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A Brief History of Mine Rehabilitation Reforms in Queensland
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Abstract

The period 2017 to present has seen the most significant reforms to mine rehabilitation policy in Queensland's history. This has followed 30 years of incremental change, since a former gold mine in suburban Brisbane, overlain by residential subdivision, began oozing wastes to the surface in 1986. Despite the incremental and sporadic reforms from the late 1980s to 2016, the percentage of the land disturbed by mining that has been rehabilitated progressively has fallen. Currently in Queensland, mining companies are required to rehabilitate land disturbed by mining to a safe, stable, non-polluting condition, able to sustain a post-mining land use, and to undertake this rehabilitation progressively, through the life of mine. This has not always been a requirement articulated so explicitly in Queensland legislation. The objective of this article is to explore the significant events and the legislative and policy landscape that have led to the rehabilitation framework that now exists, to provide context for the suite of reforms introduced, and to discuss the ongoing policy reforms designed to achieve more and better mine rehabilitation in Queensland.

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Introduction

Queensland's resources industry is a mainstay of the Queensland economy. According to its industry peak body, the industry contributed AU$84.3 billion to the Queensland economy in fiscal year 2021, contributing $1 in every $5 of the economy and one in six jobs. [1] Importantly, the resources industry provides economic opportunity in regional areas, as well as metropolitan support roles.

The Queensland Resources Council (QRC) website states that less than 0.1% of the State's land surface is directly impacted by the industry. The actual disturbed area, while constantly changing, was estimated in 2021 at 216,000 ha or 2,160 km^2. [2] However, while the percentage is comparatively small, the total area dedicated to mining remains a significant area of disturbance, with potential for offsite impacts if not suitably rehabilitated. If extractive industries are to be considered temporary land uses, [3] then the beneficial use of post-mining land in perpetuity becomes a socio-economic and environmental imperative.

Currently in Queensland mining companies are required to rehabilitate land disturbed by mining to a safe, stable, non-polluting condition, able to sustain a post-mining land use, and to undertake this rehabilitation progressively, through the life of mine.

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65

Early Reforms – 1990s – Mine Rehabilitation Becomes a Public Issue

Concern regarding the effective rehabilitation of mining impacts has been a longstanding issue within society. It can be argued that the "modern" era of the Queensland Government's focus on the industry commenced when contamination from the Mt Taylor Park gold mine became apparent. Mt Taylor Park operated in the Brisbane suburb of Kingston from around 1915 until its abandonment in 1955.[4] Tailings disposal areas and other contaminated areas at Mt Taylor Park were backfilled with mining, municipal and other wastes, and capped. Subdivisions were created in the 1960s with residential lots constructed[5] and residential subdivision continued to be approved into the 1980s. As capping materials eroded and wastes mobilised beneath the site, residents began to experience those wastes making their way to the surface.

Local print media[6] outlined the timeline of events in the vicinity of the former gold mine as follows:

> **September 1986:** Complaint by Diamond St resident made to Logan City Council about sludge material on property
>
> **April 1987:** Caustic substance that burns skin and clothing is reported to be seeping into Diamond St properties. Test drilling begins
>
> **May 1987:** … Toxic waste is found to be more widespread than first thought…
>
> **July 1990:** Removal and demolition of houses in Mt Taylor area begins…
>
> **September 1991:** Capping, sealing and landscaping completed. Mt Taylor Environmental Park opened.

The Kingston (Mt Taylor Park gold mine) case was cited as a catalyst for the Contaminated Land Bill 1991 (Qld).[7] The administration of the legislation fell to the then Chemical Hazards and Emergency Management Unit. A "superfund" style[8] cost recovery model using a pool of funds was also mooted[9] but rejected in favour of a "reasonable compromise" on cost-sharing by State and local government where the polluter could not be found. Despite the fact that a former mining operation was a part contributor to the original premise of the legislation, land "already controlled by the *Radioactive Substances Act 1958*, the *Minerals Resources Act 1989*, and the *Petroleum Act 1923*"[10] was exempt. Commentary at the time highlighted that land subject to these exemptions had "the greatest possibility of contamination and therefore, the greatest need for control".[11] Nevertheless, the potential for deleterious impacts from improper rehabilitation of mines had been brought into the mainstream of public debate.

