

**Submission
No 106**

**INQUIRY INTO CURRENT AND POTENTIAL IMPACTS OF
GOLD, SILVER, LEAD AND ZINC MINING ON HUMAN
HEALTH, LAND, AIR AND WATER QUALITY IN NEW
SOUTH WALES**

Organisation: NSW Government

Date Received: 15 September 2023

Current and potential impacts of gold, silver, lead and zinc mining on human health, land, air and water quality in New South Wales

Portfolio Committee No. 2 – Health

September 2023

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1 Executive summary

The NSW Government submission addresses the terms of reference for the Portfolio Committee No. 2 – Health inquiry into current and potential impacts of gold, silver, lead and zinc mining on human health, land, air and water quality in New South Wales.

The submission aims to inform the Committee on matters relating to the terms of reference, including on the legislative and regulatory framework and the roles and activities of relevant Government agencies.

The Government takes an integrated approach to managing minerals mining in NSW. This approach flows through the assessment of development applications and into ongoing oversight measures including monitoring, compliance, and enforcement activities by regulatory authorities. This framework also enables rapid responses to acute incidents that pose a risk to human health and the environment.

The Government is committed to appropriately balancing the positive and negative impacts of mining on communities, economies and the environment, including through an effective legislative and regulatory framework that protects human health and the environment.

2 Introduction

2.1 Overview

NSW has an abundance of the minerals and metals that are essential to future industries including renewable energy, advanced manufacturing, battery manufacturing, defence, aerospace, ag-tech and renewables. The development of critical mineral resources, and the downstream industries and processing is critical to support a transition to net zero and creation of local jobs.

Across NSW, mining directly employs about 29,500 workers. Operating minerals and metals mines employ about 4,000 workers directly. NSW has 13 active gold, silver, lead and zinc mines located in the Central West, Far West, Riverina and South East Tablelands regions.

The Australian Bureau of Statistics estimates that in 2021/22 mining directly contributed \$28.8 billion to Gross State Product (4.1%). Mining is expected to contribute about \$4.65 billion in royalties to the NSW Government in 2022/23. The value of minerals production (excluding coal) for 2022/23 is expected to be about \$5.5 billion.

The pursuit of these opportunities must be balanced by a legislative and regulatory framework with a core purpose to protect human health and the environment from adverse impacts of mining. The NSW framework regulates how minerals mines are established, operated, closed and rehabilitated. The key elements of the framework are found in the:

- Environmental Planning and Assessment Act 1979 (EP&A Act)
- Mining Act 1992 (Mining Act)
- Protection of the Environment Operations Act 1997 (POEO Act),
- Water Act 1912
- Water Management Act 2000
- Work Health and Safety (Mines and Petroleum Sites) Act 2013 (WHS (MPS) Act), and
- associated regulations.

2.2 Regulatory framework

The Government takes an integrated approach involving multiple agencies to regulate mining in NSW. This approach flows through the assessment of development applications and into ongoing oversight measures including monitoring, compliance, and enforcement activities by regulatory authorities.

Development for the purpose of large-scale mineral ore extraction is State Significant Development (SSD) under the EP&A Act. The SSD assessment process is an integrated whole-of-government approach, coordinated by the Department of Planning and Environment (DPE). It recognises that mining projects will require approvals under abovementioned laws in addition to development consent under the EP&A Act. The assessment of all relevant matters relating to these approvals is fully integrated into the SSD assessment.

DPE seeks advice on an SSD application from Government agencies and local councils throughout the assessment process. This includes advice on the Secretary's Environmental Assessment Requirements (SEARs)¹, Environmental Impact Statement (EIS)², Submissions Report, draft conditions of development consent, and responses to any requests for additional information. All advice is provided to the applicant and made publicly available on the DPE website.

