Addressing Energy Justice through Progressive Rehabilitation of Critical Minerals Mines in New South Wales, Australia

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ABSTRACT

The development of the critical minerals industry in Australia is expected to have extensive impacts on regional communities. The significant development required to exploit critical minerals provides an opportunity to embed energy justice. New South Wales ('NSW') has not considered energy justice in the *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation* 2021. This thesis seeks to address the key research question of whether regulations with respect to progressive rehabilitation can afford energy justice to communities affected by critical minerals mines. Because rehabilitation often occurs late in the mine life cycle, initiatives and funding may be inadequate to ensure effective rehabilitation. Communities with proximity to critical minerals mines face challenging decisions and circumstances in respect of environmental, social, and economic health of their community, many of which are compounded by ineffectively rehabilitated land. Progressive rehabilitation is the process of undertaking rehabilitation prior to and throughout the life of the mine, rather than only at the end stages of closure and decommissioning. It may mitigate some of the challenging circumstances faced by local communities by providing ongoing reporting and monitoring of rehabilitation efforts. Progressive rehabilitation may increase opportunities for community participation throughout the life cycle of the mine, while supporting the provision of energy justice for local communities. This thesis poses energy justice as a tool to guide policymakers in developing progressive rehabilitation regulations, and thus support a just transition to a low carbon economy.

STATEMENT OF ORIGINALITY

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

(Signed) Date: 25 October 2022

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ABBREVIATIONS

ARR	Annual Rehabilitation Report
BC Act	*Mines Act*, RSBC 1996, c 293
DISR	Department of Industry, Science and Resources
DPE	NSW Department of Planning and Environment
EAA	*Environmental Assessment Act*, SBC 2018 c 51
EIA	Environmental Impact Assessments
EIS	Environmental Impact Statements
EMLI	BC Ministry of Energy, Mines and Low Carbon Innovation
EPAA	*Environmental Planning and Assessment Act 1979* (NSW)
EPBCA	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
IAA	*Impact Assessment Act*, SC 2019, c 28
IEA	International Energy Agency
IPC	Independent Planning Commission (NSW)
NSW Act	*Mining Act 1992* (NSW)
PEOA	*Protection of the Environment Operations Act 1997* (NSW)
RCE	Rehabilitation Cost Estimate
SIA	Social Impact Assessments
VPA	Voluntary Planning Agreements

CHAPTER I: INTRODUCTION

1.1 Introduction

The world economy has a pressing need for critical minerals. Critical minerals comprise a range of metals and minerals that are important, in part for their use in clean energy technologies. The International Energy Agency (IEA) estimates that production for critical minerals must increase more than 40% for copper and rare earth elements, 60–70% for nickel and cobalt, and nearly 90% for lithium by 2040.[1] Likewise, the New South Wales (NSW) *Critical Minerals and High-Tech Metals Strategy* ('the NSW Strategy') explains that the 'transition to low carbon economy is metals/minerals intensive' and meeting the 'demand from renewables technologies (wind turbines, solar panels, batteries for storage) will require three times the amount of minerals by 2040'.[2] As such, the demand and prices for the critical minerals required for the clean energy transition are increasing worldwide,[3] just as cobalt prices increased in 2021 owing to the anticipated 'increase in demand due to the clean energy transition'.[4]

Price increases are also related to supply-chain disruptions,[5] and vulnerabilities within critical minerals supply chains have been made more evident by the effects of COVID-19[6] and the Russian invasion of Ukraine.[7] As supply often comes from geographically restricted or concentrated locations,[8] securing Australia's exploitation of its various critical minerals endowments is crucial. Australia is both a consumer

[1] These commodities required for the energy transition may be termed 'critical energy minerals' for enhanced specificity, but as this has not yet been universally adopted, this thesis uses the umbrella term 'critical minerals'. International Energy Agency, *The Role of Critical Minerals in Clean Energy Transitions* (Report, May 2021); Jerad Ford and Jim West, 'Critical Energy Minerals: Mining for Opportunities in the Energy Transition' (Web Page, 2021) < https://ecos.csiro.au/critical-energy-minerals-mining-for-opportunities-in-the-energy-transition/>.
[2] Department of Regional NSW, *Critical Minerals and High Tech Strategy* (Report, 2021).
[3] Tae-Yoon Kim, 'Critical Minerals Threaten a Decades-Long Trend of Cost Declines for Clean Energy Technologies' *International Energy Agency* (Web Page, 18 May 2022) < https://www.iea.org/commentaries/critical-minerals-threaten-a-decades-long-trend-of-cost-declines-for-clean-energy-technologies >.
[4] Natural Resources Canada, 'Canadian Mineral Production' (Web Page, 2022) < https://www.nrcan.gc.ca/maps-tools-and-publications/publications/minerals-mining-publications/canadian-mineral-production/17722>.
[5] Tae-Yoon Kim (n 3).
[6] Department of Industry, Science, Energy and Resources (Commonwealth), *2022 Critical Minerals Strategy* (Report, 2022) 3.
[7] Tae-Yoon Kim (n 3).
[8] Ministry of Energy and Mines (British Columbia), *Rare Metals: BC Geological Survey Information Circular 2016-4* (Report, 2016), 2; Jess Robinson, 'Rare Earths and Critical Minerals Provide Significant Opportunities for Australia*' CSIRO Resourceful Magazine* (Web Page, 2021) < https://www.csiro.au/en/work-with-us/industries/mining-resources/resourceful-magazine/issue-22/rare-earths-and-critical-minerals-provide-significant-opportunities-for-australia >.

and producer of critical minerals,[9] needing to harness critical minerals for a successful domestic energy transition and to support the national economy.

Australia is well-positioned in the global race to secure critical minerals,[10] with many critical minerals mined in the country and significant opportunity for further exploration.[11] Australia is the world's largest producer of lithium, second-largest producer of rare-earth elements, and has the richest supply of titanium, zirconium, and tantalum.[12] Further, Australia is one of the world's top five producers of cobalt, manganese, niobium, tungsten, and vanadium.[13] Rare-earth elements, lithium and cobalt are among the most in-demand critical minerals,[14] positioning Australia as one of the few geopolitically-stable sources of these key critical minerals.

To address the need for critical minerals development in Australia, the Australian Government released the *2022 Critical Minerals Strategy* ('the Australian Strategy') to 'secure Australia's interests in a challenging world'.[15] The Australian Strategy explains that demand is growing for critical minerals that are developed responsibly, and coupled with Australia's robust regulatory environment, may position Australia as a favoured critical minerals supplier.[16] It emphasises the increasing demand for critical minerals that are sourced in an environmentally responsible manner, which can help to avoid 'adverse consequences for workers, vulnerable people, communities and the environment'.[17] While a promising notion, the Australian Strategy fails to outline rehabilitation responsibility expectations with sufficient specificity.

[9] World Bank Group, *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition* (Report, 2020), 97.
[10] Sarah Kalantzakos, 'The Race for Critical Minerals in an Era of Geopolitical Realignments' (2020) 55 *Italian Journal of Internal Affairs*, 1–16.
[11] Department of Industry, Science and Resources (Commonwealth), 'Investing in Critical Minerals in Australia' (Web Page, 2022) < https://www.industry.gov.au/policies-and-initiatives/critical-minerals-facilitation-office/investing-in-critical-minerals-in-australia#:~:text=Australia's%20critical%20minerals,-Australia%20has%20significant&text=Australia's%20resources%20of%20critical%20minerals,zircon%20and%20rare%20earth%20elements >.
[12] Ibid.
[13] Ibid.
[14] Kalantzakos (n 10); World Bank Group (n 9) 93.
[15] Department of Industry, Science, Energy and Resources (Cth), *2022 Critical Minerals Strategy* (n 6) 3.
[16] Ibid 9.
[17] Ibid 19.

1.2 Thesis Context

Australia is faced with the challenge of sustainably and responsibly mining critical minerals. Industry proponents and governments must focus on the needs and opportunities of regional communities, as exploration and development of critical minerals mines are largely geographically located in remote regions. This requires regulation that accommodates the need for critical minerals and the need for communities affected by critical minerals mines to receive co-benefits.

Enabling these communities to benefit from critical minerals mines means affording them energy justice. Energy justice has been defined as 'the goal of achieving equity in both the social and economic participation in the energy system, while also remediating social, economic, and health burdens on those historically harmed by the energy system'.[18] This thesis regards local communities affected by critical minerals mines as 'those (potentially) harmed by the energy system',[19] often through risks to environmental, social, or public health.[20] This reflects an effort to centre the concerns of the communities most directly affected by the current laws, regulations, and policies surrounding critical minerals mines in NSW.

An important aspect of affording energy justice for communities associated with critical mineral mines is consideration for the risk of adverse social, health, and environmental outcomes[21] as a result of proximity to extraction sites. This includes land-use changes causing social disruption or community displacement,[22] compromised agricultural activity,[23] loss or pollution of water,[24] waste generation[25] or contamination, air pollution,[26] and the social harms[27] often due to inequitable treatment or unsafe labour practices.[28] These issues can cause harm to affected local communities as well as other stakeholders involved with critical minerals mine, such as industry proponents and governments.[29] It can also affect the pace of the energy

[18] Initiative for Energy Justice, *The Energy Justice Workbook* (Report, December 2019).
[19] Ibid.
[20] Australian Geographic, 'Australia's Abandoned Mines: Rehabilitated' (Web Page, 2022) <https://www.australiangeographic.com.au/topics/history-culture/2022/07/australias-abandoned-mines-rehabilitated/>; Célestin Banza Lubaba Nkulu et al 'Sustainability of Artisanal Mining of Cobalt in DR Congo' (2018) *Nature Sustainability*, 495; Caroline Damgaard et al 'Assessing the Energy Justice Implications of Bioenergy Development in Nepal' (2017) 7(8) *Energy, Sustainability, and Society*, 13.
[21] Célestin Banza Lubaba Nkulu et al (n 20) 495; Caroline Damgaard et al (n 20) 13.
[22] International Energy Agency, *The Role of Critical Minerals in Clean Energy Transitions* (n 1) 40.
[23] Ibid 213.
[24] World Bank Group (n 9) 93.
[25] Ibid 104.
[26] International Energy Agency, *The Role of Critical Minerals in Clean Energy Transitions* (n 1) 137.
[27] World Bank Group (n 9) 16.
[28] International Energy Agency, *The Role of Critical Minerals in Clean Energy Transitions* (n 1) 40, 192, 209, 213, 238.
[29] Ibid 192.

transition at large.[30] The World Bank has reported that while the transition to a cleaner energy system is crucial, this cannot come at the cost of communities directly affected by mining activities.[31] As such, it is critical that industry proponents and governments have a thorough understanding of the impacts of critical minerals mines on affected local communities.[32] Without responsible and sustainable mining practices, it is expected that the negative impacts from mines will increase.[33]

Many of these risks can be mitigated or lessened through more effective rehabilitation of mined land. Accordingly, an important aspect of affording energy justice to affected communities is satisfactory mine rehabilitation. In NSW, the statutory definition of rehabilitation is 'the treatment or management of disturbed… land for the purpose of establishing a safe and stable environment'.[34] The NSW Resources Regulator positions rehabilitation as 'effectively another phase of mining, which is undertaken both progressively over the life of the mine, and as well as the end of the mine'.[35] Further, rehabilitation often occurs at the end stages of closure and decommissioning due to the difficulty of achieving ecological restoration objectives within the life of a mine, leading to suboptimal outcomes.[36] Instead, an approach that centres progressive rehabilitation should be pursued. Progressive rehabilitation is an enhanced opportunity to achieve rehabilitation.[37] Progressive rehabilitation is concerned with rehabilitation throughout the entirety of a mine's life cycle 'in a manner that achieves sustainable final land uses following the completion of mining'.[38] This builds on the understanding of mine rehabilitation posited by the NSW Resources Regulator.[39]

[30] Ibid 192.
[31] World Bank Group (n 9) 7.
[32] Ibid 97.
[33] Ibid 101.
[34] *Mining Act 1992* (NSW).
[35] Resources Regulator (NSW), *Exploration and Mining Rehabilitation Fact Sheet* (Explanatory Guide, 2021).
[36] Michael Ngugi and Victor Neldner, 'Two-tiered Methodology for the Assessment and Projection of Mine Vegetation Rehabilitation against Mine Closure Restoration Goal' (2015) 16 *Ecological Management and Restoration*, 215.
[37] *Mining Act 1992* (NSW). See Chapter II for further discussion on the concept of mine rehabilitation.
[38] Resources Regulator (NSW), 'New Standard Rehabilitation Conditions on Mining Leases' (Web Page, 2021) < https://www.resourcesregulator.nsw.gov.au/rehabilitation/compliance/new-standard-rehabilitation-conditions-on-mining-leases >.
[39] Resources Regulator (NSW), *Exploration and Mining Rehabilitation Fact Sheet* (n 35).

1.3 Thesis Research Questions

This thesis hypothesises that the current regulatory framework for mine rehabilitation in NSW does not deliver energy justice to local communities[40] affected by and hosting critical minerals mines. To address this fundamental problem, this thesis poses the following research questions:

1. What constitutes an effective mining rehabilitation framework and effective progressive rehabilitation? (Chapter II)
2. Does the recent *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW; 'Mining Amendment') align with and enhance the progressive rehabilitation of disturbed land in relation to critical minerals? (Chapter III)
3. How does the approach in British Columbia (BC), Canada, differ for progressive rehabilitation in the context of energy justice principles? (Chapter IV)
4. In light of the approach in BC to mining rehabilitation, to what extent is the current NSW regulatory framework for mining effective in achieving the progressive mine rehabilitation of critical minerals mines by embedding principles of energy justice for communities in NSW? To what extent does the *Mining Act 1992* (NSW) need to be amended to better incorporate energy justice in rehabilitation? (Chapter V)
5. How can NSW better integrate energy justice into the current mining framework? (Chapter VI)

1.4 Methodology

This thesis offers a socio-legal doctrinal and functional comparative analysis that applies energy justice principles to the progressive rehabilitation of critical minerals mines in NSW. A functional comparative analysis with BC is undertaken to support the evaluation of whether the NSW regulatory framework provides energy justice for communities affected by critical minerals mines. At the state and provincial level, NSW and BC, respectively, are apt for functional comparison as both Commonwealth legal jurisdictions maintain similar legal and policy mechanisms for mine regulation. Further, BC is a leading mining province in Canada and maintains a long history of mine reclamation regulation from which to draw lessons, as well as recent case law with respect to mine rehabilitation.

[40] Local communities are those that are living near mining activities and are directly affected by mining operations: see Ross Harvey, 'How to Ensure Communities Living Near Mining Activities Get a Better Deal', *The Conversation* (online, 7 May 2018) <https://theconversation.com/how-to-ensure-communities-living-near-mining-activities-get-a-better-deal-95980 >. See also Jacob Taarup-Esbensen, 'Communities as a Risk in Mining: Managing Community Legitimacy' (2020) 23(6) *Journal of Risk Research*.

At a national level, both Canada and Australia are Commonwealth federal states with opportunity for meaningful comparison, particularly as a result of their shared colonial history. However, the two jurisdictions maintain constitutional differences with respect to the ambit of federal and Provincial or state powers.[41] Both Australia and Canada are primary resource export economies, with a large focus on minerals and metals mining. Accordingly, there is a significant record of relevant legislation, case law, and policy addressing mining activities. Like Australia, Canada is a global leader in the production of several minerals. Canada is one of the top five producers of aluminum, cobalt, gold, indium, niobium, palladium, platinum, tellurium, and other minerals and metals.[42] The value of Canada's mineral production reached a record high in 2021 of CAD$55.5 billion, due in part to increased demand as a result of supply-chain issues.[43] Canada's mining industry is recognised as a global leader not only in mineral production but also in best practice for mineral production.[44]

This thesis systematically outlines the mine rehabilitation frameworks in both NSW and BC surrounding progressive rehabilitation and analyses the relationship between these frameworks and energy justice.[45] Specifically, it compares the function of the respective mine rehabilitation regulations in NSW and BC through an examination of Annual Rehabilitation Reports (ARRs). The ARRs form the primary regulatory mechanism for mining rehabilitation assessment across comparable jurisdictions.[46] This thesis compares the function of two disparate legal frameworks to draw conclusions. [47] In alignment with doctrinal legal research, it examines legislation and case law to assess the state of the law with respect to mine rehabilitation.[48] It seeks to understand the respective mining laws, regulations and policies, and thereafter

[41] Madeline Taylor, *Consultation or Free, Informed and Prior Consent? A Comparative Legal Analysis of Indigenous Consultation During Natural Resource Activities in Australia and Canada* (Routledge, 2020) 92.
[42] Natural Resources Canada, 'Canadian Mineral Production' (n 4).
[43] Ibid.
[44] The Mining Association of Canada, 'Protocols and Frameworks' (Web Page, 2022) < https://mining.ca/towards-sustainable-mining/protocols-frameworks/ >; International Energy Agency, *The Role of Critical Minerals in Clean Energy Transitions* (n 1) 244; The Mining Association of Canada, 'Mine Closure Framework' (Web Page, 2008) <https://mining.ca/resources/guides-manuals/tsm-mine-closure-framework/ >.
[45] Dennis Charles, Enid Campbell and Don Harding, *Australian Law School: A Discipline Assessment for the Commonwealth Tertiary Education Commission* (Australian Government Publishing Service, 1987), discussed in Terry Hutchinson, 'Developing Legal Research Skills: Expanding the Paradigm' (2008) *Melbourne University Law Review*, 1068.
[46] Madeline Taylor, 'The Contestation between and Coexistence of Agricultural Land Protection and Coal Seam Gas Activities in Queensland, Australia' (2018) *Bond University*, 8; Terry Hutchinson, 'Developing Legal Research Skills: Expanding the Paradigm' (2008) *Melbourne University Law Review*, 1066, 1082, 1088.
[47] Terry Hutchinson, 'Developing Legal Research Skills: Expanding the Paradigm' (2008) *Melbourne University Law Review*, 1066, 1082, 1088.
[48] Terry Hutchinson, *Researching & Writing in Law* (Thomson Reuters, 4th ed, 2018) 51.

conduct an overall assessment of the state of mine rehabilitation regulation in NSW and BC. To do this, the thesis first interprets primary legal documents.[49]

This thesis also examines the socio-legal context of critical mineral mines and their rehabilitation in NSW and BC. A socio-legal analysis investigates the 'law in context'[50] and enables this thesis to interpret primary legal documents more holistically.[51] It is interdisciplinary in its consideration of the significant social, legal, and policy issues relevant to critical mineral mines and their rehabilitation in the comparative jurisdictions.[52] A socio-legal analysis allows this thesis to consider more than just 'privileged voices' in the just energy transition, 'a process based on dialogue and tripartite agenda shared by workers, industry and governments that needs to be negotiated and implemented in its geographical, political, cultural and social context'.[53] In the context of critical minerals mining, a just energy transition requires that marginalised voices are heard. Local communities affected by critical minerals mines and ineffective mine rehabilitation are not prioritised in the current mining regime, though they maintain important socio-legal perspectives. To mitigate this risk, energy justice theory is presented as an opportunity to incorporate socio-legal perspectives in critical minerals development.