A process to consolidate disparate environmental management legislation commenced in September 1991 with the distribution of 10,000 information packs including a Public Consultation Paper on the development of an *Environmental Protection Act*.[12] The draft Bill proposed to supersede elements of the *Clean Air Act 1963* (Qld), *Clean Waters Act 1971* (Qld), *Noise Abatement Act 1978* (Qld), *Litter Act 1971* (Qld)

66

, *Fig Tree Pocket Noise Emission Act 1984* (Qld) and the *State Environment Act 1988* (Qld). The new Act would include provisions for the imposition of financial assurances [13] which had been a requirement under the Department of Minerals and Energy's (DME) policy *Environmental Management for Mining in Queensland* (1992). The Explanatory Notes accompanying the Bill advised:

> At times where untried technologies are being used, or the risk of environmental harm is high, it is appropriate that the person undertaking the risky activity puts up a financial assurance. This financial assurance can then be called upon if environmental harm occurs and the person is no longer in a position to rehabilitate the environment. [14]

The *Environmental Protection Act 1994* (Qld) gained assent on 1 December 1994. The Act did not specify which environmentally relevant activities would be subject to financial assurances, but administratively, only mining, landfill and some quarrying/extractive activities had assurances imposed as a rule. The administration of the Act was the responsibility of the Department of Environment and Heritage, with certain environmentally relevant activities devolved to other entities. Activities pertaining to the mining industry were devolved to DME. [15]

Elsewhere in government, as the Environmental Protection legislation was being developed, the Honourable RH Matthews QC was engaged by the Criminal Justice Commission (CJC) on 9 September 1993 to investigate allegations of improper disposal of liquid waste in South-East Queensland. [16] While the investigation was focused on a particular waste management company, a submission by Mr Drew Hutton (Greens spokesperson) sought to expand the terms of reference to take evidence from the mining industry. Remarkably, the investigation accepted a limited expansion of its remit, and produced a separate volume (Volume 1) in July 1994 pertaining exclusively to evidence submitted regarding the mining industry. On 21 January 1994, the Director-General of the DME was summonsed to give evidence.

At the time of the CJC investigation, DME administered environmental issues via obligations within the *Mineral Resources Act 1989* (Qld) and policy documents within the department. DME's policy, *Environmental Management for Mining in Queensland* was introduced in 1992 to provide greater guidance as to the expectations regarding rehabilitation that had hitherto been guided by the legislation stating the rehabilitation be completed "to the satisfaction of the Minister". [17] The DME's policy remained in place until 1 January 2001.

Most of the regime was informed by policy and not "black letter" legislation. [18] Larger mines were required to produce an Environmental Overview Strategy (EMOS), a document prepared for the life of mine. The so-called EMOS was accompanied by a Plan of Operations (up to a maximum of five years' duration). Consistency between the planned operations of the mine and the life-of-mine EMOS was to be assured via an audit program conducted by the miner or their consultant. [19] Regarding the EMOS, RH Matthews concluded:

> although the DME argues that the statutory right to require special conditions for mining leases is sufficient justification for requiring an EMOS of the miner, there is no legislative foundation for this and I think this should be remedied as soon as possible. [20]

67

Testimony also raised concerns that the contingent liability of disturbed land yet to be rehabilitated was growing, that the financial assurances held were inadequate, and that the legacy from abandoned mines was a growing cost risk for government. The quantum of the "resultant legacy" for the State alleged by one DME officer, J Leggate, was not supported by evidence and

was refuted by Michael Pinnock, Chief Executive of the Queensland Mining Council, who was cited as stating the liability "of the 3500 mines [in Queensland] is $800 million, a cost borne by the mining companies over the life of their operations". [21]

Evidence given by departmental officers suggested that compliance regimes within the DME were inadequate. Given only three departmental witnesses provided testimony in addition to Mr Hutton, it remains a relatively anecdotal report, with mostly subjective assertions. Nevertheless, the testimony suggested that a range of (then) operational and abandoned sites had inadequate environmental management and rehabilitation practices, that the costs of rehabilitation were growing and may not necessarily be adequately accounted for, and that DME was conflicted in its roles; testimony that led RH Matthews QC to opine that tension between the industry promotion role of DME and its environmental regulatory role, was indeed a "dilemma". One remedy he suggested to relieve this dilemma was the establishment of an independent "Environmental Authority".

The Matthews report was released in July 1994, around eight months after the release of the draft Environmental Protection Bill, and five months before the *Environmental Protection Act* was assented to. Curiously, there is no mention in the Matthews report of the new environmental management regime that was being promulgated at the same time. This likely reflects the narrow scope of the original investigation, and that while the departure to hear mining-related testimony was possibly more a distraction for RH Matthews QC, it also highlights that the environmental regulation of the mining industry circa 1994 was administratively isolated from the developing reforms elsewhere in government.

In the wake of the Matthews investigation, the Government introduced amendments to the *Mineral Resources Act*, which in part, strengthened the environmental controls in place for the mining industry. In his second reading speech, Minister the Hon T McGrady suggested the amendments would deliver "environmental best practice" [22] for the Queensland mining industry. However, pressure continued to mount to address the "dilemma" RH Matthews QC described – that the department promoting the industry could not also be its environmental regulator.

On 5 December 1997, the *Environmental and Other Legislation Act 1997* (Qld) consolidated the *Contaminated Land Act 1991* (Qld) into the *Environmental Protection Act*. While these amendments were driven more by economic issues (eg, claims that the "stigma of contamination on low risk sites" was seriously impacting on the value of property), [23] parliamentarians were again reminded that the impetus for the creation of contaminated land statutes arose from the Kingston [Mt Taylor Park] gold mine case. [24]

The Department of Environment and Heritage was replaced by the Environmental Protection Agency (EPA), incorporating the Queensland Parks and Wildlife Service on 11 December 1998. Government decided that the mines department should no longer administer environmental regulation of the mining industry, and a new chapter began as government separated the promoter of the industry from the environmental regulator of the industry.

