountability for all of its aspects and most assuredly those that are strategic. For many mines and quarries, one of the most strategic threats or opportunities is their relationship with communities and regulators. Why wouldn’t general managers

understand that they have to spend the requisite amount of time working on that issue, and be the face of it? It could be 20 per cent – or as much as 40 per cent – of their time. If that’s the thing that most determines the success and future of an operation and its successful transition to closure, then that’s what the general manager should be spending a lot of their time on.

Should local people – ie born, raised and living in an adjoining community – be given preference in recruitment and skills training for an extractive project? And indeed fill the above management roles within the operation?

If you are working on land connected to Indigenous people’s domains, then that is most certainly important because they are the people with the intergenerational spiritual connection to that land.

In other places, being born and raised locally is not necessarily as vital a consideration, but certainly people who are living in the valley of the operation are the ones who are most likely to object to or support it – and it’s their support that is vital for the ongoing presence of that operation. If locals are not economically participating in the economy engendered by the operation, why would they be interested in supporting it?

You have to build support with those closest to you. When they are part of your support alliance, they can help lobby for regulatory and broader political support. If you can build local support and then nucleate to the next layer of the onion and so on to more distal groups, then all those people who are very distant and know nothing about what is happening locally, but would have an opinion, can go and whistle in the dark.

You’ve said that extractive companies should declare their self-interest in public engagement, which will actually garner greater public acceptance and respect. What are the pros and cons of this approach?

No one is going to trust you if you try to pretend that you are doing something that is not in your own self-interest. Earning trust is the most vital thing that mining and quarrying operators have to do, and trust has to be based on truth. The CSIRO team led by Dr Kieren Moffat² has done some very interesting work on community consultation and found that earning trust boils down to

three factors: 1) people need a sense that there is distributional fairness; 2) that there is procedural fairness; and 3) there is some reasonable quality relationship.

Now, funnily enough, when you actually ask the questions properly and analyse statistically, the first two are far more important than the third. People are less interested in a cozy relationship. They are more interested in distributional fairness, ie a fair distribution of impacts, risks and benefits to all those that are involved. They are also interested in procedural fairness – they may not be 100 per cent happy with what comes their way, but if they have been deeply involved in the process, they are more likely to accept it. Being open and transparent and debating through the issues is what earns you trust.

Are you optimistic that in a generation or two, extractive companies and regulators will be more open-minded about the adaptive management approach to mine closure?

I’m a “glass half-full” person. It just comes down to entrepreneurship. Australia has a great history of entrepreneurship, so I’m sure that we will eventually come up with imaginative options for securing the money that’s needed for regenerating many legacy mine and quarry sites as on-going enterprises. •

Bruce Harvey presented on quarry regeneration at CMIC 18 in Sydney on 21 September, 2018.

REFERENCES & RECOMMENDED READING

1. Harvey BE. *The eye of the beholder – utility and beauty in mine closure*. In: Fourie AB, Tibbett M (eds). *Mine Closure 2016: Proceedings of the 11th International Conference on Mine Closure*. 15-17 March, 2016. Australian Centre for Geomechanics, Perth, 2016. ISBN: 978-0-9924810-4-9. <https://acg.uwa.edu.au/shop/mc2016/>
2. Moffat K, Pert P, McCrea R, Boughen N, Rodriguez M, Lacey J. *Australian attitudes towards mining: Citizen survey – 2017 results*. CSIRO, Australia, 2017. EP178434. [csiro.au/attitudestomining](https://www.csiro.au/attitudestomining)