1.5 Limitations and Scope of Thesis

Using BC as a Commonwealth legal comparator, this thesis analyses the NSW regulatory regime for mine rehabilitation and the provision of energy justice to communities affected by critical minerals mines. It does not consider environmental regulation regarding critical minerals mines. While there are many ancillary issues[54] associated with critical minerals development and the energy transition,[55] such as the principles of environmental law and regulation, environmental justice, and climate justice, this thesis is limited to an assessment of the regulatory regimes with respect to mine rehabilitation. In so doing, this thesis takes an energy justice perspective in making this assessment. Further, it does not comprehensively outline the potential environmental, social, health, and economic consequences for local communities affected by

[49] Ibid.
[50] Fiona Cownie, *Legal Academics: Culture and Identities* (Hart Publishing, 2004) 51–54.
[51] Ian Dobinson and Francis Johns, 'Qualitative Legal Mike McConville and Wing Hong Chui' (eds) *Research Methods for Law* (Edinburgh University Press, 2007) 16, 21, discussed in Hutchinson, 'Developing Legal Research Skills: Expanding the Paradigm' (n 47) 1082, 1087, 1094–1095.
[52] Sol Picciotto, *Critical Theory and Practice in International Economic Law and the New Global Governance* (European Yearbook of International Economic Law, 2016) 3–22.
[53] Hutchinson, 'Researching & Writing in Law' (n 47) 51; International Institute for Sustainable Development, *Real People, Real Change: Strategies for Just Energy Transitions* (2018), iv.
[54] Ralf Michaels, 'The Functional Method of Comparative Law', discussed in Reinhard Zimmermann and Mathias Reimann, *The Oxford Handbook of Comparative Law* (Oxford University Press, 2006) 368–369.
[55] Raphael Heffron and Darren McCauley, 'What is the 'Just Transition'?' (2018) 88 *Geoforum* 74–77; Darren McCauley and Raphael Heffron, 'Just Transition: Integrating Climate, Energy and Environmental Justice' (2018) 119 *Energy Policy*, 1.

critical minerals mines. Instead, it poses the regulation of progressive rehabilitation as an opportunity to provide energy justice for local communities.

Local communities affected by legacy or historic mines, such as those contemplated in the NSW Legacy Mines Program,[56] do not form part of this thesis. Instead, the thesis focuses on forward-looking research that seeks to mitigate many issues with respect to abandoned mines before these issues arise through progressive rehabilitation in the burgeoning critical minerals industry.

Finally, due to the limitations regarding both scope and the length of this thesis, native title is not considered. This is due in part to the unique issues, legal frameworks, and government programs and policies affecting native title land ownership and rights. For example, in Canada, contentious[57] agreements are often made between natural resource companies and Indigenous communities to more equitably share project impacts and benefits.[58] Further research should consider native title land ownership and rights in the context of critical minerals development and energy justice in sufficient depth.

1.6 Thesis Structure

This thesis examines a number of legal tools within the context of mine rehabilitation. Chapter II examines the conceptual underpinnings relating to mine regulation. It explores the concept of effective mining rehabilitation framework and progressive rehabilitation, as well as energy justice in the context of critical minerals is examined and provides the theoretical basis for this thesis. Chapter III outlines the regulatory framework in NSW, while Chapter IV outlines the regulatory framework in BC and considers the role of the ARR as a tool in managing mine rehabilitation. Chapter V adopts a functional comparative analysis to assess whether energy justice can be used as a regulatory tool in this context to better manage mine rehabilitation. It considers whether the ARR framework in NSW should harness energy justice principles as benchmarks to evaluate progressive mine rehabilitation. By the same token, progressive rehabilitation is a unique opportunity to provide energy justice to local communities. Chapter VI identifies recommendations for reform through opportunities to integrate energy justice into the NSW mining framework. Finally, Chapter VII considers the findings in the previous chapters and concludes the thesis.

[56] Department of Regional NSW, 'Legacy Mines Program' (Web Page, 2022) <https://www.regional.nsw.gov.au/meg/exploring-and-mining/legacy-mines-program >.
[57] Michael Hitch and Courtney Riley Fidler, 'Impact and Benefit Agreements: A Contentious Issue for Environmental and Aboriginal Justice' (2007) *Environments Journal*, 45–69.
[58] Indigenous Services Canada, 'Centre of Expertise on Impact and Benefit Agreements: An Important Ally' (Web Page, 2022) <https://www.sac-isc.gc.ca/eng/1645561183367/1645561204248 >.

1.7 Thesis Originality and Significance

This thesis contributes to the energy justice literature specifically concerning the application of alternative regulatory tools to improve the current mine rehabilitation regulatory framework in NSW. This thesis poses energy justice as a tool to guide policymakers in developing progressive rehabilitation regulations. To date, the literature has not applied the energy justice framework to the regulatory frameworks affecting critical minerals in NSW. This thesis is original in its identification of the ARR framework as an opportunity to build energy justice into the regulatory framework in NSW. This recommendation supports the policy ambition of enacting 'mechanisms to encourage and enforce progressive rehabilitation'[59] as outlined by the federal Australian government.

It is intended that this thesis will contribute to the wider study of mine rehabilitation, and in doing so, promulgate energy justice for communities affected by critical minerals mines. This thesis positions the ARR as one meaningful opportunity to improve progressive rehabilitation and afford energy justice as Australia seeks to transition to clean energy justly and sustainably. The critique within this thesis may also invite a broader discussion about the need for energy justice in the transition to a low-carbon economy and may assist in bolstering Australia's critical minerals mining policies.

[59] Senate Standing Committees on Environment and Communication, *Rehabilitation of Mining and Resources Projects as it Relates to Commonwealth Responsibilities* (Report, 20 March 2019) 33.

CHAPTER II: PRINCIPLES RELATING TO THE REGULATION OF CRITICAL MINERALS MINES AND ENERGY JUSTICE

2.1 Introduction

Chapter I discussed the context, methodology, and scope of this thesis. It introduced a number of key concepts central to this thesis, namely critical minerals and critical energy minerals, energy justice, mine rehabilitation, and progressive mine rehabilitation. These concepts form the foundational-theoretical basis of this thesis. Chapter II examines these concepts in detail, including whether these concepts are effective in addressing regulatory gaps associated with mine rehabilitation. The regulatory framework, including primary legislation, subordinate legislation, and policy guidelines, defines the manner in which mining rehabilitation takes place. The purpose of this chapter is to examine the principles relating to the regulation of critical minerals mines and energy justice as fundamental to progressive rehabilitation.

The issue of what constitutes an effective mining rehabilitation framework is divided into two main questions, which are addressed in this chapter. First, the chapter examines the characteristics and challenges of progressive mine rehabilitation, and second, it explores whether progressive mine rehabilitation can introduce transformational changes in the provision of energy justice. This question is aimed at examining whether access to energy justice can be increased by utilising progressive rehabilitation tools. Consequently, this chapter evaluates the principles of energy justice in the context of a just energy transition. The analysis undertaken in this chapter is utilised within the thesis acting as the principle foundation develop recommendations for a progressive rehabilitation approach in NSW based on energy justice principles.

2.2 Defining Mine Rehabilitation

The *Mining Act 1992* (NSW; 'NSW Act') defines 'mine' as both a noun and a verb. When used as a verb, 'mine' means 'to extract material from land for the purpose of recovering minerals from the material so extracted or to rehabilitate land from which material has been extracted'.[60] Including rehabilitation in the definition of 'mine' contemplates the impermanent nature of mines as temporary uses of land.[61] According to Kennan and Holcombe, this 'reframes the way that we should understand mining legacies, including responsibilities to local communities and to sustainable development'.[62] NSW defines rehabilitation as 'the

[60] *Mining Act 1992* (NSW) Dictionary.
[61] Julia Keenan and Sarah Holcombe, 'Mining as a Temporary Land Use: A Global Stocktake of Post-mining Transitions and Repurposing' (2021) *The Extractive Industries Society*, 8.
[62] *Mining Act 1992* (NSW) Dictionary.

treatment or management of disturbed water or land for the purpose of establishing a safe and stable environment'.[63] Unfortunately, mining often irreversibly impacts lands, ecosystems, and communities.[64] In response to this reality, leading Australian scholars Keenan and Holcombe explain that the aim of rehabilitation is to attend to 'environmental clean-up' and return 'disturbed land to a stable, productive and self-sustaining condition, after taking into account beneficial uses of the site and surrounding land. Reinstatement of degrees of ecosystem structure and function where restoration is not the aspiration'.[65] In line with this modest perspective, the Australian Government explains that rehabilitation 'comprises the design and construction of landforms as well as the establishment of sustainable ecosystems or alternative vegetation, depending upon desired post-operational land use'.[66]

In BC, the term 'reclamation' is preferred, defining it as the process of returning 'land, watercourses and cultural heritage resources … to a safe and environmentally sound state' upon mine closure.[67] There is no standard definition for 'rehabilitation' and 'reclamation'. For example, the BC Government's definition contemplates reclamation as activities taken in the late stages of the mine life cycle. Keenan and Holcombe explain that reclamation aims to return 'land and/or infrastructure to a state where economic, environmental or human uses are possible'.[68] On the other hand, they contemplate reclamation as focusing 'on returning land and/or infrastructure to a state where economic, environmental, or human uses are possible'.[69] Overall, the term 'rehabilitation' is often used generically by industry proponents.[70] Regardless of the potential nuances[71] between the terms, both rehabilitation and reclamation contemplate a broad range of possible land use outcomes.[72] Reflected in these conceptualisations are both the process of rehabilitation and its outcomes. The process of rehabilitation comprises the work performed to achieve successful rehabilitation; the outcomes of rehabilitation delineate the ultimate state of rehabilitation for a particular site. In line with

[63] *Mining Act 1992* (NSW).
[64] Keenan and Holcombe (n 61) 8.
[65] Keenan and Holcombe (n 61) 3.
[66] Department of Industry, Science, Energy and Resources (Cth), *Mine Rehabilitation: Leading Practice Sustainable Development Program for the Mining Industry* (Report, 2016), 3.
[67] Ministry of Energy, Mines and Low Carbon Innovation (BC), 'Reclamation and Closure' (Web Page, 2022) <https://www2.gov.bc.ca/gov/content/industry/mineral-explorationmining/permitting/reclamation-closure>
[68] Keenan and Holcombe (n 61) 3.
[69] Keenan and Holcombe (n 61) 3.
[70] David Lamb, Peter D Erskine and Andrew Fletcher, 'Widening Gap Between Expectations and Practice in Australian Minesite Rehabilitation' (2015) 15 *Ecological Management and Restoration*, 186.
[71] Scholars indicate that further work to explore and define the rehabilitation and reclamation and the relationships between them is required. Further, the terms are often used interchangeably in scientific literature, government reports, and policy documents. As a result, no deeper analysis of the usage of these terms in NSW and BC will take place. See Travis Gerwing et al 'Restoration, Reclamation, and Rehabilitation: On the Need for, and Positing a Definition of, Ecological Reclamation' (2021) *The Journal of the Society for Ecological Restoration* and also Ana Lima et al 'The Legacy of Surface Mining: Remediation, Restoration, Reclamation and Rehabilitation' (2016) 66 *Environmental Science and Policy*, 227.
[72] Keenan and Holcombe (n 61) 3.

these expansive understandings, this thesis approaches both rehabilitation and reclamation as the process and objective of returning mine sites to a positive land use outcome.[73]

2.2.1 Mine Rehabilitation as a Process

The NSW Resources Regulator positions rehabilitation as 'effectively another phase of mining, which is undertaken both progressively over the life of the mine, as well as the end of the mine'.[74] This can occur through demolition of infrastructure, sealing mine entries, remediating contaminated land, capping tailings dams, geotechnical stabilisation, water treatment, establishing a final landform, revegetation, and making safe infrastructure that may be retained for future use.[75] However, many of these rehabilitation activities often occur in the later stages of a mine's life cycle, such as closure and decommissioning.[76] Rehabilitation is thus often considered part of a mine's life-cycle process.

Late-stage rehabilitation concentrates on the issue that 'ecological restoration outcomes of mine rehabilitation are unachievable within the life of a mine'.[77] Additionally, mine operators may need to re-access previously mined land. Prematurely rehabilitating land can cost substantial resources in these circumstances. However, early rehabilitation activities have real benefits for rehabilitation outcomes. For example, surface materials such as soil and plant matter may be stored for later rehabilitative use,[78] and water loss can be prevented through prioritising recycling and improving water infrastructure.[79] An initial dedication to practices that ensure resources are mined efficiently can increase the sustainability of the mine.[80] Additionally, early measures can help develop and solidify long-term rehabilitation objectives, reflecting responsible mining efforts.[81] One example of the practicality of progressive reclamation efforts is demonstrated in the Michel Coal Project, steelmaking coal operations on Ktunaxa Nation land in BC.

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[73] 'Reclamation' and 'rehabilitation' are often used interchangeably. For clarity and consistency, this thesis primarily uses the term 'rehabilitation'. See Department of Industry, Science, Energy and Resources (Cth), *Mine Rehabilitation: Leading Practice Sustainable Development Program for the Mining Industry* (n 66) 3.
[74] Resources Regulator (NSW), *Exploration and Mining Rehabilitation Fact Sheet* (n 35).
[75] Ibid.
[76] Ana Lima et al (n 71) 227; Raphael Heffron, 'Applying Energy Justice into the Energy Transition' (2022) *Renewable and Sustainable Energy Reviews*, 6.
[77] Ngugi and Neldner (n 36) 215.
[78] Rolf Schmitt et al 'Progressive Reclamation and Environmental Programmes During Pre-Operations at the New Afton Copper-Gold Mine, Canada' (2011) *Australian Centre for Geomechanics*, 271, 273, 278.
[79] Lindsay Delevingne et al 'Climate Risk and Decarbonization: What Every Mining CEO Needs to Know' *McKinsey Sustainability* (Web Page, 2020) < https://www.mckinsey.com/capabilities/sustainability/our-insights/climate-risk-and-decarbonization-what-every-mining-ceo-needs-to-know>.
[80] David Laurence, 'Establishing a Sustainable Mining Operation: An Overview' (2011) 18 *Journal of Cleaner Production*, 282.
[81] Damien Giurco et al 'Prior, Responsible Mineral and Energy Futures: Views at the Nexus' (2014) *Journal of Cleaner Production*, 329.

The company states it has begun mining operations 'with the end in mind'.[82] The industry proponent, North Coal, states that it worked with the Ktunaxa Nation Council to identify plants of cultural significance and collect seeds and soil at an early stage, preventing contamination of air, water, and soil by employing thoughtful design and technology solutions, and engages in active water treatment throughout the life of the mine.[83] Working towards rehabilitation throughout the entirety of the mine's life cycle versus only at the final stages of closure and decommissioning is progressive mine reclamation.[84]

This thesis understands 'progressive mine rehabilitation' as a class of mine rehabilitation. Whereas mine rehabilitation is an overarching theory encompassing process and outcomes, progressive mine rehabilitation primarily attends to the process of rehabilitation as it requires persistent and ongoing action. Progressive rehabilitation requires the implementation of various legal and regulatory tools to encourage responsible rehabilitative practices throughout a mine's life cycle. The challenge for regulators in this field is to implement progressive rehabilitation regulations in a manner that affords energy justice to communities, and in doing so, enhances a just energy transition.

2.2.2 Mine Rehabilitation as an Outcome

Rehabilitation should establish a 'safe, stable environment' through the 're-establishment of native ecosystems, groundwater systems, agriculture and a variety of rural, urban and industrial land uses'.[85] Different outcomes are possible, as explained by the Australian Department of Industry, Science and Resources (DISR):

> Rehabilitation aims to reinstate ecosystem functionality and land productivity, although it will probably assume a different land-use and species composition from the original ecosystem. The new ecosystem may be simpler in structure than the original but more productive, such as when a woodland is replaced with a plantation or grazing land. Alternatively, the new ecosystem can be simpler but less productive in the form of a hybrid or novel ecosystem, such as planted eucalypts over a weed–grass understorey.[86]

[82] North Coal, 'Open Letter to the Community' (Web Page, 2021) < https://northcoal.ca/open-letter-to-the-community/ >.
[83] Ibid; North Coal, 'Michel Coal Project' (Web Page, 2022) < https://northcoal.ca/michel-coal-project/ >; Okane, *Case Study: Investing in Communities* (Report, 2021) <https://www.okc-sk.com/new/wp-content/uploads/2021/04/North-Coal_Investing-in-Communities.pdf >.
[84] Ministry of Energy and Mines (BC), *EY Report & Recommendations for BC's Mine Reclamation Financial Security Policy* (Report, 2017).
[85] Resources Regulator (NSW), *Exploration and Mining Rehabilitation Fact Sheet* (n 35).
[86] Department of Industry, Science, Energy and Resources (Cth), *Mine Rehabilitation: Leading Practice Sustainable Development Program for the Mining Industry* (n 66) 4.

The DISR further lists the recommended objectives of mine rehabilitation as i) the long-term stability and sustainability of the landforms, soils, and hydrology of the site; ii) the partial or full repair of ecosystem capacity to provide habitats for biota and services for people; and iii) the prevention of pollution of the surrounding environment.[87] While these objectives require ecosystem repair in service provision for people, there is no reference to local community interests, nor the social acceptability of land-use outcomes. Similarly, the best practices for rehabilitation posited by Manero et al. instruct that rehabilitated land should be i) physically/geotechnically stable and safe for humans and animals; ii) geochemically stable, non-polluting and non-contaminating; iii) capable of supporting an agreed post-mining land use; and iv) socially and environmentally sustainable, without the need for long-term active care.[88] This conceptualisation goes beyond the DISR in requiring social sustainability of land-use outcomes. Further, in referencing an agreed post-mining land use, it does reflect an opportunity for the consideration of local community needs.

The rehabilitation objectives reflected in the literature and government publications are necessarily broad. This is because specific land-use outcomes will necessarily vary across—and even within—mining sites based on a myriad of factors. These factors can be classified as geotechnical, environmental, legal, economic, and social considerations.[89] They can include the preferences of local communities, proximity to inhabited areas, proximity to cultural or archaeological sites, the state of the terrain and topography, and other matters pertaining to disparate circumstances and locations.[90] Whether certain rehabilitation actions need to be taken depends on the level of contamination and whether the original ecosystem can be recovered.[91]

Within large mines, different strategies may need to be imposed in different areas.[92] As such, it is not possible for this thesis to pose specific objectives for mine rehabilitation with universal applicability to all critical minerals mines in NSW. However, the thesis does recommend that mine rehabilitation objectives are inclusive of the local community's interests and garner sufficient social acceptance. Overall, the choice of objectives is not only dependent on environmental and ecological conditions at the particular mine site in question but also on 'negotiations with the local community who might identify some ecological

[87] Department of Industry, Science, Energy and Resources (Cth), *Mine Rehabilitation: Leading Practice Sustainable Development Program for the Mining Industry* (n 66) 3.
[88] Ana Manero et al 'A Framework for Developing Completion Criteria for Mine Closure and Rehabilitation' (2020) 273(1) *Journal of Environmental Management*, 2.
[89] Ioannis Palogos et al 'Selection of Optimal Land Uses for Reclamation of Surface Mines by Using Evolutionary Algorithms' (2017) 27 *International Journal of Mining Science and Technology*, 491–498.
[90] Ibid.
[91] Ana Lima et al (n 71) 228–229.
[92] Ibid 229.

attributes as being more important targets for rehabilitation than others'.[93] As such, this thesis seeks to embed progressive rehabilitation alongside community consultation in line with energy justice.