The Next Chapter – 2000 to 2016 – Separation of the Environmental Regulator from the Industry Promoter

Responsibilities for environmental regulation of the mining industry were transferred to the EPA via the *Environmental Protection and Other Legislation Amendment Act 2000* (Qld), commencing 1 January

68

2001. The new Act also strengthened provisions regarding mine rehabilitation. In his second reading speech, the Hon RJ Welford reinforced rehabilitation requirements at surrender:

> A surrender application must include a final rehabilitation report describing the extent to which the land has been rehabilitated and an audit statement verifying the accuracy of the report. The EPA will ensure the people of Queensland

> are not left with the liability of repairing environmental damage after a mining project finishes, as has occurred in the past. [25]

Commentary on the machinery of government changes questioned whether the move would make tangible difference. Importantly, it was noted the "the most significant change … is in the personality of the regulator". [26] Finally, at the least, a solution to RH Matthews QC's "dilemma" had been reached – the promoter of the industry was no longer in charge of its environmental regulation.

Following the transfer of roles, the Queensland Government established a Mining Legislative Review Committee to assess the performance of the reforms after 18 months' operation. [27] The Queensland Mining Council (QMC) expressed concerns about the implementation of the new legislation and some limitations with the regime. In particular, QMC expressed concern that the legislation did not provide sufficient certainty that progressive rehabilitation that met the standards of the time, would be accepted into the future, as standards, technologies and community mores changed. [28] The discussion paper also cited the following concerns:

- there is no mechanism to certify that the standards were met;
- legislation or policy that sets rehabilitation requirements could change;
- stakeholder expectations may change;
- monitoring or research may result in changes to rehabilitation requirements;
- different interpretation of the rehabilitation requirements may occur …;
- new measurement techniques may be developed or used. [29]

The EPA itself also raised a major concern of its own – that the financial assurance system created unfunded liability for the State. The EPA identified that:

> the FA held is commonly less than half the full cost [of rehabilitation] for several reasons [30] including;
> - the rehabilitation requirements have changed with time;
> - some costs were underestimated or unknown;
> - inflation; and
> - the discount system … that is available at some sites. [31]

69

The Financial Assurance Discount System

The requirement for large mines to carry a financial assurance by way of a bank guarantee or cash predates the *Environmental Protection Act*. The then DME's guideline *Environmental Management for Mining in Queensland* (1992) introduced a discount system of between 10% and 75%, based on historic performance criteria. [32] A table showing the performance criteria applicable to attract a zero, 10%, 35%, 60% or 75% discount is shown in Appendix B, Table 2 of the EPA's 2003 guideline. [33]

The original intent of the discount system was to incentivise mines to undertake progressive rehabilitation, and thereby reduce the quantum of their financial assurance. Perversely, the discount system alleviated the cost of holding a bank guarantee, and the annual bank fee for this surety was, by comparison to the cost of rehabilitation, a small price to pay. The matter of the total industry surety held against the liability of a default against rehabilitation obligations was a complex issue in 1992, in 2004 and remains so today.

The growth in the quantum of estimated liability – anecdotally $800–$1,000 million in 1994, [34] $2,000 million in 2004, [35] $8.7 billion in 2017, [36] $10.882 billion in 2021 [37] – reflects a complex combination of inter alia, inflation, cost of rehabilitation, growth in the resources sector and an increase in the area of disturbance yet to be rehabilitated.

History shows that the actual risk of a default against the total liability is infinitesimal – a relatively small proportion of mines have historically defaulted against their obligations. As such the overall industry risk is very low compared to the total liability of outstanding rehabilitation. However, at the individual operator level, that risk varies widely. Finding a mechanism to return value to the industry overall (given the economically inefficient balance sheet burden of total liability being held in some form of surety) and still identify the risk posed by individual mines or companies, would be the key to substantial and enduring reform that benefited both the resources industry overall, as well as the community at large. That reform came with the establishment of the Financial Provisioning scheme, described below.

As such, the 2004 Discussion Paper introduced the limitations of the financial assurance system as it existed, highlighted the lack of clarity for industry regarding certification of rehabilitation, and introduced the matter of how much financial assurance should be refunded at the end of mine life (this is now known as the residual risk payment, rather than a withholding of surety fund). The desire to stimulate greater levels of progressive rehabilitation was a clear objective of the EPA's work in 2004.

The apparent failure of the financial assurance system to drive progressive rehabilitation was a sufficiently important issue for a separate consultative committee to be established. [38] After months of negotiations between the State and the Queensland Resources Council (QRC – replaced the QMC in November 2003), no model that abolished the discount system and provided the industry with an equitable benefit could be reached, thus the status quo remained for a decade.