Government agencies that may be consulted in this process include, but are not limited to: Crown Lands, Dams Safety NSW, Department of Regional NSW (including the NSW Department of Primary Industries (NSW DPI) and Mining Exploration and Geoscience/NSW Resources Regulator, DPE Biodiversity Conservation and Science Directorate, DPE Water Group, Environment Protection Authority (EPA), Fire and Rescue NSW, Heritage NSW, NSW Health, NSW Rural Fire Service, Transport for NSW and Water NSW.

SSD projects require development consent from either the Independent Planning Commission or the Minister (or delegate). All SSD projects are determined on their merits, having regard to economic, environmental and social impacts and the principles of ecologically sustainable development.

DPE's SSD Guidelines and the Integrated Mining Policy are publicly available documents that guide how applicants are to prepare applications.

SSD applications and documents (including the EIS) are placed on public exhibition for a minimum of 28 days. Members of the public, special interest groups, Government agencies and local councils may make submissions. Any Government agency may request further information and additional studies from the applicant. An applicant must also provide a response to submissions to address all matters raised.

If development consent is granted to SSD, certain regulatory instruments cannot be refused if they are necessary for carrying out that SSD and must be substantially consistent with the development consent.³ Development consent may be granted with conditions. Compliance with conditions of the development consent is monitored and enforced by DPE.

If development consent is granted for a mining project, several other approvals will be required for a mine to begin operating. This includes an Environment Protection Licence (EPL) issued by the EPA under the POEO Act. EPL conditions primarily relate to pollution prevention and monitoring. Another key approval is a mining lease granted under the Mining Act. The mining lease gives the holder the exclusive right to mine for minerals over a specified area of land and includes conditions on matters such as protection of the environment and rehabilitation. The Resources Regulator regulates the rehabilitation of mine sites and the conditions of mining leases. These regulatory instruments are reinforced by ongoing monitoring, compliance and enforcement activities by the respective regulatory authority. Work health and safety at mines is regulated by the Resources Regulator.

If there is non-compliance with regulatory obligations, the relevant regulatory authorities coordinate with each other and rapidly respond to address the issue. There are a range of regulatory tools available (detailed later in this submission) to ensure that human health and the environment is protected, and incidents are managed to minimise impacts on the community. Stakeholder engagement is at the centre of the Government's regulatory response and keeping the community informed of regulatory responses to acute incidents is a key priority.

¹ SEARs outline all matters that must be addressed in an EIS prepared by an applicant. DPE consults with key agencies and councils in the preparation of SEARs.

² An EIS that accompanies a minerals mining application is required to include comprehensive assessment of air quality, human health, groundwater, surface water, biodiversity and agricultural impacts.

³ Includes a new EPL under the POEO Act up until the first review of the EPL and new mining leases under the Mining Act 1992. A mining lease can be refused where a person is declared to be not a fit and proper person.

3 Terms of reference

3.1 the impact on the health of local residents and mine workers, including through biomagnification and bioaccumulation

Minerals mining poses potential health risks to local residents and mine workers. The main health risk is from exposure to dust from mining activities. Dust can be inhaled as airborne particulate matter and ingested from dust deposited in the environment for example through unwashed hands. A human health risk assessment included in an EIS looks at all possible exposure pathways including air (inhalation), ingestion (e.g., growing food in soils) and dermal.⁴

Air pollution in the form of particulate matter is referred to as PM10 and PM2.5. The main sources of particulate matter at a mine are generally wheel generated dust (mine vehicles travelling on roads) and wind erosion of exposed areas. Long-term exposure to particulate matter can cause heart and lung disease and short-term exposure may exacerbate the symptoms of these diseases.

Lead dust from mining activities has had notable impacts on human health. The major pathway of community exposure from lead is ingestion of deposited lead dust in the environment (especially through hand-to-mouth behaviour of children).⁵ Lead mine workers and people living with them can also be exposed to lead in the home if it is brought in on clothing and footwear.