Local communities increasingly demand sufficient rehabilitation at the site of the mine.[94] This is in response to the failure to prevent or remedy severely degraded lands following mining activities, reflecting 'a failure to fulfil the social contract entered into when mining leases are granted'.[95] It is increasingly unlikely that compensatory biodiversity offset programs or rehabilitation bonds will be sufficient to secure social acceptance. Further, community pressure can lead to premature mine closure, which often hurts all parties involved. Rehabilitation is often thereafter undertaken with limited funds, over a longer period of time, and unconnected to the overall mine plan.[96] Progressive rehabilitation enables the integration of rehabilitation into the overall mine plan and provides an opportunity to sooner and better mitigate disputes between mine operators and local communities.

2.3 Energy Justice

Mining activities often cause 'energy injustice' in the form of exclusionary practices that sideline the interests of local communities.[97] Such practices include large quantities of solid waste and chemicals; heavy metal contamination of air, water, and soil; water shortages; tailing spills; and resulting broader health impacts.[98] These negative impacts are of particular concern for remote communities, which often face lower rehabilitation standards than those 'at mine sites closer to larger cities and more exposed to public view'.[99] It is here where the link between mine rehabilitation and energy justice becomes well-defined. As the shift to critical minerals endures, there is a clear opportunity to support energy justice and 'remedy the injustices … of the extractive economy'[100] through effective mine rehabilitation. Industry proponents and governments must prioritise a just energy transition,[101] which has been referred to as a fair and equitable

[93] David Lamb, Peter D Erskine and Andrew Fletcher (n 70) 187.
[94] Ibid.
[95] Ibid 193.
[96] Ibid 191.
[97] Benjamin Sovacool et al 'The Decarbonisation Divide: Contextualizing Landscapes of Low-Carbon Exploitation and Toxicity in Africa' (2020) 60 *Global Environmental Change*, 2.
[98] Jordy Lee et al 'Responsible or Reckless? A Critical Review of the Environmental and Climate Assessments of Mineral Supply Chains' (2020) *Environmental Research Letters*, 3; Elsa Dominish et al 'Responsible Minerals Sourcing for Renewable Energy' *The University of Technology Sydney*, 38–44.
[99] David Lamb, Peter D Erskine and Andrew Fletcher (n 70) 188.
[100] Initiative for Energy Justice (n 19) 5, 9.
[101] The term 'just transition' combines climate justice, environmental justice, and energy justice scholarship. However, this thesis focuses only on energy justice. See Darren McCauley and Raphael Heffron, 'Just Transition: Integrating Climate, Energy and Environmental Justice' (2018) 119 *Energy Policy*, 1.

transition by leading scholars such as Heffron, McCauley, Savocool, and Labelle.[102] An important step towards prioritising a just energy transition is through effective mine rehabilitation regulations.

Ancillary to a just energy transition is the idea of a just energy system, which resists perpetuating injustices faced by individuals and communities.[103] However, in the urgent 'push toward low emissions energy production along with energy storage and usage',[104] there remains a risk that a just transition may not be prioritised. Further, there is a risk that the good governance required of governments to support a just energy system is lacking.[105] Energy justice is 'concerned with social responsibility by the private sector, the government, and the public'.[106] It can be applied in legal and policy settings to support a just energy transition.[107] However, to date, no study has provided an analysis of the mine rehabilitation regime in NSW. This thesis provides the first assessment of energy justice with respect to critical minerals development and their role in the energy transition. Therefore, it aims to fill a clear gap in the existing literature.[108]

2.3.1 Principles of Energy Justice Overview

A consideration of the principles of energy justice is imperative to an effective socio-legal analysis of mine decommissioning and rehabilitation. The three primary tenets of energy justice are procedural, distributive, and recognition justice.[109] These tenets are universal values underpinning energy justice.[110] They are used in this thesis to guide recommendations for best regulatory and policy practices towards achieving universal energy justice.[111] Universal energy justice generally centres distributional and procedural justice, whereas subjective energy justice retains a necessary focus on recognition justice.[112] There is a clear link to community factors across the three tenets of energy justice. Subjective energy justice is influenced by local

[102] Darren McCauley and Raphael Heffron, 'Just Transition: Integrating Climate, Energy and Environmental Justice' (2018) 119 *Energy Policy*, 1, 3; Benjamin K. Sovacool et al 'Energy Decisions Reframed as Justice and Ethical Concerns' (2016) Nature Energy, 1, 4; Michael Carnegie Labelle, 'Radical Energy Justice: A Green Deal for Romanian Coal Miners?' (2021) *Journal of Environmental Policy and Planning*, 2.
[103] Michael Carnegie Labelle, 'Radical Energy Justice: A Green Deal for Romanian Coal Miners?' (n 102) 2.
[104] Brian McNulty and Simon Jowitt, 'Barriers to and Uncertainties in Understanding and Quantifying Global Critical Mineral and Element Supply' (2021) 24(7) *iScience*.
[105] Michael Carnegie Labelle, 'Radical Energy Justice: A Green Deal for Romanian Coal Miners?' (n 102), 2.
[106] Darren McCauley et al 'Advancing Energy Justice: The Triumvirate of Tenets' (2013) 32 *International Energy Law Review*, 107–110.
[107] Maciej Sokolowski and Raphael Heffron, 'Defining and Conceptualising Energy Policy Failure: The When, Where, Why, and How' (2022) 161 *Energy Policy*, 1, 4.
[108] Initiative for Energy Justice (n 19) 857.
[109] Raphael Heffron, 'The Role of Justice in Developing Critical Minerals' (2020) 7(3) *Extractive Industries and Society*, 858.
[110] Michael Carnegie LaBelle, 'In Pursuit of Energy Justice' (2017) 107 *Energy Policy*, 615–616.
[111] Ibid.
[112] Ibid 616.

cultural and environmental factors.[113] Distributional and procedural energy justice are often 'negotiated and contested at community-scale'.[114] This thesis is guided by these three principles of universal energy justice, while it also examines local nuances that are consistent with energy justice in particular.

There are also two further categories of energy justice, cosmopolitanism and restorative justice, which are not a matter of focus in this thesis. Cosmopolitanism attends to the global effects of energy development decisions.[115] This is a particularly high level and broad form of universal energy justice[116] that does not closely apply to the focus of this thesis on local communities affected by critical minerals mines. As such, cosmopolitanism is outside the scope of this thesis. Restorative justice aims to 'restor[e] the environmental effects of mining'.[117] The relationship between mine rehabilitation and restorative justice has been explored and established in the literature to date and, thus, is not a focus of this thesis.[118] Restorative justice may be used proactively in mine rehabilitation by 'pinpointing where prevention needs to occur'.[119] To do this, industry proponents must 'consider the full range of issues, as any injustice caused by an energy activity would have to be rectified'.[120]

However, restorative justice is typically engaged at the time of mine closure and decommissioning.[121] As these stages occur later in the mine life cycle than the progressive rehabilitation tools proposed in this thesis, restorative justice is not a focus of the analysis presented. While Heffron applies all five principles of energy justice to each stage of the mine life cycle,[122] he also explains that '[restorative justice] would ensure that the three energy justice tenets … are applied as these identify the areas where restorative action would have to be applied'.[123] Thus, restorative justice may be understood as a vehicle through which the three primary tenets of energy justice can be achieved. This thesis takes a deeper dive by identifying the opportunity for increased harmonisation between progressive rehabilitation and the three primary principles of energy justice.

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[113] Ibid 615–616.
[114] Alister Forman, 'Energy Justice at the End of the Wire: Enacting Community Energy and Equity in Wales' (2017) 107 *Energy Policy*, 650.
[115] Heffron, 'The Role of Justice in Developing Critical Minerals' (n 109) 858.
[116] Michael Carnegie LaBelle, 'In Pursuit of Energy Justice' (n 110) 616; Raphael Heffron et al 'Resolving Society's Energy Trilemma through the Energy Justice Metric' (2015) 87 *Energy Policy*, 170.
[117] Susan Nakanwagi, 'Mine Closure and Justice Implications' (2021) *Indian Journal of Projects, Infrastructure and Energy Law*.
[118] Nakanwagi (n 117); Heffron and McCauley, 'The Concept of Energy Justice across the Disciplines' (2017) *Energy Policy*, 660–661.
[119] Heffron and McCauley, 'The Concept of Energy Justice across the Disciplines' (n 118) 660.
[120] Ibid.
[121] Raphael Heffron, 'Applying Energy Justice into the Energy Transition' (n 76) 6.
[122] Heffron, 'Applying Energy Justice into the Energy Transition' (n 76) 3–6.
[123] Heffron and McCauley (n 118) 660.

2.3.2 Procedural Justice

Procedural justice requires proponents to follow a full and fair legal process,[124] inclusive of full legal steps[125] that engage all project stakeholders.[126] McCauley and Heffron warn that '[t]he transition away from fossil fuels will generate new senses of injustice surrounding processes of community engagement and involvement'.[127] Centring procedural energy justice is an opportunity to create ongoing community engagement and conflict resolution, particularly after effective public engagement is undertaken in the early stages of a development.[128] This thesis proposes progressive rehabilitation regulations that reflect a full and fair legal process with clearly articulated steps and both early and ongoing opportunities for local community engagement. In this context, local communities affected by critical minerals mines can be afforded procedural energy justice.

2.3.3 Distributive Justice

Distributive justice requires that the benefits and responsibilities of energy developments are fairly allocated.[129] It requires the identification and mitigation of energy access or affordability issues for local communities.[130] Local communities should also experience the economic and other benefits of critical minerals mines, particularly in long-life mines, where mine operations endure for a lengthy period of time.[131] To ensure that benefits are distributed fairly, community, regulatory, and legal measures may be used as tools to support positive land-use outcomes and afford energy justice for local communities.[132] Listening to the objections of local communities with respect to the location of the mine 'can contribute to rectifying injustices, and should not always be considered as detrimental to a project in terms of contributing to a delay'.[133] Incorporating the opinions of local communities regarding site selection may assist in affording distributive justice through more equitable allocation of mine benefits and drawbacks.

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[124] Manero et al (n 88) 2; Heffron, 'The Role of Justice in Developing Critical Minerals' (n 109) 858.
[125] Heffron, 'The Role of Justice in Developing Critical Minerals' (n 109) 858.
[126] Darren McCauley et al 'Advancing Energy Justice: The Triumvirate of Tenets' (n 106) 107–110; Raphael Heffron et al 'Resolving Society's Energy Trilemma Through the Energy Justice Metric' (n 116) 170.
[127] Darren McCauley and Raphael Heffron, 'Just Transition: Integrating Climate, Energy and Environmental Justice' (2018) 119 *Energy Policy*, 4; Heffron, 'The Role of Justice in Developing Critical Minerals' (n 109) 858.
[128] McCauley and Heffron, 'Just Transition: Integrating Climate, Energy and Environmental Justice' (n 127) 4.
[129] Heffron, 'The Role of Justice in Developing Critical Minerals' (n 109) 858; Darren McCauley et al 'Advancing Energy Justice: The Triumvirate of Tenets' (n 106) 107–110.
[130] McCauley and Heffron 'Just Transition: Integrating Climate, Energy and Environmental Justice' (n 127) 4.
[131] Keenan and Holcombe (n 61) 5.
[132] Ibid.
[133] Darren McCauley et al 'Advancing Energy Justice: The Triumvirate of Tenets' (n 106) 107–110.

Local communities affected by critical minerals mines should not bear the economic, social, environmental, or health costs associated with decommissioning and rehabilitation.[134] Significant downstream health and environmental impacts (for example, the heavy metal drainage resulting from the Captains Flat mine in NSW) have been known to affect local communities situated near mines.[135] Distributive environmental justice is an opportunity to ensure that industry proponents—rather than governments or communities—bear the burden of effective mine rehabilitation. This goes beyond challenging the 'apparent trend for mines to be placed into "care and maintenance" or sold to other entities to avoid the costs of rehabilitation';[136] it is a re-conceptualisation of the distribution of risks associated with critical minerals mines. This re-distribution should take place in the early stages and at ongoing periodic intervals of a mine's life cycle.

2.3.4 Recognition Justice

Recognition justice is the fair identification and acknowledgement of community rights holders.[137] Recognititon justice participation,[138] though it is a necessary step towards effective community engagement. Marginalised groups face the risk of 'misrecognition', both intentional and otherwise, leading to their interests being neglected.[139] Recognition justice can 'shed light on other under-recognised sections of society'.[140] It requires the precise and inclusive identification of the disparate interests of local communities and mitigation of adverse impacts on these interests. This has utility for both local communities and industry proponents, particularly in long-life mines, where established relationships with community organisations, local businesses, and other institutions may enhance working relationships. Additionally, these relationships may increase the industry proponent's commitment to rehabilitation.[141] The establishment of strong working relationships may afford recognition energy justice for local communities.

Access to energy justice in the age of rapid critical minerals exploration and development is a fundamental consideration for industry proponents and local communities. To support a just energy transition and maintain social acceptance of critical minerals mine projects, energy justice must be afforded to local communities. Achieving acceptable rehabilitation standards is a common concern shared by local communities affected by mining operations. Inadequate mine rehabilitation hinders the provision of energy

[134] Raphael Heffron, 'Energy Law for Decommissioning in the Energy Sector in the 21st Century' (2018) *The Journal of World Energy Law & Business*, 189–190.
[135] David Lamb, Peter D Erskine and Andrew Fletcher (n 70) 186.
[136] Ibid.
[137] Heffron, 'The Role of Justice in Developing Critical Minerals' (n 109) 858.
[138] Raphael Heffron et al, 'Resolving Society's Energy Trilemma through the Energy Justice Metric' (n 116) 170.
[139] Darren McCauley et al 'Advancing Energy Justice: The Triumvirate of Tenets' (n 106) 107–110.
[140] Raphael Heffron et al, 'Resolving Society's Energy Trilemma through the Energy Justice Metric' (n 138) 170.
[141] Keenan and Holcombe (n 61) 5-6.

justice to local communities, particularly through an unsatisfactory process,[142] a failure to recognise the community's unique interests and concerns, and unfair distribution of benefits and drawbacks of mining operations. Progressive mine rehabilitation is an opportunity to afford energy justice to local communities.

2.4 Progressive Mine Rehabilitation as an Opportunity to Afford Energy Justice

Progressive rehabilitation is conducted 'in a manner that achieves sustainable final land uses following the completion of mining'.[143] It provides an opportunity to transition mined land more effectively,[144] as it can draw early attention to whether a proponent is on track to achieving its mine rehabilitation commitments[145] and 'ensure that the mine operator has turned their attention to rehabilitation requirements throughout the mine life'.[146] Funding for rehabilitation is more likely to be adequate if it is directed towards rehabilitation at an early stage in the mine life cycle.[147] Progressive rehabilitation also provides an important opportunity for routine oversight as it is often monitored through annual reporting.[148] Progressive rehabilitation is a prime opportunity to achieve land-use outcomes and provide energy justice to local communities through the ARR framework.

However, progressive rehabilitation may limit or impact creative final land-use options.[149] Additionally, performing activities associated with progressive rehabilitation does not necessarily indicate that a closure plan has been agreed upon by all stakeholders.[150] Yet, as demonstrated in this chapter, a failure to undertake certain activities such as soil and seed storage or waste and toxicity management may limit the final land-use options available to a particular site. Further, 'inactive areas of long-life mines can be rehabilitated at the same time as consideration is given to land-use transitions'.[151] This demonstrates the role of progressive rehabilitation in supporting positive or agreed-upon land-use outcomes.

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[142] Ignacio Herrera Anchustegui, 'Distributive Justice, Community Benefits and Renewable Energy: Offshore Wind Projects' in Ruven Fleming, Kaisa Huhta, and Leonie Reins (eds), *Sustainable Energy Democracy and the Law* (Brill Nijhoff, 2021) 218.
[143] Resources Regulator (NSW), 'New Standard Rehabilitation Conditions on Mining Leases' (n 38).
[144] Sarah Holcombe and Julia Keenan, 'Mining as a Temporary Land Use Scoping Project: Transitions and Repurposing' (2020) *Centre for Social Responsibility in Mining, The University of Queensland*, 41.
[145] Department of Industry, Science, Energy and Resources (Cth), *Mine Rehabilitation: Leading Practice Sustainable Development Program for the Mining Industry* (n 66) 6.
[146] Ibid.
[147] Environmental Defenders Offices of Australia, *Inquiry into the Rehabilitation of Mining and Resources Projects as it Relates to Commonwealth Responsibilities* (Submission, 2017) 6.
[148] Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (Explanatory Guide, 2021) 15, 20, 22–24; Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Small Mines* (Explanatory Guide, 2021) 12–13.
[149] Keenan and Holcombe (n 61) 7.
[150] Ibid.
[151] Ibid.

While undisputedly required for the energy transition to a low carbon economy,[152] critical minerals mines pose unique considerations. Critical minerals mines are often highly emissions-intensive,[153] which can be exceptionally harmful for local communities. These mines often contain more companion commodities than non-critical minerals mines.[154] Many critical minerals are often found in deposits associated with other critical minerals,[155] and residual materials associated with copper mines can be the source of other critical minerals.[156] Operations focusing on companion commodities can lead to larger mines, longer operations, or the re-activation of decommissioned mines. These factors can negatively impact local communities. Further, by-product metals often experience more price volatility than primary metals.[157] These by-product metals may also have relatively small markets or be particularly difficult to extract compared with the primary, or 'host', metals.[158] This unpredictability can be harmful for mine operators and local communities.

It is also common for critical minerals mining to take place in areas facing environmental stress. Nearly 50% of copper, gold, iron ore, and zinc production occurs in areas already suffering from worsening water stress.[159] For example, and of particular importance to NSW, Eastern Australia was listed as one of the seven water-stress hot spots globally for mining.[160] Further, mining has been associated with ecotoxicity and human toxicity, and the energy transition may compound these issues.[161] Understanding and assessing the impacts of each critical mineral and mining operation is an important preliminary step in mine development.[162] In NSW, this is covered through environmental impact assessments conducted during the mine application phase.[163] However, in the context of a hastening energy transition and increasing

[152] Heffron, 'The Role of Justice in Developing Critical Minerals' (n 109) 855–863; Thomas Graedel et al 'Metal Resources, Use and Criticality' as discussed in Gus Gunn (ed) *Critical Minerals Handbook* (John Wiley & Sons, 2013).
[153] International Energy Agency, *Sustainable and Responsible Development of Minerals* (Report, 2021) < https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/sustainable-and-responsible-development-of-minerals >.
[154] Laura Sonter et al 'Renewable Energy Production Will Exacerbate Mining Threats to Biodiversity' (2020) *Nature Communications*; Gavin Mudd et al 'Critical Minerals in Australia: A Review of Opportunities and Research Needs' (2019) *Analysis & Policy Observatory*; Gavin Mudd et al 'The World's By-Product and Critical Metal Resources Part I: Uncertainties, Current Reporting Practices, Implications and Grounds for Optimism' (2017) 86 *Ore Geology Reviews*, 925.
[155] Department of Regional NSW, *Critical Minerals and High Tech Strategy* (n 2) 14.
[156] Michael Moats et al 'Towards Resilient and Sustainable Supply of Critical Elements from the Copper Supply Chain: A Review' (2021) 307 *Journal of Cleaner Production*.
[157] Gavin Mudd et al 'The World's By-Product and Critical Metal Resources Part I: Uncertainties, Current Reporting Practices, Implications and Grounds for Optimism' (n 154) 926.
[158] Ibid.
[159] Lindsay Delevingne et al (n 79).
[160] Ibid.
[161] Jordy Lee et al (n 98) 2, 3.
[162] Ibid 2.
[163] See Chapter III for an examination of the environmental impact assessment process in NSW.

environmental effects associated with climate change, regulatory tools should be periodically employed throughout the mine life cycle.