The *Environmental Regulation of the Resources and Waste Industries* report was published by the Queensland Audit Office in 2013. [39] The report was critical of the administration of environmental liabilities accruing in the resources industry despite its importance to the Queensland economy. The report cites the industry as contributing:

> over two thirds of all investment decisions in the state and employment in this sector has increased … over the past decade. This growth comes with the increased risk of environmental harm .... [40]

70

The report refers to:

> an estimated 15 000 abandoned mines and up to $1 billion estimated cost [41] if all mines were to be rehabilitated. [42]

While the large number of "abandoned mines" has now been rationalised by removing the thousands of mine features included in this early estimate (the Department of Resources (2021) [43] estimated approximately 120 abandoned mines), the report reflects growing concern at the time regarding effective rehabilitation of mines. The report stated: "This legacy issue has been known for years without being addressed." [44]

It was clear that many of the issues raised in 2004 by the then EPA regarding mine rehabilitation remained a decade later. The financial assurance system remained largely as it had since 1992, albeit the discounts available had reduced to a maximum of 30%, progressive rehabilitation had continued, but the industry concerns regarding clarity of final rehabilitation criteria, and challenges of progressive and final certification of rehabilitation continued to plague industry, regulator and other stakeholders.

The issue re-emerged as stakeholders pushed for greater reforms and the then Labor Opposition took a renewed commitment to mine rehabilitation reform to the 2015 election.

The Most Recent Round of Reforms – 2015 to Present – Closing the Gap between Disturbance and Rehabilitation

The Labor Opposition had gone to the January 2015 election with a commitment to "investigate the expansion of upfront rehabilitation bonds for resource companies to fully fund long-term rehabilitation activities". [45] While the June 2016 progress report cited this commitment as "completed", a significant body of policy reform has continued after the initial investigation. In the meantime, five mining and industrial collapses were the catalyst for new legislation targeting those who "walked away" from their responsibilities. [46]

Then Minister for Environment and Heritage Protection and Minister for National Parks and Great Barrier Reef, Steven Miles, cited the cases of companies defaulting on their responsibilities when he introduced the Environmental Protection (Chain of Responsibility) Amendment Bill 2016 (Qld). [47] He specifically named the Texas Silver mine, Collingwood Tin mine and Mt Chalmers gold mine. These three mines had all been disclaimed and abandoned to the State and all retained some financial assurance, albeit inadequate for the quantum of the rehabilitation task. The failed Linc Energy underground coal gasification project at Hopelands, near Chinchilla, was also widely cited as a catalyst for policy reform. [48] The Minister reserved special attention for Queensland Nickel Limited's Yabulu nickel refinery at Townsville. Manufacturing facilities had not historically been required to hold financial assurance and as such no bond was held for rehabilitation at the refinery. The following extract from Hansard summarises

71

the concerns of government at the time, and the mixture of mining and industrial examples used at the introduction of the Bill.

> Over the past 12 months it has become clear that Queensland's current laws do not adequately ensure that major industrial or mining sites will always take a responsible approach to fulfilling their environmental obligations. This is particularly the case when operated by companies in financial difficulty. This problem is widespread. It has emerged at the Texas silver mine …; we have seen it at the Collingwood tin mine and at the Mount Chalmers gold mine – and these are just the recent examples. At these places Queensland has seen businesses closing their doors without completing the work required to rehabilitate and stabilise their site of operations and without leaving adequate funds available to allow this work to occur. Right now Queensland is facing down the unacceptable prospect of the taxpayer being left to clean up the bill after the owner of the Yabulu nickel refinery. [49]

An Inter-departmental Committee (IDC) of Financial Assurance, chaired by the Under-Treasurer, including Directors-General from central agencies, resources and environment departments, was established in 2016. Its Terms of Reference precipitated a wide-ranging investigation into Queensland's financial assurance system, and the attendant issues emerging regarding mine rehabilitation and risks for the State.

Queensland Treasury Corporation published its *Review of Queensland's Financial Assurance Framework* in April 2017. [50] By 2017, QTC quoted that the industry included "220,000 hectares of disturbance, with an estimated rehabilitation cost of $8.7 billion". The review highlighted several key limitations of the status quo including shortfalls in funded liability via the financial assurance held for any given project; the use of a discount system based on a relatively informal set of risk criteria, incorrect rehabilitation cost estimation as markets fluctuated for capital and labour, changes in the amount of rehabilitation liability accrued by miners between reporting periods, and the high cost of sureties for small and mid-sized operators.

Under this arrangement, the industry carried a collective balance sheet liability of $8.7 billion while the State was potentially exposed to shortfalls in rehabilitation funding on any given site. In reality, the actual risk of default against rehabilitation liabilities was, of course, significantly less than the total $8.7 billion held. Exactly how much actual risk of default existed across the industry was moot, but short of a catastrophic failure of the industry, the actual risk was a fraction of the total surety held. As such, the system drove economically inefficient outcomes without adequately managing the exposure of the State to the risk.