Health impacts from lead mining have been particularly significant in Broken Hill. Children under five years of age are at particular risk of lead exposure, and the blood lead levels of children in Broken Hill are high. The Far West Local Health District Lead Program Annual Report 2022 states that almost 39% of all children and 66% of Aboriginal children under five have blood lead levels which are required by law to be notified to NSW Health.

It is important to note that issues associated with lead mining at Broken Hill, including persistently high levels of lead in soil, have resulted from 140 years of mining. Modern regulatory frameworks were not in place for a significant period of that time. Blood lead levels in children in Broken Hill have decreased significantly since the introduction of lead abatement programs and the blood lead screening program in 1991. The EPA has also overseen a range of improvements to reduce off-site dust emissions from the active mining operations still occurring in Broken Hill (Perilya Broken Hill Limited and Broken Hill Operations Pty Ltd).

A general point to note is that for a person's health to be impacted by an environmental hazard, such as particulate matter air pollution from a mine, there must be a pathway from the emission source to the individual. If an exposure pathway exists, whether a person's health is impacted depends on the toxicity profile of the hazard, the level of exposure, the way in which the hazard enters the body, and individual factors such as a person's age, exposure to smoking, alcohol consumption and whether they have existing disease (for example asthma increases sensitivity to the health effects of air pollution).

The regulatory tools available to avoid or minimise impacts on the health of local residents and mine workers is addressed later in this submission relating to the specific terms of reference.

⁴ Impacts on rainwater tanks is addressed in the next section on catchments and waterways. Work, health and safety relating to mine workers is addressed later in this submission.

⁵ See <https://leadsmart.nsw.gov.au/about/>.

3.2 the impact on catchments and waterways, affecting both surface and groundwater destined for, local and town water supplies, including rainwater tanks, and on aquatic biodiversity

Minerals mining poses potential risks to catchments and waterways. Potential risks include metals leached from mine tailings, dust from tailings and acid mine drainage. There is clear scientific evidence of the potential adverse impacts of mining on local ecosystems if risks are not appropriately managed. Healthy catchments and waterways are critical for human health and aquatic biodiversity.

Impact assessment and management

In assessing an SSD application, impacts on surface water and groundwater are addressed in the EIS and considered by the decision maker. DPE Water and the EPA provide advice on the potential water quality impacts identified in the EIS. DPE Water provides advice to ensure that development is sustainable and consistent with the broader management principles of the state's water resources and their dependent ecosystems for the benefit of both present and future generations.

DPE Water considers the requirements of the *Water Management Act 2000* and *Water Act 1912*. DPE Water also considers related legal instruments (e.g., water sharing plans) and relevant policies and guidelines such as the Australian Groundwater Modelling Guidelines and the Aquifer Interference Policy (which establishes and objectively defines minimal impact considerations as they relate to water-dependent assets).

DPE Water also provides advice to applicants about appropriate ongoing management and monitoring to prevent contamination and ensure that impacts are no greater than approved.

Development consent may include a condition requiring the applicant to prepare a water management plan to the satisfaction of the Planning Secretary and to implement that plan as approved by the Secretary. The plan must describe the measures that will be taken to ensure the water management performance measures set out in the development consent will be met.

Development consents generally require mine operators to monitor the water quality of surrounding waterways to ensure that mining activities are not impacting on surrounding waterways. This can include a Trigger Action Response Plan to ensure any impacts are detected and actions are taken to identify and prevent any further potential impacts on human health or the environment.

Development consents and EPLs may also require water monitoring onsite.

Water pollution

In some cases, water pollution may occur from mining activities. Pollution of waters is an offence under the POEO Act, legislation that is administered by the EPA. The EPA's policy is that water pollution should be avoided wherever possible. When it is not possible, it is the responsibility of the person undertaking the works or activity to conduct an assessment to consider the potential impact on waterways. If the impacts are unacceptable, mitigation measures that prevent or minimise impacts on water quality should be implemented.