Mining often leads to disputes between industry proponents and local communities.[164] In 2021, a survey seeking public input on potential coal exploration in NSW attracted approximately 2,000 submissions strongly opposed to mine operations.[165] Industry proponents recognise the importance of resolving disputes at an early stage, as costs associated with conflicts are high.[166] There is a need to 'manage and close mines with the support of the communities in which it operates'.[167] Further, the existing literature expresses that meeting rehabilitation regulatory criteria alone may not lead to social acceptance.[168] It is here where progressive rehabilitation regulations may pose an opportunity to mitigate not only disputes but also risks associated with critical minerals mines. Progressive rehabilitation 'minimises mine closure costs and environmental risk'.[169] It provides ongoing opportunities to review site-specific issues alongside local communities and promote adaptability to environmental stressors that may occur 'at different rates from place to place',[170] particularly as the climate crisis 'introduces unpredictability'.[171] This thesis proposes progressive rehabilitation as an opportunity to achieve rehabilitation objectives and afford energy justice for local communities. By minimising the risks associated with critical minerals mines, progressive rehabilitation supports the provision of energy justice to local communities and a just energy transition.[172]

This chapter analysed recent literature to determine the factors that impede the provision of energy justice to local communities. This demonstrates that effectively regulating progressive mine rehabilitation provides a foundation for the provision of energy justice. NSW currently regulates progressive rehabilitation but gaps remain in the ability of these regulations to support a just energy transition. The following chapter examines the legal, regulatory, and policy framework in NSW towards identifying opportunities to support energy justice for local communities affected by critical minerals mines.

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[164] Jordy Lee et al (n 98) 2.
[165] Department of Planning and Environment (NSW) *Hawkins-Rumker Potential Release Areas* (Report, 2021) ii, iv.
[166] Rachel Davis and Daniel M Franks, 'The Costs of Conflict with Local Communities in the Extractive Industry' (2011) *First International Seminar on Social Responsibility in Mining*, 9.
[167] Australian Geographic (n 20).
[168] Josianne Claudia Sales Rosa et al 'To What Extent Can Mine Rehabilitation Restore Recreational Use of Forest Land? Learning from 50 Years of Practice in Southwest Australia' (2020) 90 *Land Use Policy*.
[169] Steven Pearce et al 'Progressive Rehabilitation – Martabe Gold Mine as a Case Study' (2016) *Australian Centre for Geomechanics*, 613.
[170] Lindsay Delevingne et al (n 79).
[171] Ibid.
[172] Éléonore Lèbre et al 'The Social and Environmental Complexities of Extracting Energy Transition Metals' (2020) *Nature Communications*.

CHAPTER III: MINING REHABILITATION REGULATION IN NEW SOUTH WALES

3.1 Introduction

To address the research question of whether NSW embeds the principles of energy justice in its regulation of critical minerals mines, the regulatory framework pertaining to mining activities in NSW must be examined. This chapter extends the analysis presented in Chapter II, which defines and positions the concepts of mine rehabilitation, progressive mine rehabilitation, and energy justice as the essential conceptual foundation of the thesis. Chapter III first explores the regulatory framework in NSW with respect to mining, before applying the concepts of energy justice and progressive rehabilitation to the existing framework.

After exploring the legislative and policy framework in NSW with respect to mining, this chapter investigates whether the recent *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW; 'Mining Amendment') aligns with and enhances the progressive rehabilitation of disturbed land in relation to critical minerals. This question is aimed at examining progressive rehabilitation in the age of the energy transition and the challenging issues created by critical minerals mines. The chapter then assesses the extent to which the current NSW regulatory framework for mining is effective in achieving the progressive mine rehabilitation of critical minerals mines by embedding principles of energy justice for communities in NSW. The objective of this chapter is to introduce potential regulatory solutions to deficits associated with mine rehabilitation and energy justice in NSW.

3.2 Mining Policy Guidelines

NSW is a historical producer and exporter of copper[173] and today holds opportunities for the extraction or exploration of 16 further critical minerals.[174] To support the advancement of mining in the state, NSW has funded the $130 million Critical Minerals Activation Fund ('the Fund').[175] The Fund aims to achieve a secure supply of critical minerals and takes steps towards the transition to a low-carbon economy. However, while the Fund aims to support the critical minerals industry in 'generating prosperity safely', it does not state with specificity what 'safely' means, nor how this will be achieved. In addition, the priorities listed do not refer to local communities affected by critical minerals mines, nor to a just energy transition more

[173] NSW Mining, 'NSW Government Critical Minerals and High-Tech Metals Strategy' (Web Page, 2021) <https://www.nswmining.com.au/news/2021/11/nsw-government-critical-minerals-and-high-tech-metals-strategy >.
[174] Department of Regional NSW, 'Critical Minerals' (Web Page, 2022) <https://www.regional.nsw.gov.au/meg/nsw-resources/critical-minerals >.
[175] Department of Regional NSW, 'Critical Minerals and High Tech Metals Activation Fund' (Web Page, 2022) < https://www.regional.nsw.gov.au/meg/nsw-resources/critical-minerals-and-high-tech-metals-activation-fund >.

broadly. As such, it is unclear whether the Fund will support the provision of energy justice to local communities affected by critical minerals mines.

NSW also implemented the *Critical Minerals and High-Tech Metals Strategy* ('the Strategy') to promote exploration of critical minerals and attract investment in the mining sector.[176] The Strategy highlights the importance of strong governance to 'ensure a security of supply'[177] but fails to comment on mine rehabilitation in its clear aim to achieve a strong regulatory environment. This is particularly discouraging considering that a NSW Audit Office Report identified a number of issues relating to the state's mine operations and closure planning regulations.[178] These findings led to new rehabilitation policies and guidelines,[179] which are not reiterated in the Strategy.[180]

NSW has made policy progress, however, with respect to progressive rehabilitation. Whilst the state previously 'supported' progressive rehabilitation 'through the partial release of the security deposit if successful rehabilitation is demonstrated',[181] the NSW Resources Regulator prominently displays the objective the 'rehabilitation is carried out progressively, that is, as soon as reasonably practicable following disturbance'.[182] Further, mine rehabilitation as a cornerstone of a strong regulatory environment is becoming more universally accepted.[183] However, progressive rehabilitation must remain a priority as efforts to secure a critical minerals supply expand. This is fundamental to achieving energy justice for local communities affected by critical minerals mines and requires express legislative provisions to provide clear and rigorous regulation. This chapter argues the NSW regulatory framework, as examined below in section 3.3, should approach progressive rehabilitation in a manner that reflects its imperative role in the just transition to a low-carbon economy.

[176] Department of Regional NSW, *Critical Minerals and High Tech Strategy* (n 2)
[177] *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW) s 17.
[178] Audit Office of New South Wales, *Mining Rehabilitation Security Deposits* (Report, 2017).
[179] Ibid; Department of Planning and Environment (NSW), 'Mine Rehabilitation' (Web Page, 2021) <https://www.planning.nsw.gov.au/Policy-and-Legislation/Mining-and-Resources/Mine-rehabilitation >.
[180] Department of Regional NSW, *Critical Minerals and High Tech Strategy* (n 2)
[181] Department of Planning and Environment (NSW), *Improving Mine Rehabilitation in NSW* (Discussion Paper, 2017), 7.
[182] Resources Regulator (NSW), 'Mine Rehabilitation' (Web Page, 2022) <https://www.resourcesregulator.nsw.gov.au/rehabilitation/mine-rehabilitation >.
[183] Minerals Council of Australia, *Mine Rehabilitation in the Australian Minerals Industry* (Report, 2016) 4.

3.3 Mining Legislation and Regulation

3.3.1 *Mining Act 1992* (NSW)

In Australia, mining is predominantly regulated by the states and territories. The primary legislation with respect to critical minerals mine development in NSW is the *Mining Act 1992* (NSW; the 'NSW Act'). Some of the objectives of the NSW Act reference or are related to mine rehabilitation. The NSW Act requires that the discovery and development of mineral resources must:

> (a) recognise and foster the significant social and economic benefits to New South Wales that result from the efficient development of mineral resources,
>
> (b) provide an integrated framework for the effective regulation of authorisations for prospecting and mining operations,
>
> (c) provide a framework for compensation to landholders for loss or damage resulting from such operations,
>
> (d) ensure an appropriate return to the State from mineral resources,
>
> (e) require the payment of security to provide for the rehabilitation of mine sites,
>
> (f) ensure effective rehabilitation of disturbed land and water, and
>
> (g) ensure mineral resources are identified and developed in ways that minimise impacts on the environment.[184]

This thesis pays particular attention to objective (f), being the *effective rehabilitation of disturbed land* and water. More specifically, the thesis assesses whether the current regulatory framework provides effective rehabilitation of land following the exploitation of critical minerals. It does not consider water disturbed by critical minerals mines as this is outside the scope of this research, nor does it consider issues concerning Native Title, as previously mentioned.[185]

Progressive rehabilitation is also relevant to ss 31A(e) and 31A(g) of the NSW Act, which stipulate a requirement of sufficient security to provide for the rehabilitation of critical minerals mines as well as identification and development of critical minerals mines in ways that minimise impacts on the environment, respectively. For example, sufficient security and environmentally-minded critical minerals development may support an environment conducive to effective rehabilitation. Likewise, identifying and developing mineral resources in ways that minimise impacts on the environment thus supports

[184] *Mining Act 1992* (NSW) s 3A.
[185] *Native Title Act 1993* (Cth).

rehabilitation. The effective rehabilitation of land disturbed by critical minerals mines is the overarching objective of this thesis. Ensuring effective rehabilitation is a targeted opportunity to address energy justice for local communities affected by critical minerals mines.

In addition to stipulating legislative objectives associated with rehabilitation and mandating rehabilitation security bonds,[186] the NSW Act delineates governmental powers to enforce rehabilitation. For example, the Secretary may direct a holder of a mining authorisation to rehabilitate land that is or may be affected by activities under the authorisation.[187] If this direction is not complied with, the Minister may take action to give effect to the direction at the holder's expense.[188] The Minister may also grant a permit to any person to enable them to carry out any rehabilitation work required by the direction.[189] These sections create overarching powers of enforcement. However, the particular procedures for managing rehabilitation are matters attended to in the *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW; **'**Mining Amendment'). The Mining Amendment is analysed below (section 3.3.2).

3.3.2 *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW)

In 2021, NSW enacted the new Mining Amendment. The Explanatory Note included in the Amendment highlights the overarching objective to prescribe conditions relating to environmental management, protection and rehabilitation of land that is or may be affected by mining.[190] The conditions include:

> (a) preventing or minimising harm to the environment,
>
> (b) ensuring rehabilitation occurs promptly and achieves the final land use,
>
> (c) carrying out rehabilitation risk assessments,
>
> (d) preparing documents relating to rehabilitation and having some of them approved,
>
> (e) keeping records of compliance and reporting on non-compliance,
>
> (f) nominating contact persons, and
>
> (g) giving notice in relation to development applications and modifications of development consent.

When introducing the Regulation, the Minister responsible for these objectives explained that the Mining Amendment would improve environmental management compliance by reducing regulatory complexity,

[186] *Mining Act 1992* (NSW) pt 12A.
[187] *Mining Act 1992* (NSW) s 240(1)(e).
[188] Ibid ss 241-242.
[189] Ibid s 249.
[190] *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW).

ensuring progressive rehabilitation and carrying out rehabilitation risk assessments.[4] This section examines whether progressive rehabilitation is regulated and, thus, operates to improve environmental management.

To ensure effective rehabilitation of disturbed land, the Mining Amendment aims to improve environmental management compliance by reducing regulatory complexity, ensuring progressive rehabilitation, and carrying out rehabilitation risk assessments.[191] This includes the requirement for proponents to conduct rehabilitation risk assessments,[192] and to record and report on compliance,[193] including annual reports on rehabilitation.[194] These amendments, while positive, do not rectify all deficits associated with effective rehabilitation of disturbed land. This is in part because many of these measures rely on proponent goodwill or administrative discretion. For example, clause 4 requires that proponents take 'reasonable' measures to prevent and minimise harm to the environment, and clause 5 requires that rehabilitation occur as soon as 'reasonably' practicable after disturbance.[195] Here, the terms 'reasonable measures' and 'reasonably practicable' are not defined, leaving some level of discretion to industry proponents.

The NSW Resources Regulator indicates that the 'lease holder must meet the standard of behaviour expected of a reasonable person in the lease holder's position'.[196] This includes what was known, or ought to have been known, by the lease holder at the time; what was reasonably foreseeable to the lease holder at the time; what was possible in the circumstances; and whether it was reasonable in the circumstances to do all that was possible.[197] Generally, cost does not have a bearing on what is 'reasonably practicable' for the purposes of mine rehabilitation.[198] In a 2022 case regarding a coal mine that polluted waters, the Land and Environment Court of NSW held that practical measures could have been taken to reduce negative environmental impacts. For example, erosion could have been prevented or decreased through reasonably practicable measures such as installing temporary diversion banks and stockpiling topsoil.[199] While this indicates some judicial guidance on what may constitute progressive rehabilitation, further case law with respect to the relatively new Mining Amendment is needed to define and clarify obligations surrounding progressive rehabilitation.

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[191] *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW) cls 4, 5, 7.
[192] Ibid cl 7
[193] Ibid cl 17–18.
[194] *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW) cl 13(2); NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 15, 20, 22–24; NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Small Mines* (n 148) 12–13.
[195] *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW).
[196] Resources Regulator (NSW), 'New Standard Rehabilitation Conditions on Mining Leases' (n 38) 11.
[197] Ibid.
[198] Ibid.
[199] *Environment Protection Authority v Maules Creek Coal Pty Ltd* [2022] NSWLEC 33 [195]–[200]; [207]–[208].

In addition to the discretion surrounding what measures are 'reasonable' or 'reasonably practicable', the Secretary of Regional NSW[200] enjoys a broad ambit to consider 'any other matters the Secretary considers relevant'[201] when deciding whether to approve rehabilitation outcome documents, which includes the ARR. In *Muswellbrook Shire Council v Hunter Valley Energy Pty Ltd*,[202] the Secretary approved a rehabilitation strategy, which was later challenged by the local community on the basis that the approval was unreasonable. The NSW Land and Environment Court found that certain determinations would be 'better suited to performance by a person with some knowledge or expertise in relation to the type of commercial/environmental matters referred to',[203] or otherwise 'would clearly be an issue for the Secretary's consideration when determining whether to approve the Rehabilitation Strategy'.[204]

While the Mining Amendment provides for evaluation of each mining operation on a case-by-case basis, further guidance for discretionary terminologies and powers are needed. This thesis examines the ARR and opportunities to enhance progressive rehabilitation opportunities and embed energy justice. The ARR is provided by the mining lease holder (which is the industry proponent) to the Secretary every 12 months[205] and includes the following matters:

> (a) a description of the rehabilitation undertaken over the annual reporting period,
>
> (b) a report demonstrating the progress made through the phases of rehabilitation provided for in the forward program applying to the reporting period, and
>
> (c) a report demonstrating progress made towards achievement of the following—
>
> > (i) the objectives set out in the rehabilitation objectives statement,
> >
> > (ii) the criteria set out in the rehabilitation completion criteria statement, and
> >
> > (iii) for large mines, the final land use as spatially depicted in the final landform and rehabilitation plan.[206]

[200] At the time of writing, the Secretary of the Department of Regional NSW is Ms. Rebecca Fox, associated with the Industry Development, Mining, Exploration and Geoscience cluster.
[201] *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW) cl 2(1)(b).
[202] *Muswellbrook Shire Council v Hunter Valley Energy Pty Ltd* (2019) 372 ALR 695.
[203] Ibid [137].
[204] Ibid [140]–[141].
[205] *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW) cls 13(4)–(5), 15(2).
[206] Ibid cl 13(2).

The ARR requires proponents to provide updates regarding progressive rehabilitation.[207] It is made publicly available, usually on the industry proponent's website, within 14 days after it is provided to the Secretary or amended.[208] However, opportunities for community engagement or participation are not referenced in the Mining Amendment. In this way, the existing legal framework in NSW maintains shortcomings in supporting a just energy transition, as well as progressive mine rehabilitation regulations.

Mine rehabilitation is a particularly complex and prolonged process requiring clear and consistent pre-determined regulatory criteria.[209] Without clarity of regulatory criteria and consistency of application, consequences such as those seen in Queensland may result, where '[u]nclear and unformulated approaches to rehabilitation and mine closure … pose environmental risks and economic burdens for mining companies [and] government'.[210] To avoid this, monitoring, auditing, and evaluation of progressive rehabilitation must 'assess whether completion criteria have been met or are likely to be met, and to track rehabilitation progress over time'.[211] While NSW has taken positive steps towards this outcome, gaps exist in the current framework.

3.3.3 Other Relevant Planning and Environmental Legislation

This thesis is confined to an analysis of the regulatory framework for mine rehabilitation. In NSW, this is primarily encapsulated in the NSW Act and the Mining Amendment. The scope of the thesis does not extend to an examination of the NSW environmental and planning regulatory frameworks. However, it briefly explores the environmental impacts assessments as these underpin the early stages of mining lease grants in NSW.

A development consent under the *Environmental Planning and Assessment Act 1979* (NSW; 'EPAA') is required before a mining lease can be granted.[212] The Department of Planning and Environment (DPE) evaluates the potential environmental, social and economic impacts associated with the proposed mine for state-significant mining developments. Alternatively, for other mines, the relevant local council evaluates these impacts. However, most large mining developments in NSW are state-significant developments, and

[207] NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 15, 20, 22–24; *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW) cl 13(5).
[208] *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW) cls 16(1), (3)(b).
[209] Manero et al (n 88) 2.
[210] Jo-Anne Everingham et al 'A Proposal for Engaging a Stakeholder Panel in Planning Post-Mining Land Uses in Australia's Coal-Rich Tropical Savannahs' (2018) *Land Use Policy,* 397–406.
[211] Ibid 6.
[212] *Environmental Planning and Assessment Regulation 2000* (NSW) sch 3 pt 2 s 25.

thus fall under the ambit of the DPE. At this stage, environmental impact statements (EISs) [213] are submitted by the applicant to identify the environmental impacts of a proposed development.[214] These statements form the key component of environmental impact assessments. They should include any environmental impacts on the local community; impacts on ecosystems; effects on places holding cultural, social, or other special values; long-term effects on the environment; pollution, degradation, risk, or other environmental effects; reduction in beneficial uses of the environment; and further considerations.[215] The EIS assists in identifying environmental and social impacts of a particular mine.[216] A Social Impact Assessment (SIA), which identifies social issues caused by the mine, forms part of the EIS.[217] The EPAA requires that 'the principles of sustainable development, including the precautionary principle'[218] are taken into account if certain conditions are met.[219] Once approved, any further conditions required by the DPE are incorporated into the development consent. The DPE commonly incorporates further site-specific rehabilitation objectives into mine development consents in the assessment and approval phase. Finally, the development consent is granted.