Part of the rationale for the discount system was to "reward" operators that undertook progressive rehabilitation, yet the actual performance on the ground did not support this hypothesis. In 2017, QTC cited 18,000 ha of the total disturbed area of 220,000 ha (8%) was classified by the industry as progressively rehabilitated and 0.25% certified as rehabilitated. Caution must be exercised in inferring that a large proportion of disturbed areas are "available" for rehabilitation, and the proportion of area able to be rehabilitated varies between mine types. For example, a large open cut highwall coal mining operation will have more opportunity for progressive rehabilitation than a deep open cut or underground metalliferous mine excavating from a relatively static point in the landscape. Certification of rehabilitation also presents challenges.

The review flagged the need for policy reform in progressive rehabilitation, stricter focus on operations in care and maintenance and greater controls on sale/change of ownership processes. Finally, QTC posited two options – an enhanced status quo (removing discounts) or its preferred option to create a risk-based "tailored solution" that introduced a combination of existing financial instruments and a pooled fund model for the sites deemed lowest risk. [51]

72

The Queensland Government, guided by the work of the IDC, embarked on a comprehensive raft of reform processes. [52]

The Financial Assurance Framework Reform [53] and Better Mine Rehabilitation for Queensland [54] discussion papers were released for consultation on 4 May 2017, closing 15 June 2017. Consultation reports for both were released later in 2017. [55]

Reform of the State's financial assurance framework was the primary motivation for the QTC work in 2016/2017. However, in the course of their work, QTC discovered that a much wider range of reforms was required to give full effect to the objectives of more and better mine rehabilitation. The logic of their recommendations stemmed from the premise that the use of financial assurance funds to rehabilitate mines was a "measure of last resort, after considering all other options". [56] As such, "all other options" needed to be interrogated and reformed where appropriate.

The centrepiece of the financial assurance framework reform was the "tailored solution". This solution allocated a risk profile to each mining operation. The lowest risk operations were to participate in a pooled rehabilitation fund and payments to the fund would replace bank guarantees, or other financial instruments historically used. The balance of operators (deemed high risk) would continue to access instruments in the financial market. The proposals put forward prompted vigorous debate from a wide range of stakeholders. Submissions were received from 477 stakeholders (423 standard pro forma responses, and 54 individual responses). [57] The consultation report ran to 35 pages in contrast to the original discussion paper's 19 pages. The changes to the final model adopted by the Government are outlined in following sections.

A Pooled Rehabilitation Fund – The "Moral Hazard" One of the most contentious elements of the financial reform package was the establishment of a pooled Rehabilitation Fund. Those against the reforms argued that operators considered to be low risk were to contribute to a fund that may be called upon to service the liabilities	Queensland Treasury refuted the claims, advising that nothing in the design of the scheme alleviated the obligations of each miner to fulfil their obligations under the *Environmental Protection Act*. Consultation continued, attempting to resolve the concerns of the industry. The matter of the charge rates was debated

incurred by higher risk operators who may have either not undertaken sufficient rehabilitation or had disclaimed operations altogether. As such, some operators felt they were being held financially accountable for poor operators in the industry. In addition, the proposal to use income derived from the fund to expand the Abandoned Mines Program was again seen as good operators of today being financially penalised for the "sins of the past".

During the Economics and Governance Committee hearings into the Mineral and Energy Resources (Financial Provisioning) Bill 2018 (Qld), BHP opined that a pooled fund:

> may make certain operators less motivated to pursue high-standard environmental and rehabilitation outcomes due to the assumption that the associated costs will be absorbed by the fund in certain circumstances … Queensland's mine operators are essentially being asked to pay for rehabilitation twice: once for their own operations and again for the entities which draw upon the fund. [58]

73

to seek a compromise solution that would balance the need to build a "war chest" of resources, while not incurring costs greatly above those being charged in the financial markets, nor expose the Fund to the risk from any single operator. Many of the larger companies accessed bank guarantees at very competitive rates – the service often being provided as an additional service by banks to valued customers, rather than an independently commercial activity.

The Financial Provisioning Fund is now established with the following rates:

• very low 0.5%

• low 1.0%

• moderate 2.75%

The Scheme Manager, the operator of the Financial Provisioning Scheme Fund, advises that caution must be exercised in any inference of contribution rates and credit ratings being necessarily related. He advises that companies with credit ratings can be assessed at either Very Low, Low or Moderate as can companies without a credit rating. It is simply the fact that credit rated companies, by nature, tend to be larger, and as an average, at lower probability of default than smaller companies which, with less scale, less diversity, higher exposure to single commodity/operations etc, are inherently higher risk. [59]

For the largest operators, with access to remarkably low costs for bank guarantees, the Fund was seen as introducing new costs (although it also provided balance sheet relief as the contingent liability of the guarantee need no longer be carried by the operator; the State effectively "standing in the shoes" of the financial institutions which previously provided the guarantee). A compromise was reached that exposure to the fund would be limited to a maximum of 5% of the total industry liability for any given operator. At the commencement of the Scheme, this equated to a $450 million cap, with operators able to choose which projects would be exposed to the fund, and which (above the $450 million cap) would remain exposed to financial instruments in the market (eg, if company A had a total calculated rehabilitation liability of $1,000 million, the first $450 million would be payable via a contribution to the Rehabilitation Fund at the company's contribution rate, while the $550 million remainder would be covered by some form of financial guarantee).