If surface water discharges from mining activities occur the discharge would be considered using the existing technical, policy and regulatory frameworks set out below for managing water pollution.

The EPA uses the National Water Quality Management Strategy and National Water Quality Guidelines (ANZG 2018) as the policy and technical framework to assess and manage water pollution. The EPA considers all uses of the water including aquatic ecosystems, agricultural use and drinking water sources when providing advice.

The level of assessment required will depend on a range of case- and site-specific circumstances. Once the risks are appropriately characterised and the potential impacts understood, the EPA can consider a proposed discharge and, if appropriate, impose and enforce discharge limits on the EPL for any pollutants that have the potential to cause harm.

Water storages containing contaminants such as heavy metals at metalliferous mines are generally designed to retain the contaminated water and catchment runoff from at least a 1 in 100 year 72-hour rainfall event. This means that a discharge to surface waters only occurs during periods of high rainfall when there are significant volumes of water in the waterways to rapidly dilute and disperse any pollutants. Modern tailings storage facilities and other contaminated water storages are also lined to prevent pollution of groundwater. They may also include seepage management and detection systems to prevent pollution of groundwater.

At each mine site, the operator prepares a water balance with the aim of retaining contaminated water on-site and maximising recycling/reuse to minimise the use of groundwater and/or town water sources. Prior to the use of contaminated water or effluent for activities such as dust suppression an assessment of the suitability and sustainability of the wastewater may be required by the development consent or EPL.

Rainwater tanks

Dust from mining activities can land on house roofs and flow into water tanks during rain. However, the impact on water in rainwater tanks can be managed. The National Water Quality Management Strategy Australian Drinking Water Guidelines (2011) provide a framework for the good management of drinking water supplies. The guidelines outline the management practices recommended for rainwater tanks which includes tank type and installation, rainwater collection locations, first flush systems and tank maintenance (such as desludging, cleaning and disinfection). Guidance on use of rainwater tanks is produced by the Commonwealth Government's Environmental Health Standing Committee and provides further information on potential threats to water quality in rainwater tanks and how to avoid them. NSW Health's advice on maintaining good water quality from rainwater tanks is consistent with this information.⁶

Aquatic biodiversity

The Stronger Primary Industries Strategy 2022-2030 commits to the effective management of sustainable resources and productive landscapes. This includes ensuring fish stocks are conserved and that there is "no net loss" of key fish habitat upon which they depend.

To achieve this, NSW DPI ensures that developments, including mining activities, must comply with the *Fisheries Management Act 1994*. This is done by including relevant conditions of development consent that relate to aquatic habitat protection and threatened species conservation provisions in Parts 7 and 7A of the *Fisheries Management Act 1994* respectively, and the associated Policy and Guidelines for Fish Habitat Conservation and Management (Update 2013) and NSW Biodiversity Offsets Policy for Major Projects - Fact Sheet: Aquatic Biodiversity (November 2014). Conditions can include, but are not limited to, the development and implementation of management plans, monitoring programs and direct protection and rehabilitation actions.

⁶ <https://www.health.nsw.gov.au/environment/water/Pages/rainwater.aspx>.

3.3 the impact on land and soil, crops and livestock, including through biomagnification and bioaccumulation

There is the potential for land and soil, crops and livestock to be impacted by heavy metals from a range of sources, including mining. The Government recognises the critical importance of having sustainable agricultural resources and productive landscapes.

NSW DPI has conducted research into the impacts of heavy metals and organic chemicals in a range of sources (such as biosolids and other organic waste streams) on soil properties over decades. Outcomes of past research outline levels of heavy metal concentration that impact on plant/crop growth and soil health. Metals can transfer to livestock through plant and direct soil ingestion. Livestock ingest considerable surface soil (0.00484 kg/day/kg), so some heavy metals in soil will bioaccumulate in livestock tissue.