Should a mining action have a significant impact on a matter of national significance, it must be approved under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth; 'EPBCA'), where further conditions may be imposed before a mining project is approved. These conditions may relate to mine rehabilitation. Matters of national environmental significance include world or national heritage, wetlands of international importance, nationally threatened species and ecological communities, migratory species, Commonwealth marine areas, and other matters wholly unrelated to this thesis. This thesis does not discuss the regulatory process of mining actions that may impact a matter of national significance, as this work remains solely focused on the regulatory process in NSW. However, it is mentioned here as a potential precursor to mining lease grants. After obtaining any further environmental assessments, such as those under the EPBCA or the *Protection of the Environment Operations Act 1997* (NSW; 'PEOA'), the industry proponent may obtain a mining lease pursuant to the NSW Act.[220]

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[213] *Environmental Planning and Assessment Regulation 2000* (NSW) ss 71–72, 78; pt 14; sch 2.
[214] *Environmental Planning and Assessment Act 1979* (NSW) pt 5.
[215] *Environmental Planning and Assessment Regulation 2000* (NSW) s 228.
[216] See Ch II for discussion surrounding barriers to rehabilitation.
[217] Department of Planning and Environment (NSW), *Social Impact Assessment Guideline for State Significant Projects* (Report, 2021), 12.
[218] The precautionary principle is often cited as requiring postponement of cost-effective measures to prevent environmental degradation. See Chris Tollefson, 'A Precautionary Tale: Trials and Tribulations of the Precautionary Principle' in Allan Ingleson (ed), *Environment in the Courtroom* (University of Calgary Press, 2019) 17, 18–19.
[219] Chris Tollefson (n 218) 17, 31–36; *Telstra Corporation Ltd. v. Hornsby Shire Council* [2006] NSWLEC 133 [121]–[126].
[220] *Mining Act 1992* (NSW) s 65(1).

In the post-approval phase, the industry proponent is still expected to engage with the local community during the entirety of the mine life cycle, including decommissioning.[221] Further, the community maintains avenues to raise concerns with the industry proponent as well as the DPE.[222] However, barriers to effective rehabilitation will persist.[223] This is a result of expected and unexpected challenges that may arise during the course of mine operations. As such, regulatory tools that operate in the post-approval phase are required to effectively regulate the challenging nature of progressive rehabilitation.

3.4 Opportunities to Embed the Principles of Energy Justice into Progressive Rehabilitation Regulations

A myriad of factors affecting the success of mine rehabilitation may occur at different stages in the mine life cycle. As outlined in Chapter II, many mining areas face environmental and water stress, which is expected to increase as the climate crisis persists. Further, it is relatively common for operators to close the mine when faced with unexpected or unmanageable financial or other issues.[224] Nickel and copper mines are at particular risk of closure due to falling commodity price,[225] which may signal particular challenges faced by operators of critical minerals mines. Mine closure can be particularly devastating for local communities, which often face abandoned mines and incomplete rehabilitation.[226]

Yet, evidence shows that ongoing community engagement, progressive closure, and contingency plans can generate local community resilience.[227] This may mitigate some impacts on rehabilitation due to early mine closure. This demonstrates the need for community engagement in the ongoing planning and modification process. However, this is not embedded in the regulations as they currently exist in NSW. For example, industry proponents maintain power to seek project modification through the DPE, whereas communities are not afforded the same opportunity.[228] This unilateral power is particularly concerning given that, for example, governments rarely scrutinise how sustainable or efficient a mining operation is, instead electing to focus on safety and environmental matters.[229] This may be a result of 'the community [having] more of

[221] Department of Planning and Environment (NSW), *Undertaking Engagement Guidelines for State Significant Projects* (Report, 2021), 22–23.
[222] Ibid 23.
[223] Department of Planning and Environment (NSW), *Indicative Secretary's Environmental Assessment Requirements* (Report, 2015), 10.
[224] David Laurence (n 80) 281.
[225] Ibid.
[226] Ibid.
[227] Rezki Syahrir et al 'Coping with Sudden Mine Closure: The Importance of Resilient Communities and Good Governance' (2021) 8 *The Extractive Industries and Society*.
[228] Department of Planning and Environment (NSW), *Undertaking Engagement Guidelines for State Significant Projects* (n 221) 23.
[229] David Laurence (n 80) 283–284.

an interest in these aspects, or simply the lack of technical expertise in government'.[230] Regardless of the reason for limited government oversight in this area, local community perspectives can provide imperative insight into the efficiency and sustainability of a particular critical minerals mine operation. While some industry proponents may include community perspectives in their applications for project modification, this is not a prerequisite. As such, opportunities for local communities to share their perspectives on a regular basis should be provided for in the regulatory framework.

While the EIS is a crucial foundational resource to guide rehabilitation from the earliest stages, additional regulatory tools are needed to support effective rehabilitation. Such tools should be enduring and flexible to the circumstances that arise over the course of mining operations, and particularly those pertaining to large or long-term mines. This aligns with the approach of the NSW Resources Regulator (the 'Regulator'), which 'is outcomes focused while being flexible to allow for industry to develop and implement innovative and best practice methodologies specific to a site'.[231] Rehabilitation requirements are attached to all mining leases issued pursuant to the NSW Act.

The Regulator regulates the rehabilitation requirements under the NSW Act and the mining lease terms. The Regulator utilises a number of tools to do this, including various guides, the rehabilitation objective statement, the rehabilitation completion criteria statement, the rehabilitation management plan, forward programs, and the ARR.[232] The ARR may arguably provide an exceptional opportunity to monitor and enforce progressive rehabilitation. Further, regulations surrounding the ARR may provide an environment for progressive rehabilitation to enhance energy justice for local communities affected by and hosting critical minerals mines. To ensure positive rehabilitation outcomes and provide for flexibility and innovation in rehabilitation practices, regular and rigorous monitoring of progressive rehabilitation should take place. This monitoring can provide an opportunity to incorporate local community perspectives on the status of rehabilitation.

As discussed in section 3.3.3, state-significant developments require an EIS, social impact assessment ('SIA'), and voluntary planning agreements. The general public is given 28 days to respond to an EIS. Yet, there is a lack of targeted participation and consultation with affected communities situated within close proximity to critical minerals mines. Further, the principles of energy justice are not expressly provided for in the wording of the Mining Amendment. Whilst the Mining Amendment includes a number of provisions surrounding mine rehabilitation, it does not make specific reference to community engagement. Seeking

[230] Ibid 284.
[231] Resources Regulator (NSW), 'Regulatory Framework' (Web Page, 2022) <https://www.resourcesregulator.nsw.gov.au/rehabilitation/mine-rehabilitation/regulatory-framework >.
[232] *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW) cl 12(1)(a)–(c), 12(2), 13(1).

the engagement and support of the local community is important to protecting the efficiency and sustainability of mine operations. In part, this is because '[d]ysfunctional community interaction will ultimately distract management from its main focus of efficiently running the mine'.[233] Industry proponents that fail to afford the principles of energy justice to local communities may be at greater risk of dysfunctional community interactions. This may occur through an incomplete or incorrect assessment of the disparate demographics and perspectives within a community and, thus, fails to provide recognition justice. An insufficient consultation process may reflect a failure to provide procedural justice, and even unfair distribution of the benefits and drawbacks of mine operations, in turn hampering distributive justice. Further, dysfunctional community interactions may obstruct progressive rehabilitation through reduced efficiency of operations, or a failure to understand or achieve the local community's expectations with respect to mine rehabilitation standards.

This chapter highlighted the gaps in the ability of the NSW regulatory framework to achieve progressive rehabilitation of critical minerals mines. NSW should mandate effective community engagement in efforts to embed the principles of energy justice into mine rehabilitation regulations. The NSW Act could better incorporate the principles of energy justice through co-designing and monitoring progressive rehabilitation with local communities. This will better support a just energy transition by ensuring the meaningful inclusion of local communities. As mining rehabilitation is a primary source of concern and risk for local communities, it is of the utmost importance that regulations centre their perspectives throughout the mine life cycle. The following chapter builds on the discussion in this chapter by reviewing BC, Canada, as a comparative functional jurisdiction to analyse whether the regulatory approach in BC better incorporates progressive rehabilitation and energy justice for critical minerals mines.

[233] David Laurence (n 80) 283–284.

CHAPTER IV: MINING REGULATION IN BRITISH COLUMBIA: A BETTER APPROACH TO REHABILITATION?

4.1 Introduction

This chapter provides an overview of the current regulatory frameworks governing mine rehabilitation in BC with respect to critical minerals mines. The mining framework in BC provides a functionally comparative jurisdiction to assess and analyse the functioning of regulatory and legal tools to achieve incorporation of energy justice principles in the critical minerals sector in NSW. It outlines scholarship and evidence surrounding regulatory best practices in this area. This chapter asks whether there are alternative regulatory tools to manage progressive rehabilitation by examining how BC has implemented a progressive mining approach.

It is important to note that there remain concerns surrounding mine rehabilitation regulations in all jurisdictions. The BC regime is not posed as a comprehensive alternative 'best practice' model. It is not a complete solution to the regulatory deficiencies present in NSW. In addition to historical and contextual differences, the BC framework suffers from 'the Provincial government's unwillingness to ensure that its legislative and regulatory regime guarantees that those who cause the harm efficiently and effectively bear its costs'.[234] This leads to 'hidden risks and costs' to both local communities and industry proponents, such as long-term environmental impacts and poor investment decisions.[235] Rather, the BC framework provides an opportunity to address the lack of legal consensus in Australia on how to manage the complex regulatory issues associated with mine rehabilitation. A Senate inquiry expressed that 'regulatory requirements and mining approvals in a given mine's jurisdiction can … have a significant impact on what rehabilitation outcomes are agreed to and delivered'.[236] Thus, this chapter reviews the BC model in light of the NSW regime discussed in Chapter III. The aim of Chapter IV is to determine whether there are opportunities to apply alternative regulatory mechanisms in NSW. The functional comparative analysis is presented in Chapter V.

[234] Robyn Allan, 'Toward Financial Responsibility in British Columbia's Mining Industry' (Report, May 2016) *Union of British Columbia Indian Chiefs*, 5.
[235] Ibid.
[236] Senate Standing Committees on Environment and Communication, *Rehabilitation of Mining and Resources Projects as it Relates to Commonwealth Responsibilities* (n 59) 11.

4.2 Primary Legislation

In BC, the regime for mining development is contained in the *Mines Act 1996* ('the BC Act'). The BC Act, similar to that in NSW, provides for the mandates surrounding all stages of the mine life cycle, including construction, operations, and decommissioning. A permit must be granted under s 10 before mining can begin.[237] This permit includes detailed closure and reclamation plans, a security assessment, and financial assurances. Mining companies must place a security with the BC government[238] to ensure reclamation obligations are kept. This security is only returned once the mine site has been satisfactorily reclaimed and there are no outstanding obligations with respect to monitoring or maintenance. While the provincial government has recognised that the financial risk posed by reclamation should be reduced, provincial liability for unfunded reclamation has continued to grow.[239] While not the focus of this thesis, sufficient financial security remains an ongoing gap in the BC mining framework.

If there are changes to closure and reclamation plans or security assessments during the course of mine planning or operations, the permit must be amended. This process helps support satisfactory reclamation. BC has regulated mine reclamation since 1969,[240] ensuring that upon mine closure, land, watercourses and cultural heritage resources are returned to a safe and environmentally sound state.[241] BC was one of the earliest jurisdictions in Canada to regulate mine reclamation after extensive environmental and ecological damage associated with inadequate mine reclamation.[242] Today, the BC Act applies to all stages of the mine life cycle, including mine reclamation.[243] However, it does not list reclamation as an objective of the BC Act. To assist with reclamation, the BC Act prescribes the *Health, Safety, and Reclamation Code for Mines in BC* ('the Code'). This is the 'primacy vehicle for regulating the Province's mining industry'.[244]

4.3 Secondary Legislation

The legislative framework in BC appears to emphasise worker health and safety more than environmental impact protection. Most references to risk in the *Health, Safety, and Reclamation Code for Mines in BC* ('the Code') surround risks to human health and safety. Nonetheless, when introducing the 2021 amendments to the Code, the Minister explained along with improving health and safety, it would 'support

[237] *Mines Act*, RSBC 1996, c 293 s 10.
[238] Ibid s 12.
[239] Robyn Allan (n 234) 33–34.
[240] Ministry of Energy and Mines (BC), *EY Report & Recommendations for BC's Mine Reclamation Financial Security Policy* (n 84), 6.
[241] Ministry of Energy, Mines and Low Carbon Innovation (BC), 'Reclamation and Closure' (n 67).
[242] Ministry of Energy, Mines and Low Carbon Innovation (BC), *Message from the Minister* (Report, 2021).
[243] *Mines Act*, RSBC 1996, c 293 s 2.
[244] Ministry of Energy, Mines, and Low Carbon Innovation (BC), *Message from the Minister* (n 242).

a responsible and sustainable industry that plays a critical role in our transition to a low-carbon economy'.[5] BC's 2021 amendments do appear to strengthen reclamation in the province. This is supported by the purposes of the Code, which are to:

> 1) protect employees and all other persons from undue risks to their health and safety arising out of or in connection with activities at mines;
>
> 2) safeguard the public from risks arising out of or in connection with activities at mines;
>
> 3) protect and reclaim the land and watercourses affected by mining; and
>
> 4) monitor the extraction of mineral and coal resources and ensure maximum extraction with a minimum of environmental disturbance, taking into account sound engineering practice and prevailing economic conditions.

The third purpose, being the protection and reclamation of land, is of particular interest to the current research, as progressive rehabilitation may provide an opportunity to both protect and reclaim land affected by critical minerals. Watercourses affected by mining is beyond the scope of this thesis. Part 10 of the Code primarily deals with matters affecting mine reclamation.[245]

To obtain a mine permit, the permit application must include a map showing the location and extent of the mine; the present use and condition of the land, including land rights, climate, geology, and more; a detailed mine plan reflecting extensive topographic information and ore reserves; environmental protection programs; closure and reclamation plans; and a total costs estimation (among others).[246] Mine plans must also meet specified design standards.[247] The mine plans must then be updated every 5 years, including reclamation plans.[248] This ensures that reclamation plans are updated as often as the overarching mine plan itself. This reflects a commitment to relatively accurate information pertaining to each mine operation. However, reclamation plans do not encompass all relevant information. For example, environmental assessments are encompassed within a separate legislative framework, discussed in section 4.4.

[245] *Health, Safety and Reclamation Code for Mines in British Columbia* (2021) pt 10.
[246] Ibid s 10.1.3.
[247] Ibid s 10.1.4.
[248] Ibid s 10.4.1.

4.4 Other Relevant Planning and Environmental Legislation

This thesis is confined to a comparative examination of the regulatory frameworks surrounding mine rehabilitation. However, environmental impact assessments are explored briefly in this section, as this process underpins the early stages of mining lease grants in BC. The following discussion demonstrates various existing gaps in the BC environmental assessment process for mine developments. While not directly related to the subject matter of this thesis, gaps in the early stages of mine leasing lead to negative impacts in the later stages of the mine life cycle.

The *Constitution Act 1867* allocates jurisdiction to the provinces to enact laws within their legislative power.[249] As such, Canadian provinces and territories typically maintain responsibility for developments intra-provincially.[250] This includes the issuing of a BC environmental assessment certificate under the *Environmental Assessment Act* (EEA).[251] However, certain projects may also be required to complete a federal environmental assessment under the *Impact Assessment Act* (IAA).[252] This is the case for major projects, projects carried out on federal lands, or projects carried out outside of Canada. The federal government has implemented measures to avoid duplication of the environmental assessment process in circumstances where both federal and provincial environmental assessment processes are triggered with respect to the same project. When a project is subject to a federal IAA, factors such as climate change, sustainability, alternatives, and economic requirements will be considered. However, the IAA process is likely to remain highly industry-friendly.[253]

In the context of mine development, an environmental assessment under the federal IAA will be triggered where production capacity of the proposed mine exceeds a specified threshold. For rare earth element mines, this requires an ore production capacity of at least 2,500 tonnes per day.[254] For other metal mines, this requires at least 5,000 tonnes per day.[255] In BC, the thresholds to trigger a provincial environmental assessment can be quite high and, thus, many mines fall below the assessable threshold. For example, the Copper Mountain mine expansion did not attract environmental review, as its production levels did not meet the stipulated threshold of 75,000 tonnes per year and 600 hectares of disturbed land.[256] These

[249] *Constitution Act 1867* (IMP), 30 & 31 Vic, c 3 s 92.
[250] *Constitution Act 1867* (IMP), 30 & 31 Vic, c 3 s 92A.
[251] *Environmental Assessment Act*, SBC 2018, c 51 s 29.
[252] *Impact Assessment Act*, SC 2019, c 28.
[253] David Wright, 'The New Federal Impact Assessment Act: Implications for Canadian Energy Projects' (2021) 59 *Alberta Law Review*, 97.
[254] *Physical Activities Regulations*, SOR/2019-285 sch 2, s 18(e).
[255] Ibid s 18(c).
[256] Stephen Hazell, *Not Yet a World Leader: Environmental Reviews of Metal Mines in British Columbia* (Report, Ecovision, May 3 2022) 10–12.

thresholds have been critiqued as 'loopholes' for industry proponents to avoid environmental assessment.[257] These thresholds may not be reflective of domestic or international standards, as 'significant adverse effects of new metal mines and mine expansions that would be reviewed in other jurisdictions … are not reviewed by British Columbia'.[258]

As such, some critical minerals mines may not be required to obtain federal and/or provincial environmental assessments. This reflects existing gaps between existing BC laws and policies, and best practices for responsible mining development. When facing the hastening energy transition to a low-carbon economy, BC requires robust law and policies reflective of the realities of critical minerals mining.

4.2.4 Policy Guidelines

Canada recognizes the need to bolster the critical minerals industry to secure a domestic supply and support the transition to a low-carbon economy.[259] BC is Canada's largest producer of copper, only producer of molybdenum, a leading producer of gold, and can produce nickel, zinc, and lithium.[260] In 2021, BC was Canada's largest mining producer by value of production.[261] In addition to this promising critical minerals profile, BC boasts a long history of regulating mine rehabilitation. Commencing in 1969, it was one of the earliest jurisdictions in Canada to regulate rehabilitation, after experiencing environmental damage as a result of insufficient mine rehabilitation.[262]

Unlike NSW, BC has not yet released a strategy directed towards critical minerals development in the province. Nonetheless, public policy demonstrates an intention to move the province towards a low-carbon economy.[263] Notably, a 2021 report by the Ministry of Energy, Mines and Low Carbon Innovation (MEMLC) anticipates that BC's mining sector will 'contribute … to the transition to a low-carbon economy with responsibly produced minerals and metals'.[264] This report supports the continued development of the

[257] Ibid 2.
[258] Ibid 25.
[259] Natural Resources Canada, *Canadian Minerals and Metals Plan* (2020); Canadian Government, *Canada-U.S. Joint Action Plan on Critical Minerals Collaboration* (2020).
[260] Geoscience BC, *Extracting Geological Value from Search Airborne Magnetic Data, West Central British Columbia* (Web Page, 2016) < https://www.geosciencebc.com/projects/2016-038/ >; Ernst and Young, *BC Exploration Thriving in the Post-Pandemic Economic Recovery: Insights from the BC Mineral and Coal Exploration Survey 2021* (Report, 8 April 2022).
[261] Natural Resources Canada, 'Canadian Mineral Production' (n 4).
[262] Ministry of Energy and Mines (BC), *EY Report & Recommendations for BC's Mine Reclamation Financial Security Policy* (n 84); Ministry of Energy, Mines and Low Carbon Innovation (BC), *Britannia Mine* (Web Page, 2022) < https://www2.gov.bc.ca/gov/content/environment/air-land-water/site-remediation/remediation-project-profiles/britannia-mine >.
[263] Ministry of Environment and Climate Change Strategy (BC), *Clean BC: Full Report* (Report, 2019).
[264] Ministry of Energy, Mines, and Low Carbon Innovation (BC), *2021/22 – 2023/24 Service Plan* (Report, 2021) 6.