The Financial Assurance Framework Reform discussion paper introduced "a number of important and interrelated reforms … which would have positive environmental outcomes, improve rates of site rehabilitation and ultimately reduce the amount of rehabilitation required at the end of a resource operation's life". [60] In addition to the proposed tailored solution, the paper introduced the following reform work packages:

- **Improving rehabilitation in Queensland** (released as "Better Mine Rehabilitation for Queensland" discussion paper [61]).

- **Expanded range of surety providers** (released as "Financial Assurance Review – Providing Surety" discussion paper [62]).
- **Expansion of the Abandoned Mine Lands Program** (released as "Achieving Improved Rehabilitation for Queensland: Addressing the State's Abandoned Mines Legacy" discussion paper [63]).
- **Improved management of sites in care and maintenance** (released in "Achieving Improved Rehabilitation for Queensland: Other Associated Risks and Proposed Solutions" discussion paper [64]).

74

- **Other reforms** (released in "Achieving Improved Rehabilitation for Queensland: Other Associated Risks and Proposed Solutions" discussion paper [65]).

The Better Mine Rehabilitation for Queensland discussion paper proposed a new policy statement for mine-site rehabilitation in Queensland, citing eight policy principles to achieve this objective. Importantly, the discussion paper introduced six "delivery elements" as follows:

- introducing life-of-mine plans for site-specific mines (those mines that are too large or complex to warrant a standard environmental authority)
- regular monitoring, assessment and reporting
- clear completion and signoff requirements
- performance-based incentives
- good quality data for policy and regulatory implementation. [66]

The paper cited that the area of land disturbed was three times greater than that rehabilitated in 2006 (ie ~30% of disturbed land was rehabilitated) and had reduced to only 9% of disturbed land rehabilitated in 2017. It projected that, by 2021, the area of land disturbed would be 12 times greater than that rehabilitated (or ~8%). [67]

QTC's work on financial assurance reforms included a suite of recommendations for additional reforms that it considered necessary to more fully achieve the objectives of more and better progressive rehabilitation and end-of-mine-life closure planning. While many of the proposed reforms strengthened already existing requirements included in environmental authorities (eg, rehabilitation objectives, planning included in Plans of Operations, audits), one major reform proposal was the introduction of statutory "life of mine plans" (later identified as Progressive Rehabilitation and Closure (PRC) plans). These plans would replace the Plans of Operations over time. This reform was considered to bring Queensland into line with "other Australian jurisdictions and best practice, while ensuring mining companies' accountability for carrying out progressive rehabilitation". [68] A jurisdictional analysis highlighted practices across Australian and international jurisdictions.

The paper also articulated expectations for progressive rehabilitation. Importantly, the challenges for progressive rehabilitation of open cut base and precious metals mines (where little land becomes "available for rehabilitation" during mine life) were identified. As such, a distinction is made between the opportunities for progressive rehabilitation of strip-mining operations (such as open-cut coal, bauxite, mineral and silica sands and phosphate) as opposed to deep open cut or underground metalliferous mining techniques.

The surety discussion paper [69] and consultation report [70] canvassed a range of alternatives to the traditional bank guarantee and cash securities. New financial instruments are now accepted by the Scheme Manager subject to certain preconditions.

Two more discussion papers were released, canvassing a range of policy issues identified by Queensland Treasury Corporation; abandoned mines, [71] other associated risk and proposed solutions, [72] and a combined consultation report. [73] The objective for

the abandoned mines program was to improve the outcomes on abandoned mines to deliver "safe, durable, secure and, where possible, productive" sites. [74]

75

The proposed reforms sought to reduce the difficulties of access for securing the sites, and to allow third parties to explore repurposing options. For example, access to sites for activities other than mining face challenges in navigating mining tenure and safety requirements. In addition, managing the liability for existing contamination and rehabilitation also presents challenges, particularly when the repurposing may include environmental impacts of its own. Reforms were proposed to be introduced progressively. An early initiative has been the call for market soundings for re-commercialisation of three abandoned mines in north Queensland. [75]

"Associated risks" were canvassed in the 16 July 2018 discussion paper on mine rehabilitation in Queensland. [76] Mines entering care and maintenance were identified as a particular risk. The paper cites, that of 170 medium, large and giant mines, 27 had entered care and maintenance (as at September 2017). [77]

While care and maintenance remains a legitimate part of an industry subject to volatility in a range of factors, greater transparency was called for, to ensure the status of these operations could be effectively monitored. Changes to ownership and the capability of new operators, and strategies to better protect the State's interests when mines were disclaimed (under Federal corporations law) were identified as risks to more and better mine rehabilitation.