Code with respect to reclamation, demonstrating some policy understanding of responsible mining as the country moves towards a low-carbon economy.

However, this general policy understanding should take the form of unequivocal policy statements to better guide government and industry action. This is because 'an energy transition that depends on mining new materials without considering materials and energy for what, for whom, and at what socio-environmental costs will only reinforce injustices and lack of sustainability that have deepened the climate crisis in the first place'.[265]

Currently, the Code fails to explicitly reference reclamation with respect to the unique characteristics surrounding critical minerals mining. Other government publications express that reclamation is 'expected to occur progressively throughout all phases of mining, either actively or through research and planning'.[266] This is effectively progressive reclamation if 'undertaken concurrent with mining activities'[267] and if the associated activities are 'aligned with end land use objectives … not simply an interim measure'.[268] In the transition to a low-carbon economy, progressive rehabilitation should be a clearly legislated and regulated policy priority for the responsible production of critical minerals in BC. In the absence of an overarching critical minerals policy, regulatory tools can support the responsible production of critical minerals.

4.3 The Annual Reclamation Report

The BC Act requires that industry proponents comply with their duties to accomplish mine reclamation as encapsulated in the BC Act and associated regulations and codes, as well as the conditions of their respective permits.[269] Once a permit is issued, permit holders are required to submit annual reclamation reports to EMLI in compliance with their BC Act permits and the Code. The Annual Reclamation Report (ARR) delivers a summary of all activities conducted on the mine property over the previous year, and is to be provided in a specific format. EMLI views the ARR as:

> [A] synopsis of mining and reclamation activities, and an opportunity to demonstrate compliance with approved plans, permit conditions, and best practices. It also allows for tracking effectiveness of monitoring

[265] Mariana Walter et al, *Mapping Community Resistance to the Impacts and Discourses of Mining for the Energy Transition in the Americas* (Report, 2021) 5.
[266] Ministry of Environment and Climate Change Strategy (BC), *Developing a Reclamation and Closure Plan for Regional Mines* (Report, 2021) 1.
[267] Ibid 16–17.
[268] Ibid.
[269] *Mines Act*, RSBC 1996, c 293 s 24(3).

programs for key mitigations implemented, identification of potential issues, and liabilities that will require mitigation, and documentation of information gathered throughout the life of the mine.[270]

The ARR must outline a number of matters relating to mine development, the environmental protection program, and the reclamation program. This requires mine operators to provide detailed information on areas disturbed and reclaimed, the quantity of waste materials, the monthly mining and mill production, and the quantities of soil (among others). Further, the matters referenced in s 10.1.3(e) reflect reclamation and environmental monitoring work and are to be reported in the ARR, as encapsulated in s 10.4.4(a).[271] This includes:

> (e) a program for the environmental protection of land and watercourses during the construction and operational phases of the mining operation, including plans for the
>
> (i) prediction, identification and management of physical, chemical, and other risks associated with tailings storage facilities and dams;
>
> (ii) prediction, and if necessary, prevention, mitigation and management of metal leaching and acid rock drainage;
>
> (iii) erosion control and sediment retention; and
>
> (iv) environmental monitoring and surveillance designed to demonstrate that
>
> (A) the objectives of section 10.4.4 (a) of this code are being met,
>
> (B) the reclamation standards as outlined in section 10.7 of this code are being met, and
>
> (C) environmental protection of land and watercourses required under paragraph (g) (i) and (ii) of this section are being achieved and maintained.

This is a comprehensive and technical annual report that demonstrates adherence to progressive rehabilitation. Importantly, the ARR must provide a projection of mining and reclamation activities planned for the next 5 years, as well as a report on reclamation over the past year and following year.[272] This is effectively reporting on progressive rehabilitation, as the ARR presumes ongoing efforts to support reclamation throughout the life cycle of the mine. Thus, this thesis refers to the ARR as reporting on

[270] Ministry of Energy, Mines and Low Carbon Innovation (BC), *Annual Reclamation Report – General information and Format Requirements* (Explanatory Guide, 2021) 1.
[271] *Health, Safety and Reclamation Code for Mines in British Columbia* (2021) s 10.4.4(a).
[272] Ministry of Energy, Mines and Low Carbon Innovation (BC), *Annual Reclamation Report – General information and Format Requirements* (n 270) 6.

progressive rehabilitation. The ARR requires particular updates on specified reclamation standards and activities and instructs industry proponents on reporting requirements. These can be viewed in Figure 1.

4.0 RECLAMATION PROGRAM

Describe the Reclamation Program over the past year and next year (in detail) and projected for the next 5 years (in summary), including the following (where applicable):

Reclamation Standard/Activity:	Report Requirement:
End Land Use	- Document/map the end land use plan over the site based on pre-mining uses and ecosystem targets.
Land Capability	- Document/map the land capability pre-mining versus the predicted post-mining land capability over the site based on biogeoclimatic site series.
Long-Term Stability	- Stability of waste dumps, dams, impoundments, pits, borrows, roads, and watercourses.
Revegetation	- Describe revegetation treatments, application area, species selection, application specifications, amendments/fertilizers, locations, objectives (such as trials, erosion control, and final reclamation for specified end land use). - Provide a map identifying the location of revegetation activities. - Describe the revegetation evaluation/effectiveness program(s) for revegetation treatments.
Growth Medium	- Describe soil replacement depth/volumes, locations, application area, surface preparation, decompaction, and drainage/erosion control. - Provide a map identifying the location of soil replacement activities - Describe the soil monitoring program.
Landforms	- Describe landscaping, contouring, and resloping previously conducted (specify application area). - Provide a map identifying the location of surface preparation activities.
Structures and Equipment	- Describe removal of equipment, scrap/recyclables, and treatment of foundations.
Waste Dump Reclamation	- Describe progressive and final reclamation on waste dumps (include details such as material characteristics, locations, elevations/heights, size of areas, slope angles, and aspects).
Watercourse Reclamation	- Describe progressive and final reclamation for watercourses.
Open Pit Reclamation	- Describe progressive and final reclamation for open pits.
Tailings Storage Facility and/or Impoundment Reclamation	- Describe progressive and final reclamation for impoundments.
Road Reclamation	- Describe progressive and final reclamation for access and mine haul roads.
Infrastructure Decommissioning/Reclamation	- Describe decommissioning/reclamation of infrastructure (e.g., buildings, power distribution and transmission lines, fuel farms, etc).
Securing Openings	- Describe activities conducted to secure potentially dangerous surface areas and underground openings.
Disposal of Hazardous Materials, Chemicals and Reagents	- Describe removal and disposal activities for hazardous materials. - Describe programs for investigating contaminated sites, remediation of contaminated media, and hazardous materials and chemical management and disposal.
Reclamation Research	- Describe research activities, for example, plant species selection, optimal soil depths for specified end land uses, surface preparation/erosion control/compaction treatment techniques, native species collection, propagation, transplanting, landforming, drainage modeling, and water body reclamation. - Describe research collaborations and outreach. - Detailed research programs documented in standalone reports may be submitted separately.
5 Year Reclamation Plan	- Describe the nature and scope of reclamation and research programs for the next 5 years.

Figure 1. Ministry of Energy, Mines and Low Carbon Innovation (BC), *Annual Reclamation Report – General Information and Format Requirements* (n 270) 1.

While the ARR specifies, with sufficient clarity, requirements for progressive rehabilitation reporting, industry proponents do not always abide by the Code. This may be due to the current regulatory environment in BC. For example, in the 2021 case *Ignace v. British Columbia (Chief Inspector of Mines)*, the industry proponent failed to include a plan for progressive rehabilitation for the next 5 years as required by the Code when applying for a permit.[273] Nevertheless, the Inspector of Mines proceeded to issue the permit for the mine. This case highlights the deficiencies associated with regulatory oversight of progressive rehabilitation in BC. This regulatory environment reflects the mining-positive stance of the BC Government.[274] While shortcomings exist in the permitting process, the decision in *Ignace* also signifies that courts will enforce the progressive rehabilitation regulations in the Code. *Ignace* highlights a missed opportunity for regulation of progressive rehabilitation in BC, but at the same time, clarifies an opportunity for improved regulatory attention moving forward. As such, the particular tool for functional comparative analysis in this thesis is the ARR, which must be submitted by all licensed mine operators in accordance with the Code.[275]

4.4 Progressive Rehabilitation as a Regulatory Approach

This thesis has so far explored energy justice as a pressing concern for local communities and regulators in NSW. In recent years, the NSW Resource Regulator has increasingly regulated mine rehabilitation, including progressive rehabilitation. While positive, mine rehabilitation regulations have necessitated a number of additional regulations and guidance notes. To date, NSW has increasingly added to its mine rehabilitation suite of tools. This has led to marked complexity with respect to the regulation of mine rehabilitation in NSW. Such complexity can create additional compliance costs for industry proponents, or convolute opportunities for meaningful community engagement and resilience-building.[276] While this thesis does not undertake an analysis of regulatory and governance approaches and best practices, it does seek to identify specific tools that can be of benefit throughout the mine life cycle. In particular, tools that support progressive rehabilitation may have utility throughout a longer period of time. As such, progressive rehabilitation can be used as a regulatory approach to achieve the aim of energy justice provision. Progressive rehabilitation is the best practice for achieving satisfactory mine decommissioning, as it can

[273] *Ignace v. British Columbia (Chief Inspector of Mines)*, 2021 BCSC 1989 [161]–[170]; *Health, Safety and Reclamation Code for Mines in British Columbia* (2021) s 10.4.1.
[274] Robyn Allan (n 234).
[275] *Health, Safety and Reclamation Code for Mines in British Columbia* (2021) s 10.4.4.
[276] Minerals Council of Australia, *Productivity Commission Study of Resources Sector Regulation* (Report, 2019) 4–6.

assist in accounting for the realities of regulation mine rehabilitation, which is exceptionally complex. Regulations in NSW should focus on implementing progressive rehabilitation.

Progressive rehabilitation is an opportunity to attend to the volatility of the mining sector and has been adopted in BC. According to the Union of BC Indian Chiefs, '[c]ommodity prices, investment, production and export volumes change significantly, and relatively quickly, because of international forces of supply and demand'.[277] A governmental review of exploration and mining in BC explains that industry disruptions occurred in 2021 due to '[f]orest fires in the summer and unusually intense rainstorms in November', before highlighting that 'the value of provincial mining production reached an all-time high'.[278] The urgency associated with sourcing a secure supply of critical minerals, and the extraordinary quantity required for the energy transition, may result in volatility within the critical minerals sector leading to 'the labour force, communities and environment … bear[ing] a disproportionate share of the burden'.[279] A regulatory focus on progressive rehabilitation is an opportunity to implement 'policy measures to ensure that the cyclical nature and the negative impacts of mining's boom and bust character are mitigated'.[280]

For example, progressive rehabilitation efforts may need to be modified in the event of unexpected or unauthorised environmental harm. Authorised harms are those that are reflected in the mining permit and reclamation plan.[281] On the other hand, unauthorised harm can include climate and environmental events such as 'erosion, weathering, sedimentation, precipitation, and climate change',[282] or events associated directly with a mine such as 'a tailings pong breach, mine explosion, or an un-permitted slow release of contaminants into the environment'.[283] Initial rehabilitation plans may be unable to account for future realities. For example, catastrophic floods are occurring more often in BC. The probable maximum flood (PMF) stipulated at the present time may not be 'the same PMF that could occur after decades or centuries of climate change'.[284] As such, progressive rehabilitation regulations can be used to confront the existing 'disconnect between who benefits and who bears the burden' of mining development.[285] In this way, energy justice can be incorporated into mining development through progressive rehabilitation.

[277] Robyn Allan (n 234) 18.
[278] Ministry of Energy, Mines, and Low Carbon Innovation (BC)*, Exploration and Mining in British Columbia, 2021: A summary* (Report, 2021), 1.
[279] Robyn Allan (n 234) 18.
[280] Ibid.
[281] Ibid 43.
[282] Ibid 53.
[283] Ibid 52.
[284] Steven H Emerman, *The Risk of Tailings Dam Failure in British Columbia: An Analysis of the British Columbia Existing and Future Tailings Storage Database* (Report, Reform BC Mining, 2022) 9.
[285] Robyn Allan (n 234) 19.

This chapter comparatively analysed the current regulatory frameworks governing mine rehabilitation in NSW with BC with respect to critical minerals mines. It outlined various regulatory tools to manage progressive rehabilitation in BC. Importantly, this chapter posits the ARR framework as a predominant opportunity for regulatory reform in NSW. The following chapter examines opportunities for NSW to incorporate energy justice into regulatory reform. It builds on the discussion in this chapter by applying energy justice to specific regulatory tools with respect to progressive mine rehabilitation.

CHAPTER V: A COMPARATIVE FUNCTIONAL ANALYSIS OF MINING REHABILITATION REGULATION IN NEW SOUTH WALES AND BRITISH COLUMBIA

5.1 Introduction

The previous chapters critiqued BC's mining regulatory framework with respect to progressive rehabilitation as it pertains to critical minerals mines. This thesis also posits the centrality of energy justice for local communities affected by critical minerals mines. To support this aim, it proposes progressive rehabilitation regulations as important opportunities to support energy justice. This chapter builds upon this understanding to answer the fundamental research question: In light of the approach in BC to mining rehabilitation, to what extent is the current NSW regulatory framework for mining effective in achieving the progressive mine rehabilitation of critical minerals mines by embedding principles of energy justice for communities in NSW? To what extent does the *Mining Act 1992* (NSW) need to be amended to better incorporate energy justice in rehabilitation? The current chapter undertakes a comparative functional analysis of the progressive rehabilitation regulations in NSW and BC to highlight opportunities for the incorporation of local community perspectives.

5.2 Progressive Rehabilitation Regulations in NSW and BC

In light of the approach in BC to mining rehabilitation, the *Mining Act 1992* (NSW; 'NSW Act') should be amended to better incorporate energy justice in mining decommissioning. This thesis identifies the ARR as a regulatory tool with respect to progressive rehabilitation. This section examines opportunities for reform in the NSW ARR framework. These opportunities include improving clarity surrounding deadlines for ARR submission, increasing the comprehensiveness of the ARR, and requiring community participation prior to submission of the ARR. An overview of mining policy and regulatory factors in both BC and NSW is reflected in Table 1 on Page 55 of this thesis. Table 1 demonstrates the similarities between NSW and BC mining policies. Both maintain a policy focus of ensuring the government retains an active role in mining development and regulation. BC does not demonstrate a policy focus on critical minerals specifically. This is in contrast to NSW, which may take a more active role in managing critical minerals development. BC also fails to include rehabilitation as a primary objective of mining regulation. However, it does require updates to future rehabilitation plans, demonstrating more rigorous monitoring. These nuances are examined in the following section.

With respect to rehabilitation reporting, there are a number of variances. First, the deadlines for submission of the NSW ARR are imprecise. Currently, the ARR is required within 60 days following the annual reporting period, or a later date as approved by the Secretary.[286] The annual reporting period is generally every 12 months following the date that the mining lease was granted.[287] Because of the different annual reporting periods and opportunities for Secretary discretion, the ARR deadline is not immediately clear. Conversely, the BC ARR framework requires that industry proponents submit the ARR by the 31st of March every year. This provides opportunity for industry proponents and local communities to mark their calendar and engage well in advance of the deadline. It also provides local communities with a clear date by which to pressure industry proponents or submit complaints to the Secretary, holding the mine to compliance.[288]

In BC, the reclamation plan is included as a component of the BC ARR framework. Conversely, the current ARR framework in NSW arguably lacks comprehensiveness, as it refers to criteria reflected in other regulatory tools, such as the forward program.[289] The NSW ARR itself requires only a description of rehabilitation undertaken over the annual reporting period and progress made to date on other rehabilitation matters.[290] In NSW, industry proponents indicate future plans for rehabilitation through the forward program, which is then included in the ARR pursuant to s 13(2)(b). The forward program must include the following:

> (a) a schedule of mining activities for the mining area for the next 3 years,
>
> (b) a summary of the spatial progression of rehabilitation through its various phases for the next 3 years, and
>
> (c) a requirement that the rehabilitation of land and water disturbed by mining activities under the mining lease must occur as soon as reasonably practicable after the disturbance occurs.[291]

Overall, BC and NSW differ in how planning for future rehabilitation is specified annually. In BC, future reclamation plans are provided as a component of the BC ARR framework. In NSW, an additional step is added, as future rehabilitation plans are provided as a component of the forward program, which is then

[286] *Mine Regulation 2016* (NSW) sch 8A cls 13(5), 15(2).
[287] Ibid sch 8A cl 13(5).
[288] Ibid sch 8A cl 18.
[289] *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW) cls 13(2), 13(4)-(5), 15(2).
[290] *Mining Amendment (Standard Conditions of Mining Leases—Rehabilitation) Regulation 2021* (NSW) cls 13(2), 13(4)-(5), 15(2); NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 15, 20, 22–24.
[291] *Mine Regulation 2016* (NSW) sch 8A cl 13(1).

included as part of the NSW ARR framework. This convolutes the reporting on future rehabilitation, which is an important component of progressive rehabilitation.

BC and NSW also differ in how far into the future rehabilitation plans are required. In NSW, the forward program describes progressive rehabilitation for the following 3 years. In BC, a description of progressive rehabilitation is required for the following 5 years. Thus, the BC ARR requires that progressive rehabilitation is examined and predicted farther into the future than NSW. In addition, the BC regulatory regime requires that the reclamation plan be updated every 5 years. This ensures relatively accurate and current reclamation plans. Conversely, there is no requirement for the forward program, nor rehabilitation outcome documents to be updated in specified intervals in NSW.[292] The BC Government more effectively regulates progressive rehabilitation through enhanced comprehensiveness and lengthier reporting requirements of the BC ARR framework.

[292] *Mine Regulation 2016* (NSW) sch 8A cls 12, 14, 15.

Table 1: Comparison of Mining Policy and Regulatory Factors

Factors	NSW	BC
Mining Policy		
• Controlled development of mining resources	✓	✓
• Mining strategy specific to critical minerals development in the state/province	✓	×
• Role of the state/province as regulator	✓	✓
Mining Regulation		
• Objective of primary legislation inclusive of rehabilitation of mined land	✓	×
• Conditions of secondary legislation inclusive of prompt rehabilitation of mined land	✓	✓
• Mandated updates of future rehabilitation plans	×	✓
• Discretionary regulation to adjust to changing or unique conditions	✓	✓
• Crown as the owner of mined resources	✓	✓
• Commonwealth-based Torrens title private land ownership	✓	✓

Source: Compiled by author.

5.3 Opportunities for Community Participation

Both BC and NSW reflect shortcomings in opportunities for community participation within the ARR framework. First, the BC ARR requirements are reviewed. The BC ARR requires the following information pursuant to s 10.4.4:[293]

> (a) reclamation and environmental monitoring work performed under section 10.1.3 (e) of this code;
>
> (b) tailings storage facility and dam safety inspections performed under section 10.5.3 of this code;
>
> (c) a report of the activities of the Independent Tailings Review Board established under section 10.4.2 (1) (c) of this code that describes the following:
>
> > (i) a summary of the reviews conducted that year, including the number of meetings and attendees;
> >
> > (ii) whether the work reviewed that year meets the Board's expectations of reasonably good practice;
> >
> > (iii) any conditions that compromise tailings storage facility integrity or occurrences of non-compliance with recommendations from the engineer of record; and
> >
> > (iv) signed acknowledgement by the members of the Board, confirming that the report is a true and accurate representation of their reviews;
>
> (d) a summary of tailings storage facility and dam safety recommendations including a scheduled completion date;
>
> (e) performance of high-risk dumps under section 10.5.5 of this code;
>
> (f) updates to the tailings storage facilities register as required; and
>
> (g) other information as directed by the chief inspector.

There is no explicit opportunity for community participation listed. However, under subsection (g), there may be opportunity for the chief inspector to require additional information in the form of community reports on reclamation and environmental monitoring work under subsection (a). This type of community engagement is not innovative nor unwarranted, even within the context of the existing regulations. Currently, the Code requires that, along with other groups, affected communities be included in the creation of the mine emergency response plan through 'identification of potential hazards, emergency communications, and responses'.[294] Further, it includes the participation of First Nations in the annual testing of various hazards plans.[295] Thus, the incorporation of affected groups has been implemented for

[293] *Health, Safety and Reclamation Code for Mines in British Columbia* (2021).
[294] *Health, Safety and Reclamation Code for Mines in British Columbia* (2021) s 3.7.1(2)(d).
[295] Ibid s 3.7.1(3).

mine emergency response plans. It also demonstrates the utility of effective and comprehensive annual review of certain critical matters, such as emergency response plans, and the inclusion of stipulated interest groups in this review.

5.4 Community Participation and the Annual Rehabilitation Report

As discussed in Chapter IV, the BC regulatory framework emphasises worker health and safety more than environmental considerations. While this thesis does not seek to detract from the importance of stringent health and safety regulations, it does maintain the position that environmental considerations should be afforded similarly robust regulatory measures. As such, like emergency response plans, this thesis recommends that stipulated interest groups be included in any annual reporting framework with respect to progressive rehabilitation.[296] Identifying opportunities for community engagement in the BC regulatory framework is hereafter carried into the NSW ARR framework.

In the NSW ARR framework for large mines,[297] marked opportunities for inclusion of local communities in the annual reporting framework are not immediately evident. As such, NSW maintains an opportunity to further develop its ARR framework to better incorporate community inclusion. The NSW ARR currently requires industry proponents to identify each relevant stakeholder, and to summarise the consultation activities and forms of consultation, the matters subject to consultation, and actions taken by the lease holder in response to matters raised by any stakeholder in relation to rehabilitation.[298] This is a positive regulatory requirement and does reflect an indication of the stances of the community consultative committee.[299] However, this is only a brief opportunity to address energy justice. It does not specify particular actions required to be taken by the lease holder (referred to herein as the industry proponent), which could centre and safeguard energy justice for local communities. Further, this summary is both drafted and submitted by the industry proponent, leaving no opportunity for community submissions. This leaves room for some disagreement between industry proponents and local communities on certain submissions regarding the state of rehabilitation of a particular mine and whether energy justice has been afforded in the process.

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[296] This thesis maintains a focus on local communities affected by critical minerals mines, but other interest groups, in particular First Nations, should be consulted with respect to the ARR.
[297] As per the *Mine Regulation 2016* (NSW) sch 8A cl 1, a large mine in NSW is 'a mine the subject of one or more mining leases, the carrying out of activities under at least one of which requires an environment protection license under the *Protection of the Environment Operations Act 1997*', whereas a small mine is any mine that is not a large mine. The characteristics of critical minerals mines discussed in previous chapters suggests that most critical minerals mines are large mines. Large mines maintain more stringent regulatory requirements than small mines. For these reasons, this thesis focuses on the requirements for large mines.
[298] NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 5.
[299] Ibid 32.

Both the forward plan and ARR are to be made publicly available.[300] Local communities are able to review the forward program and ARR once they are in the public domain, providing some opportunity for checks and balances at a later stage. However, not only does this leave communities to advocate for their own energy justice, but it reflects how 'governments are increasingly taking a cursory and superficial approach to consultation, engaging stakeholders too late in the process or giving them too little time to understand proposed changes and provide meaningful input'.[301] This gap has been demonstrated by solutions posed by community organisations in BC, such as the creation of an interactive online map that provides communities with access to critical information about the risks posed by toxins to themselves and the environment.[302] The regulatory framework would benefit from local community review prior to the submission of the forward program and ARR to the Secretary. This ensures that the local community has helped identify issues affecting effective progressive rehabilitation, leading to a more accurate forward program and ARR. This may reduce instances where the Secretary does not approve the forward program and ARR, leading to a delay in mining operations. It may also avoid confusion or disagreement between industry proponents and local communities after the forward program and ARR has been made public. Finally, it may better support the 'minerals industry approach to community engagement … [which is] increasingly focused on long-term community partnerships and strategic investment to support community priorities and aspirations for sustainable long-term development outcomes'.[303]

This chapter undertook a functional comparative analysis of the progressive rehabilitation regulations in NSW and BC, as well as examined opportunities for the incorporation of local community perspectives in these regulations. Large gaps remain in the BC and NSW regulatory frameworks to sufficiently centre the experiences of local communities and thus afford them energy justice. The following chapter examines whether the principles of energy justice are compatible with the current critical minerals framework and proposes opportunities to address energy justice through progressive rehabilitation regulations.

[300] *Mine Regulation 2016* (NSW) sch 8A cl 16.
[301] Minerals Council of Australia, *Productivity Commission Study of Resources Sector Regulation* (n 276) 9.
[302] BC Mining Law Reform, 'British Columbia Mine Tailings Map' (Web Page, 2022) <https://reformbcmining.ca/tailings-map/>.
[303] Minerals Council of Australia, *Productivity Commission Study of Resources Sector Regulation* (n 276) 9.

CHAPTER VI: EMBEDDING ENERGY JUSTICE INTO THE MINING FRAMEWORK IN NSW

6.1 Introduction

Chapters IV and V observed existing gaps within the NSW mining regulatory framework to sufficiently garner local community perspectives on mine rehabilitation. As such, the NSW regulatory framework fails to afford energy justice to local communities affected by critical minerals mines. Both BC and NSW demonstrate shortcomings with respect to local community engagement in rehabilitation reporting. However, NSW maintains an opportunity to address energy justice through regulations surrounding progressive rehabilitation. This chapter identifies relevant criteria with sufficient specificity to demonstrate opportunities for regulatory reform. It first reviews the three primary tenets of energy justice, namely recognition justice, procedural justice, and distributive justice in the context of the existing regulatory framework with respect to mine rehabilitation in NSW. Second, it proposes criteria to integrate energy justice into the current mining framework in NSW. Providing energy justice to local communities through progressive rehabilitation will support the just transition to a low-carbon economy in NSW.

6.2 Recognition Justice

As discussed in section 2.3 of this thesis, recognition justice is the fair identification and acknowledgement of community rights holders.[304] This involves recognising the rights of Indigenous communities, landholders, and local communities and councils. Though all stakeholders are owed recognition justice, this thesis is focused on the unique issues affecting local communities.[305] In particular, this thesis considers whether the rights of the local community are effectively recognised and protected to support the provision of energy justice.

The NSW ARR partially addresses recognition justice through its requirement that mining leaseholders identify each relevant stakeholder. It also summarises the activities and forms of consultation, the matters subject to consultation, and the actions taken by the lease holder in response to matters raised by any stakeholder in relation to rehabilitation.[306] However, in and of itself, this measure does not sufficiently afford energy justice to local communities. First, there is no further guidance within the ARR framework on how the topics and results of consultation are recorded and summarised. This leaves significant

[304] Heffron, 'The Role of Justice in Developing Critical Minerals' (n 109) 858.
[305] Chapter I defines local communities as those that are living near mining activities and are directly affected by its operations: see Ross Harvey (n 40) and also Jacob Taarup-Esbensen (n 40).
[306] NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 5.

discretion in the hands of the industry proponent to direct the discussion and action surrounding progressive rehabilitation each year. This fails to ensure the inclusion of 'all community opinions and perspectives'.[307] Second, there is no opportunity for the local community to make submissions surrounding the form, matters, activities, and actions[308] surrounding progressive rehabilitation. The perception of the community perspective with respect to rehabilitation is shared solely by the industry proponent. Third, there is no indication that industry proponents are expected to apply recommendations or solutions proposed by the community in attending to matters raised by the community with respect to rehabilitation. As such, this does not sufficiently centre the community perspective, nor community recommendations that may have resulted from community consultations.

In effect, observation of community-led solutions is left to the will of the industry proponent. There is no regulatory benchmark indicated to ensure a particular level of regard is had to community propositions in NSW. The role of the community in defining rehabilitative outcomes remains unclear. This results in local communities facing unsatisfactory recognition at a number of stages in the mine life cycle. Overall, the regulatory regime lacks mandatory provisions surrounding public consultation and participation that effectively identify and include local communities. The University of Victoria Environmental Law Centre recommends amendments to the current mining framework consistent with recognition justice. These include requirements that decision-makers incorporate a 'broad suite of values and interests' and 'respect community and regional land-use designations and planning processes'.[309] Recognition justice requires industry proponents to conform with local land-use plans and even enable revocation of development rights that do not conform with such land-use plans.[310]

Rights for consultation and participation should be comprehensive and guaranteed for local communities. The NSW framework requires robust mechanisms to provide for community participation with respect to critical minerals mines. When assessing the ARR, the Secretary should consider submissions from the local community with respect to stakeholder consultation.[311] Local communities should be afforded the opportunity to advise as to any relevant demographics or perspectives that may have been overlooked by the industry proponent. As such, community submissions should form a component of the ARR. Additionally, regulatory reform should entail appointing an independent assessor to identify stakeholders

[307] Madeline Taylor and Susanne Taylor, 'Applying Energy Justice Principles: A Case Study of Solar Energy in Vanuatu' (2022) 15 *Journal of World Energy Law and Business*, 195.
[308] NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 5.
[309] University of Victoria Environmental Law Centre, *A Plan of Action for Change: Summary Recommendations* (Report, BC Mining Law Reform, 2019) 6.
[310] Ibid.
[311] NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 5.

and manage stakeholder consultation in accordance with the ARR. Presently, stakeholder identification and consultation with respect to the ARR is left to industry proponents and does not attract independent oversight. Other opportunities for independent oversight in NSW face shortcomings. For example, the Independent Planning Commission ('IPC') struggles to provide for strong collaboration with communities. In particular, communities face difficulties in making objections,[312] and reasons for IPC decisions are often inaccessible and unclear.[313] Thus, in its current form, the mining framework in NSW fails to embed recognition justice.

6.3 Procedural Justice

As discussed in section 2.3 of this thesis, procedural justice requires that due process is afforded to local communities.[314] This thesis considers whether all steps for community consultation and participation are observed. Local communities are best positioned to comprehend certain matters critical to the impacts of mine development. This includes the effects of site selection, the importance and proximity of certain parcels of land to communities and habitats, the distribution of topographical features such as vegetation and soil, the effects of weather patterns such as droughts and flooding on the land, and the location of water sources (among others). Importantly, any assumptions that industry proponents make regarding the impacts of land use should be confirmed with local communities.[315]

A full legal process is necessarily inclusive of community knowledge, perspectives, and experiences throughout the life cycle of the mine. This begins in the early stages of the process, such as exploration and site selection, and continues through to mine closure and decommissioning. Community engagement throughout the planning process is required for proper mine closure.[316] Thus, community engagement is essential in achieving procedural justice with respect to mine rehabilitation planning and should be required 'as early as possible'.[317]

Local communities are greatly concerned about opportunities for public participation and consultation throughout mining exploration and development. Such concern reflects the trepidation of not being afforded procedural justice. Historically, local communities have felt 'alienated, confused, and let down' by the

[312] Productivity Commission (NSW), *Review of the Independent Planning Commission* (Report, 2019), 6.
[313] Ibid 7.
[314] Heffron, 'The Role of Justice in Developing Critical Minerals' (n 109) 858.
[315] Madeline Taylor and Susanne Taylor (n 307) 209–210.
[316] University of Victoria Environmental Law Centre, *Closure, Reclamation, and Abandoned Mines* (Report, BC Mining Law Reform, 2019) 7.
[317] Allan Ingleson and Chilenye Nwapi, 'Environmental Impact Assessment Process for Oil, Gas and Mining Projects in Nigeria: A Critical Analysis' (2014) 10 *Law Environment and Development Journal*, 17.

mining approval system in NSW.[318] As discussed in Chapter II, this may result in local communities opposing mine proposals and developments. When communities are afforded opportunities to meaningfully participate in mine decisions, the risk of dispute decreases as communities 'have been given a proper opportunity to be heard'.[319] Taking this a step further, this may suggest that community satisfaction is more likely to be achieved through the provision of procedural justice.

To afford procedural justice, the regulatory regime requires increased responsiveness to local community perspectives. This can be done through reviewing and responding to local community submissions with respect to progressive rehabilitation. Building on the recommendation provided above with respect to recognition justice, which proposes community submissions, public access to understandable and quality information, and independent assessments with respect to stakeholder identification and consultation. While there is overlap amongst all principles of energy justice, in this context, procedural justice takes recognition justice a step further by positioning the ARR as an opportunity for local communities to collaborate with industry proponents.

With respect to the NSW ARR, local communities are not afforded the opportunity to review and comment on the ARR and forward program before they are made publicly available.[320] Thus, they may not be afforded a timely or sufficient opportunity to comment on mine development plans. Insufficiently consulting with local communities hampers the relationship between the industry proponent and the local community. The NSW ARR framework reflects a one-sided regulatory process whereby the industry proponent directs opportunities for community engagement.[321] Further, while the ARR is made publicly available, this is done after the submission process is complete. As such, local communities may suffer from information asymmetry in relation to the industry proponent's commitments surrounding mine rehabilitation. Overall, this can lead to relationship breakdown between proponents and communities.

Relationship breakdown and information asymmetry is often a symptom of insufficient consultations with local communities.[322] Further, insufficient consultations may be suggestive of an incomplete legal process. In this eventuation, insufficient consultations reflect a failure to provide procedural justice. Additionally, as described in section 3.4 of this thesis, insufficient community engagement can negatively impact progressive rehabilitation efforts more broadly.[323] As such, affording energy justice to local communities

[318] Environmental Defender's Office, *Mining Law in NSW Discussion Paper* (Report, 2011) 43.
[319] Ibid 43.
[320] *Mine Regulation 2016* (NSW) sch 8A cl 16.
[321] Ibid; NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 7–13.
[322] Jordy Lee et al (n 98) 2–3.
[323] David Laurence (n 80) 283–284.

is harmed in at least two ways: through insufficient consultation and the impacts of this on the successful realisation of mine rehabilitation.

This failure to sufficiently consult local communities is witnessed in BC. In BC, industry proponents are required to provide a summary of areas disturbed and reclaimed as a component of the BC ARR. When stating that a particular area has been revegetated, it is required that '[i]n order for an area to be recorded as "revegetated", it must have supported vegetation that will lead to the designated land use objective for at least one year. Please provide monitoring data in the Annual Reclamation Report to support the areas reported [as revegetated areas]'.[324] This must align with the stated land-use objectives, which can include one or more of 'forestry, grazing, wildlife habitat, recreation, agricultural, industrial, residential, and other'.[325] This summary is based on concrete definitions of revegetation and land-use objectives,[326] and must be supported by monitoring data. This provides an opportunity to share understandable and quality information with local communities. However, this summary is not provided to local communities before final submission. As such, the BC framework fails to include local communities in the process of monitoring disturbed and reclaimed land.

Similarly, in NSW, there is no public exhibition period of the ARR prior to its approval by the Secretary. Learning from BC, the NSW ARR framework should require an easily understandable summary of land that has been disturbed and rehabilitated in the preceding year. Currently, this is reflected in submissions dedicated to the status of disturbance and rehabilitation.[327] These submissions are incorporated into different tables as opposed to one summary document.[328] Further, the tables themselves are relatively technical as they require a description of hectares, spatial data themes, and symbology requirements.[329] Thus, while quality is not at issue, the current format is not as accessible and understandable for communities as recommended by the University of Victoria Environmental Law Centre.[330]

There should be a public exhibition period prior to the approval of the NSW ARR. The materials available for public exhibition should be highly understandable and accessible, as well as of a high quality. Preferably, this should be made available at a set date each year to increase transparency and accessibility

[324] Ministry of Energy, Mines and Low Carbon Innovation (BC), 'Table 1: Summary of Areas Disturbed and Reclaimed' (Web Page, 2018) < https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/permitting/reclamation-closure/annual-reclamation-reports>.
[325] Ibid.
[326] Ibid.
[327] NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 8–13.
[328] See Tables 4, 5 and 6 in Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 8–13.
[329] Ibid 7–13.
[330] University of Victoria Environmental Law Centre, *A Plan of Action for Change: Summary Recommendations* (n 309) 12.

for local communities looking to engage in the ARR process. Better predictability is demonstrated in BC, where the ARR is submitted on 31 March for all mines.[331] However, transparency could be improved through incorporating an earlier public exhibition period. Additionally, the Secretary should be required to review and consider local community submissions with respect to the section on stakeholder consultation in the ARR.[332] Requiring the Secretary to have regard to local community submissions when determining whether to approve the ARR will ensure that progressive rehabilitation is advancing as expected and that communities are included in the process of progressive rehabilitation monitoring and oversight. Additionally, the Secretary should notify the local community directly upon approval of the ARR. Presently, the ARR is made publicly available only in its final form and only by the industry proponent. Notifying community directly will increase the transparency of the process with respect to progressive rehabilitation. As a whole, efforts to increase the quality and accessibility of information in conjunction with opportunities for meaningful community participation supports the provision of procedural justice for local communities regarding progressive rehabilitation.

6.4 Distributive Justice

As discussed in section 2.3 of this thesis, distributive justice is the fair allocation of benefits and drawbacks of mine developments.[333] This requires a certain level of community participation in decision-making relevant to each mining operation.[334] By undertaking effective community participation with respect to distributive justice, the impacts of mining operations on local communities can be understood.[335] Understanding the unique impacts of mining operations on a particular local community is a necessary first step in effectively and fairly allocating the benefits and drawbacks of a critical minerals mine. Thus, distributive justice is not feasible in the absence of this understanding, which results from effective recognition and procedural justice.