Mineral and Energy Resources (Financial Provisioning) Act 2018 and Consequential Amendments to Other Legislation

The first tranche of legislative reform to be introduced as part of the financial assurance reform program was the Mineral and Energy Resources (Financial Provisioning) Bill 2018. In her second reading speech, [78] the Hon J Trad outlined the elements of the reforms included in the Bill and consequential amendments to the *Environmental Protection Act*, and several other Acts. The Bill established the financial provisioning scheme, the roles of Scheme Manager and advisory committee (to guide investments from income derived from the fund). The final design consisted of two parts: the pooled fund for low-risk projects and sureties for higher risk or smaller operators. Acceptable sureties were expanded to include new financial instruments including insurance bonds (subject to meeting certain criteria).

Accompanying amendments to the *Environmental Protection Act* introduced a requirement for PRC plans for all large mine sites, and a transition schedule for those eligible mines to prepare and have approved, their PRC plans. New mines that proposed to leave non-use management areas [79] (NUMAs) behind at end of mine life were required to undertake a Public Interest Evaluation.

The Deputy Premier also indicated ongoing reform works including the proposal to appoint a mine rehabilitation commissioner and reforms concerning abandoned mines. The Department of Environment and Science's Estimated Rehabilitation Cost (ERC) calculator would be updated to reflect contemporary schedules of rates, after the 2014 and 2017 revisions [80] (the ERC calculator is used to estimate the rehabilitation costs during a period specified originally in a Plan of Operations, to be gradually replaced by PRC plans as they are submitted and approved for each mine). The Hon AJ Lynham, Minister for Natural Resources, Mines and Energy [81] advised Parliament during debate that additional discussion papers regarding abandoned mines and other risks were released, signalling ongoing reforms. The Act and scheme came into force on 1 April 2019. The longstanding financial assurance system including

76

the discount arrangements, had finally been replaced after more than two decades of implementation, including several unsuccessful reform attempts (during the 14 November 2018 debate, Mr S O'Connor, MLA recounted feedback to the Committee from the QRC that "for about 15 years we have been fiddling around with the financial assurance system"). [82]

The *Environmental Protection (Rehabilitation Reform) Amendment Regulation 2019* (Qld) gave effect to the amendments of the *Environmental Protection Act*, included in the *Mineral and Energy Resources (Financial Provisioning) Act 2018* (Qld) (*MERFP Act 2018*). [83] The PRC planning regime commenced on Friday 1 November 2019, and guidelines were released on 4 November 2019. [84] McCullough Robertson outlined some key aspects of the new legislation and its implementation. Apart from requiring PRC plans, the Regulation outlined transitional arrangements, included a definition of a "qualified entity" to undertake Public Interest Evaluations for any proposed NUMAs, and a definition of floodplain (see "Voids in Floodplains" below). The Department of Environment and Science was given three years from 1 November 2019 to transition existing projects into the PRC planning regime. Effectively this requires the Department of Environment and Science to have issued all its transition notices by that date. As of 1 January 2022, an estimated 211 individual sites are subject to the provisions to provide a PRC plan.

Voids in Floodplains

Many mines in Queensland are authorised to leave open voids at the end of mine life. Large voids have the potential to impact on fluvial hydrology by interfering with flood flows and intercepting flows and can potentially contribute contaminants to groundwater or surface water. Mine void water quality can be affected by various factors including quality and rate of groundwater ingress, materials chemistry within the void and evaporation rates. [85] As such, the suite of mine rehabilitation reforms commenced in 2016 in Queensland included renewed focus on best practice in rehabilitation of final voids at end of mine life.

A Floodplain Technical Advisory Group was established in November 2018, and debate ensued regarding an agreed definition of a "floodplain" and the circumstances under which altered landforms interacted with the historical floodplain hydrology, the landscape reshaped by the mine itself and the actions of third parties in other parts of the floodplain.

The *MERFP Act 2018* prohibited final voids that did not have a sustainable post-mining land use – so-called "non-use management areas" or NUMAs. The floodplain was defined based on the 0.1% Annual Exceedance Probability (AEP) including the opportunity for modelling for post-closure purposes in accordance with the Australian Rainfall and Runoff Guideline, or equivalent. The *Environmental Protection Regulation 2019* (Qld) (Ch 4) then outlined the requirements for voids modelled as being part of the floodplain (ie, where the void is present at or below the 0.1% AEP level).

Clearly the policy intent was to eliminate or minimise the presence of residual voids in floodplains post-mining. Any proponent proposing to leave a residual void as a NUMA would then be required to undertake a "Public Interest Evaluation" to demonstrate why it would be in the public interest for such a void to remain post-mining.

Jurisdictional Analysis: A US Case Study

The Better Mine Rehabilitation discussion paper provides several case studies of best practice from other jurisdictions. For example, the Paper highlights the *Surface Mining Control and Reclamation Act 1977*, from the United States (US). For the past 45 years, open cut coal mines in the US (with some exceptions) have been required to backfill mine voids to "approximate original contour". Project feasibility studies were obliged to design backfill and recontouring into mine planning, and the commercial feasibility of the proposed operation included these costs at the commencement of mine planning. While many open cut metallurgical and thermal coal mines in Queensland have approval to retain mine voids at end of mine life, the US case clearly exemplifies best practice in mine rehabilitation.