With a full understanding of community impacts, distributive justice can be afforded through design of mine operations as well as effective compensation.[336] Designing mine operations in consultation with the local community can uphold community perspectives on site selection, preservation, and management. This reduces negative impacts on parcels of land that hold particular importance to local communities and, thus,

[331] Ministry of Energy, Mines and Low Carbon Innovation (BC), *Annual Reclamation Report – General information and Format Requirements* (n 270).
[332] NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 5.
[333] Heffron, 'The Role of Justice in Developing Critical Minerals' (n 109) 858; Darren McCauley et al 'Advancing Energy Justice: The Triumvirate of Tenets' (n 108) 107–110.
[334] Madeline Taylor and Susanne Taylor (n 307) 195.
[335] Ibid.
[336] Ibid 209.

supports the provision of distributive justice to local communities. As outlined in section 6.2 of this thesis, opportunities for community consultation concerning rehabilitation are limited in the NSW ARR framework. Addressing these gaps may also assist in the provision of distributive energy justice by minimising the impacts of mine operations on local communities. As analysis of distributive justice has been discussed at length in section 2.3, this section reviews the role of compensation in achieving distributive justice. Effective compensation can take the form of employment, investment, and co-ownership opportunities, financial remuneration, and extensive community benefits schemes. Because of the breadth of compensatory tools, each is explored in their respective subsection. Distributive justice is particularly relevant for this thesis, as the flexibility surrounding various tools to achieve distributive justice also creates further opportunities for effective community participation and enhanced community acceptance.[337]

In NSW, there is both financial security for rehabilitation and compensation for landholders. With regards to the former, it remains the state's responsibility to ensure that land is effectively rehabilitated.[338] NSW requires a rehabilitation cost estimate (RCE) to be prepared by industry proponents.[339] This meets the legislative requirements to obtain sufficient financial security for mine rehabilitation.[340] There are a number of triggers for submitting an RCE, such as title renewal, suspension, cancellation, or transfer.[341] Other triggers for RCE submission include the NSW ARR framework. Thus, an RCE is required each year. However, communities are not included in assessments surrounding estimated financial security for the purposes of mine rehabilitation.

6.4.1 Rehabilitation Security

The annual preparation of an RCE is a required component of the ARR.[342] The form and contents of the RCE is standardised through the Cost Estimation Tool required by the NSW Resources Regulator.[343] This reflects some level of clarity and consistency of application, particularly as an updated RCE is required when there is a potential change in the liability of rehabilitation.[344] When providing an RCE, the industry

[337] Ignacio Herrera Anchustegui (n 142) 214–215; Madeline Taylor and Susanne Taylor (n 307) 209; Madeline Taylor and Tina Hunter, *Agricultural Land Use and Natural Gas Extraction Conflicts: A Global Socio-Legal Perspective* (Routledge, 2019) 225–226.
[338] Vlado Vivoda and Jonathan Fulcher, 'Remediation, Rehabilitation and Mine Closure' (Series on International Best Practice, Working Paper No 2/2017, American University of Armenia Centre for Responsible Mining), 9.
[339] NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 25.
[340] *Mining Act 1992* (NSW) pt 12A.
[341] Resources Regulator (NSW), *Rehabilitation Cost Estimation,* Explanatory Guide (2021), 12.
[342] NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 25.
[343] Ibid.
[344] Ibid.

proponent may elect to base it on either the maximum disturbance within a term, or a snapshot of disturbance. When the former is selected, it must align with the forward program. The maximum disturbance means that the RCE is based on the 'greatest rehabilitation liability in a period covered by the estimation'.[345] This period is defined by the industry proponent. When the latter is selected, it must align with the ARR. The snapshot of disturbance is based on 'all current liabilities for the title at the date of application, or … at a time in the future'.[346] While 'the applicability of these options to particular operations should be discussed with the department',[347] the snapshot of disturbance is expected at each annual reporting period. As such, it must align with the ARR period.

While there are a number of triggers for submission of an RCE, including at the request of the titleholder or government, local community submissions or requests do not trigger an RCE. The lack of opportunity for community submissions and requests with respect to the RCE reflected in the ARR places real limits on the perspective of local communities with respect to the financial resources needed to achieve effective rehabilitation. This is vital, as compensation is a well-understood tool for the achievement of distributive justice. This is due to the financial, environmental, and social strain faced by communities as a result of ineffective mine rehabilitation.[348] With the cost of rehabilitation in NSW rising into the billions,[349] financial securities may not be sufficient in particularly destructive cases, which often leaves taxpayers and local communities to cover rehabilitation costs.

Without sufficient resources directed to rehabilitation, other modes of compensation are unlikely to lead to positive outcomes for local communities affected by mine operations. This is because of the real risk of mined land failing to achieve final land use. As witnessed in BC, inadequate financial resources to reclamation can create 'an incentive [for industry proponents] to behave with less due care and attention than they would if an effective regime were in place … . In contrast, if there is sufficient money at stake, companies have a greater incentive to do the right thing'.[350] Thus, distributive justice is not afforded to communities where sufficient rehabilitation security has not been obtained.

In BC, opportunities exist for the Chief Inspector to 'top-up' reclamation securities throughout the life of the mine, similar to the RCE framework in NSW.[351] However, this remains at the discretion of the Chief Inspector. This is not unlike the current framework in NSW, where the RCE is accepted at the discretion of

[345] Resources Regulator (NSW), *Rehabilitation Cost Estimation* (Explanatory Guide, 2021) 13.
[346] Ibid.
[347] Ibid.
[348] Robyn Allan (n 234) 55.
[349] Lachlan Barker, 'Who Will Pay the $17.8 Billion Mining Rehabilitation Bill?' (Web Page, 2016) Renew Economy < https://reneweconomy.com.au/69725/ >.
[350] Robyn Allan (n 234) 54.
[351] *Mines Act*, RSBC 1996, c 293 s 10(5).

the Secretary. However, such broad discretion is not sufficient to provide distribution justice in either jurisdiction. Recommendations in BC suggest that opportunity for public input and appeal should be available for security release decisions with respect to mine reclamation security in the province.[352] While reclamation security in BC does not provide direct compensation to local communities, it is linked closely with mine rehabilitation outcomes and, thus, distributive justice. In NSW, the RCE framework parallels this relationship. As such, the current RCE framework in NSW fails to support the role of local communities with respect to mine rehabilitation security decisions and, thus, distributive justice.

6.4.2 Landholder Compensation

Regarding landholder compensation, mining leases commence in NSW after compensation has been determined.[353] This means that the landholder and mining lease holder have agreed upon an amount of compensation payable,[354] or if agreement has not been reached, the amount of compensation has been determined by the Land and Environment Court. Thus, compensation for landholders is established well before the point of ARR submission. Compensation is available with respect to expected losses, such as

> (a) damage to the surface of land, to crops, trees, grasses or other vegetation (including fruit and vegetables) or to buildings, structures or works, being damage that has been caused by or that may arise from prospecting or mining operations;
>
> (b) deprivation of the possession or use of the surface of land or any part of the surface;
>
> (c) severance of land from other land of the landholder;
>
> (d) surface rights of way and easements;
>
> (e) destruction or loss of, injury to, disturbance of or interference with, stock; or
>
> (f) damage consequential on any matter referred to in paragraph (a)–(e).[355]

This is a relatively narrow framework for compensable losses, as it does not necessarily put a landholder back in the position that they were in prior to mine development on their land. The amount of compensation for these losses is determined by

> (a) the nature, quality, area and particular characteristics of the land concerned;
>
> (b) the proximity of the land to any building, structure, road, track or other facility;

[352] University of Victoria Environmental Law Centre, *A Plan of Action for Change: Summary Recommendations* (n 309)15.
[353] *Mining Act 1992* (NSW) ss 271–278.
[354] Ibid s 265.
[355] Ibid s 262.

(c) the purpose for which the land is normally used; and

(d) the use of the land that is approved under any development consent that is in force with respect to the land.[356]

There are a number of gaps in this compensatory framework. First, the amount of compensation provided to landholders cannot exceed the market value of the land.[357] This limits the ability of compensation to be determined by the actual loss suffered by the landholder. Further, NSW does not maintain a framework that targets changing compensatory requirements for landholders. This means that compensation agreed upon prior to the mining lease may not be sufficient with respect to circumstances emerging later in the mine life cycle.[358] The landholder may be able to apply to the Land and Environment Court in NSW for an additional assessment,[359] but this is timely and costly.

Importantly, this compensation is directed towards landholders in the NSW Act, and not to 'mine-affected landowners',[360] which for the purposes of thesis, are considered members of the local community. Even for landholders, compensation 'cannot properly assess the variety of circumstances and motivations of landowners'.[361] Compensation, an important component of distributive justice, is often insufficient. It is important that compensation is satisfactory at the earliest stage possible, as '[o]nce mining operations have commenced, the balance tips even farther in the mining companies' favour—… the mining company may be the only interested buyer'.[362] A key component of distributive justice is fair allocation of benefits and drawbacks of mine development. As such, this imbalance will negatively affect landholders and mine-affected landowners, and further hinder distributive justice.

Legislative reform should expand opportunities for compensation to mine-affected landowners in addition to landholders. Further, compensation should provide for unexpected circumstances emerging later in the mine life cycle.[363] As the impacts of climate change become more common and pronounced, providing surplus compensation is a first step to safeguarding distributive justice throughout the mine life cycle. Alternatively, agreements regarding compensation can be reviewed periodically to assess if the assessed and provided compensation remains appropriate. This is not an austere measure, as witnessed in the NSW

[356] *Mine Regulation 2016* (NSW) cl 91(2).
[357] *Mining Act 1992* (NSW) s 272(1)(c).
[358] See the discussion in section 4.3, which examines unauthorised harms, such as the implications of climate change. See also Robyn Allan (n 234) 53; Steven H. Emerman (n 284) 9.
[359] *Mining Act 1992* (NSW) ss 276, 281.
[360] Environmental Defender's Office, *Mining Law in NSW Discussion Paper* (n 318) 56.
[361] Ibid 54.
[362] Ibid 56.
[363] See the discussion in section 4.3, which examines unauthorised harms, such as the implications of climate change. See also Robyn Allan (n 234) 53; Steven H. Emerman (n 284) 9.

ARR framework, which requires a new rehabilitation cost assessment in the form of an updated RCE each year.

6.4.3 Community Benefits Schemes

Statutory compensation is not the only opportunity to provide distributive justice for local communities. Often, local communities seek 'looser benefits for the community as a whole, for the impacts on their lives caused by the project'.[364] These 'looser benefits' regularly take the form of community benefits packages or schemes that have economic and other values.[365] Bundling different community benefits can provide some restitution for negative impacts, encourage social acceptance of mine developments, and support procedural justice.[366] There is no universal definition for 'community benefits', but it usually includes both monetary and non-monetary modes of support.[367]

In NSW, industry proponents enter into Voluntary Planning Agreements ('VPA') with local communities through the local council.[368] These agreements reflect community benefits packages. Industry proponents often fund community infrastructure, programs, and services, as well as pay rates directly to local councils. Additionally, state programs such as the Regional Growth Fund[369] provide benefits packages for local communities. However, these may not be sufficient, nor available for all local communities affected by mining operations. VPAs are not a statutory requirement, though many industry proponents participate in the arrangement to obtain social acceptance. NSW maintains a program for coal mining communities to diversify their economies,[370] but the same does not exist for critical minerals mining communities.

Overall, while opportunities for community compensation are present in NSW, they are not available to all communities affected by mine operations. Because communities cannot always rely on these grants, gaps remain in the opportunities for local communities to obtain sufficient compensation and, thus, distributive justice. When coupled with the real risk of insufficient rehabilitation securities, the outcomes can be devastating and demonstrate a failure to afford distributive justice. As such, providing meaningful support

[364] Ignacio Herrera Anchustegui (n 142) 216.
[365] Lea Diestelmeier, 'The Role of Energy Communities in Facilitating Sustainable Energy Democracy: Legal Challenges' in Ruven Fleming, Kaisa Huhta and Leonie Reins (eds), *Sustainable Energy Democracy and the Law* (Brill Nijhoff, 2021) 132.
[366] Ignacio Herrera Anchustegui (n 142) 216–218.
[367] Ibid 218-219.
[368] Department of Planning and Environment (NSW), 'State Voluntary Planning Agreements' (Web Page, 20 July 2022) <https://www.planning.nsw.gov.au/Plans-for-your-area/Infrastructure-funding/State-Voluntary-Planning-Agreements >.
[369] Department of Regional NSW (NSW), 'Regional Growth Fund' (Web Page, 2022) <https://www.nsw.gov.au/regional-growth-fund>.
[370] Department of Regional NSW (NSW), 'Royalties for Rejuvenation Fund' (Web Page, 2022) <https://www.nsw.gov.au/regional-nsw/programs-and-grants/royalties-for-rejuvenation-fund>.

for community benefits schemes is an important opportunity to provide distributive justice to local communities affected by critical minerals mines.

The needs of local communities can be assessed and reviewed with each ARR. The Ministry of Energy, Mines and Low Carbon Innovation (EMLI) views the BC ARR framework as an opportunity to demonstrate compliance with best practices and track liabilities that will require mitigation, among other purposes.[371] However, communities are not yet included in the BC ARR process. NSW can learn from this shortcoming in BC and use the NSW ARR as an opportunity for local communities to provide submissions with respect to their views on the state of rehabilitation and their conformity with land use and closure plans. Local communities can help 'identify unforeseen impacts that require attention'.[372] This assists in identifying weak points in the provision of distributive justice as well as areas that may be harming social acceptance of a mine operation, as examined in Chapter II.[373]

6.5 Recommendations reflecting Energy Justice Principles

Critical minerals mining raises an important opportunity to address energy justice through progressive rehabilitation regulations. This chapter examined recognition justice, procedural justice, and distributive justice in the context of the existing regulatory framework with respect to mine rehabilitation in NSW. It also identified existing gaps within the NSW regulatory framework, which fails to effectively embed energy justice. Like EIAs, strengthening the ARR system may increase the ability of citizens to access important information regarding the carrying out of mine rehabilitation, as well as identify new or ongoing impacts 'on them and their environment'.[374] Finally, this chapter integrated the criteria proposed for regulatory reform to better manage these gaps. Application of the proposed criteria will address energy justice through regulatory reforms to the progressive rehabilitation framework in NSW. Progressive rehabilitation regulations have the potential to support energy justice. These criteria will support the overall provision of energy justice to local communities affected by critical minerals mines.

[371] Ministry of Energy, Mines and Low Carbon Innovation (BC), *Annual Reclamation Report – General information and Format Requirements* (n 270) 1.
[372] University of Victoria Environmental Law Centre, *Closure, Reclamation, and Abandoned Mines* (Report, BC Mining Law Reform, 2019) 7.
[373] Jordy Lee et al (n 98) 2; Steven Pearce et al (n 169) 613.
[374] Allan Ingleson and Chilenye Nwapi (n 317) 4, 15–16.

CHAPTER VII: CONCLUSION

The exploration for and exploitation of critical minerals are critical to the global energy transition. However, there is a lag in the NSW mining regulatory framework to anticipate and manage the underlying conflict with local communities affected by critical minerals mines. BC faces similar pressures in a sufficiently similar legal system and provides a lengthy historical framework for mine reclamation for useful comparison. This thesis presents a comparative functional analysis of the BC mining regulatory framework to generate options for regulatory reform in NSW.

Recent literature demonstrates a shift in energy justice scholarship and the need for its application to critical minerals developments. This thesis sought to address this gap by applying the principles of energy justice to the mining framework in NSW. It is argued that local communities affected by critical minerals mines face difficulties and shortcomings in achieving energy justice. This chapter concludes by considering how the criteria proposed in Chapter VI may improve outcomes for local communities affected by critical minerals mines. These criteria are summarised in the following table:

Table 2: Recommendations for NSW.

Recommendations to Embed Energy Justice in Progressive Rehabilitation Regulations in NSW through the ARR Framework
Recognition Justice • Include guidance within the ARR framework to direct and streamline consultation and record-keeping processes. • Provide opportunities for the local community to make submissions regarding the form, matters, activities, and actions surrounding ARR consultations with respect to progressive rehabilitation. • Require that the Secretary consider local community submissions with respect to ARR consultations. • Include an expectation that industry proponents sufficiently consider community recommendations resulting from the ARR consultation process. • Appoint an independent assessor to manage and review ARR consultation.
Procedural Justice • Increase responsiveness to local community submissions and position the ARR as an expectation for annual collaboration. • Provide opportunities for local community review of the ARR before it is approved by the Secretary. • Include an accessible and understandable summary of the status of land disturbance and rehabilitation in the ARR for more equitable local community review.

Distributive Justice

- Provide opportunities for local community submissions surrounding rehabilitation cost estimates (RCE) provided in the ARR.
- Place reasonable limits or qualifiers on the discretion of the Secretary in accepting RCEs provided by industry proponents, such as by considering local community submissions.
- In addition to landholders, consider opportunities for compensation for mine-affected landowners.
- Create statewide benefits schemes supported by both government and industry proponents for local communities affected by critical minerals mines to support a just energy transition through distributive justice.

Source: Compiled by the author.

There are aspects of NSW's mining framework that fail to afford energy justice to local communities affected by critical minerals mines. This includes inadequate attention to issues raised by communities, extensive regulatory discretion, and a lack of transparency and accessibility. Such failures to provide energy justice are largely a result of deficient community participation and compensation, as discussed in Chapter VI. However, there is a more effective way for NSW to regulate the development of critical minerals to encourage collaboration and, thus, coexistence of industry and local communities. NSW maintains an opportunity to address energy justice through regulations surrounding progressive rehabilitation.

This thesis proposes criteria for integrating energy justice in NSW through progressive rehabilitation regulations. This may involve the inclusion of community submissions as a component of the ARR and the appointment of independent assessors to identify stakeholders and manage consultations in accordance with the ARR.[375] It necessarily involves efforts to increase the quality and accessibility of information with respect to disturbed and rehabilitated land, as well as opportunities for meaningful community participation in annual monitoring processes.[376] Finally, it requires appropriate compensation for local communities, which may be provided in the form of satisfactory community benefits schemes, as well as opportunities for community submissions with respect to the annual RCE.

Progressive rehabilitation requires ongoing efforts and monitoring throughout the mine life cycle. If regulated effectively, progressive rehabilitation can support energy justice through the establishment of an ongoing relationship between local communities and industry proponents. This thesis demonstrates that regulatory reform regarding progressive rehabilitation is essential to guide critical minerals development in

[375] NSW Resources Regulator (NSW), *Annual Rehabilitation Report and Forward Program for Large Mines* (n 148) 5.
[376] Ibid 7–13.

NSW. If employed effectively, regulatory reform embedding energy justice can support a just energy transition of local communities affected by critical minerals mines.

The benefits of progressive rehabilitation are crucial to achieving energy justice as critical mineral resources are increasingly developed. Such rehabilitation presents a unique opportunity to establish an ongoing relationship between local communities and industry proponents. This thesis proposes criteria to improve progressive rehabilitation based on the comparative analysis conducted. The comparative functional analysis presened within this thesis, the literature, and recent regulatory amendments in NSW show that progressive rehabilitation must be targeted through regulatory reform to provide for a just energy transition. The thesis recommends that regulatory reform considers options provided for in Chapter VI and summarised in Table 2 in Ch VII. This approach allows for progressive rehabilitation to improve community collaboration, sustain community benefits, and support the overall provision of energy justice to local communities affected by critical minerals mines.

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