77

Environmental Protection and Other Legislation Amendment Act 2020

The second reading and cognate debate for this Bill occurred on 11 August 2020, after consideration of the Bill by the Natural Resources, Agricultural Industry Development and Environment Committee. The legislation gave effect to the Deputy Premier's commitment to create a dedicated, independent Rehabilitation Commissioner role:

> with specific functions including providing advice on rehabilitation or best practice management of land, and facilitating better public reporting on rehabilitation. [86]

The Bill also introduced additional clarification of the Government's residual risk framework, including requirements:

> for a post-surrender management report to be submitted with a surrender application where a resource activity has been carried out. [87]

The Act also established the residual risk fund, to be managed by the financial provisioning Scheme Manager. Minister Enoch, in her second reading speech, also flagged the preparation of a residual risk guideline. [88] That guideline is expected to be finalised in 2022. The Act gained assent on 20 August 2020.

Residual Risk

The suite of reforms described above were designed to address the range of issues that emerged from QTC's 2017 report. Elements of risk to the State emerging from unfunded rehabilitation liability were numerous. These included:

• cumulative backlog of rehabilitation liability,

• challenges with implementing progressive rehabilitation in certain mining operations,

• changes of ownership,

• mines in care and maintenance,

• Federal corporations law being used to “disclaim” mines and

• challenges with beneficial repurposing of former mines.

The reforms arguably constituted the most significant and comprehensive suite of environmental management reforms proposed in the Queensland resources industry's history. Each element brought its own challenges to achieving the *Environmental Protection Act's* objective for mine rehabilitation to achieve a stable landform. Section 111A of the *Environmental Protection Act* states:

Land is in a stable condition if –

(a) the land is safe and structurally stable; and

(b) there is no environmental harm being caused by anything on or in the land; and

• identification of the need to record post-surrender management activities including how these could be communicated to landowners

• identification of key roles in the post-surrender management of land and funds. [90]

Policy development is expected to conclude in 2022. [91]

(c) the land can sustain a post-mining land use. Although the total land area of the State directly impacted by mining is small, the level of disturbance of most mining operations is locally significant. Despite best practice mine rehabilitation, some areas will have limited capacity to support post-mining land uses or will require a level of ongoing management. While provisions in the *Environmental Protection Act* were included to require so-called "residual risk" payments, the actual methodology and criteria remained opaque. QTC canvassed several options for a methodology and cost to be apportioned for residual risk payments at end-of-mine life. A discussion paper was released on 1 February 2019. [89] The proposed policy reforms are as follows: • principles to be used in developing a standardised risk assessment methodology • two options to assist with the estimation of post-surrender costs: – a calculation tool to be used in most circumstances – an expert panel to be used where the tool is not appropriate • clarification of payment requirements	

78

The Queensland Mine Rehabilitation Commissioner

A team of technical advisors and research/administrative support was seconded from the Department of Environment and Science to support the Queensland Mine Rehabilitation Commissioner. Prior to the appointment of the Commissioner, the team prepared the administrative capability of the office and undertook stakeholder engagement to commence the process of designing the priorities of the Office.

The Commissioner was appointed by the Governor in Council, on the recommendation of the Minister responsible for the *Environmental Protection Act*. The inaugural Commissioner commenced on 11 October 2021. The role has jurisdiction for resource activities (mining and petroleum).

The Commissioner has four key responsibilities: [92]

- Produce technical reports on the best practice rehabilitation of land.
- Engage with stakeholders and the community to raise awareness of land rehabilitation matters.
- Report on rehabilitation performance and trends in Queensland.
- Provide advice to the Minister on rehabilitation practices, outcomes and policies.

The Ongoing Mine Rehabilitation Reform Agenda

The program of reform continues. The financial provisioning Scheme Manager will continue to assess the risk status of resource operations in Queensland and administer the scheme. The Scheme Manager is also charged with the administration of any

residual risk payments that are made by projects at mine closure. The Scheme Manager is also required to undertake periodic reviews of the scheme and advise government of any improvements.

As of 1 January 2022, a total of 211 resource authority holders had been identified to require PRC plans. These plans will be submitted to the Department of Environment and Science over the period to end 2024.

Any new applications for mines that meet criteria will be required to submit a PRC plan in accordance with the *Environmental Protection Act*. Should the applicant propose to leave NUMAs at end of mine life, they will also be required to undertake a Public Interest Evaluation.

The guideline to support the amendment to the *Environmental Protection Act* regarding residual risk is planned for completion by the Department of Environment and Science in 2022.

The Queensland Mine Rehabilitation Commissioner is required to deliver the first Annual Report to the Minister and Parliament by 31 October 2022.

Footnotes

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