NSW DPI is undertaking co-investment research and development with the Australian Meat Processors Association. The aim of the research is to demonstrate the viability of Raman spectroscopy to detect heavy metals in livestock offal at abattoirs. The development of this rapid and cost-effective technology would enable more offal to be sold with an assurance to consumers it meets their expectation of beef that is “safe” and free of heavy metals. Findings from the research will be available in 2024.

It is important to note that NSW DPI regulates chemically affected animals (livestock) under the *Biosecurity Act 2015*. It includes animals affected by cadmium, mercury and lead. Livestock with lead residues higher than 0.24 micromoles per litre ($\mu\text{mol/L}$) are detained and assigned a PB1 status flagged in the National Livestock Identification Scheme. Affected livestock will be retested in 12 months and livestock producers are not able to sell affected livestock for slaughter until their blood test is below 0.24 $\mu\text{mol/L}$. This action prevents lead affected animals entering the food chain.

The above reflects an approach to ensuring that produce is fit for human consumption generally, noting that instances of heavy metal contamination may be attributable to a range of sources.

3.4 the adequacy of the response and any compliance action taken by the regulatory authorities in response to complaints and concerns from communities affected by mining activities

NSW government agencies undertake compliance and enforcement to ensure acceptable environmental and public interest outcomes. Where multiple agencies have a role, they work collaboratively to achieve outcomes with stakeholder engagement at the centre of regulatory responses. The three key agencies that undertake compliance and enforcement activities for minerals mines are DPE, the EPA and the Resources Regulator. An overview of each agency and its activities is provided below:

Department of Planning and Environment

DPE's compliance teams monitor projects to determine if they are complying with conditions of approvals, and to investigate and enforce compliance. DPE is committed to monitoring and enforcing compliance in a fair, consistent and equitable manner with rigour and integrity. Compliance activities can identify the effectiveness of approvals and opportunities for continuous improvement and investigate broader policy responses to emerging compliance issues.

DPE uses a risk and outcomes-based approach to align with the NSW Government's commitment to prioritise resources toward those that present the highest risk to regulatory compliance and reduce regulatory burden on those that comply. This risk-based approach also provides an opportunity to collaborate with other co-regulators, such as the EPA, on tools, monitoring and regulation to ensure a whole of government approach is applied.

All development consents for mineral mining projects require an Environmental Management Strategy to be prepared. This strategy requires applicants to set out the procedures that would be implemented to:

- keep the local community informed about the operation and environmental performance of the development
- receive, record, handle and respond to complaints
- resolve any disputes that may arise during the course of the development
- respond to any non-compliance and incidents and
- respond to emergencies.

Complaints are investigated by DPE compliance officers or may be referred to the EPA, if appropriate. Officers communicate with the complainant throughout the course of the investigation.

Environment Protection Authority

The EPA considers relevant policies when determining what regulatory or compliance action to take, which may include the EPA Regulatory Strategy 2021-24, EPA Regulatory Policy, EPA Regulatory and Compliance Priorities Statement, EPA Prosecution Guidelines and EPA Guidelines on Enforceable Undertakings.

The Regulatory Strategy outlines the EPA's purpose, guiding principles and approach to improving the environment and human health outcomes. The Regulatory Policy sets out matters the EPA might consider in making regulatory decisions and provides an overview of the regulatory tools available to the EPA.

The EPA adopts a risk-based approach and must also consider the matters set out in section 45 of the POEO Act, when making licensing decisions.

The EPA has a range of regulatory or compliance tools that it may use to regulate gold, silver, lead and zinc mining operations. These include:

- Varying environment protection licences. For example, to impose licence conditions requiring pollution studies or pollution reduction programs; to vary or impose further monitoring requirements.
- Issuing clean up notices or prevention notices.
- Recommending that the Minister issue a prohibition notice.
- Investigating the need for an environmental monitoring program and developing and implementing a program if it is satisfied that there is a need.
- Entering into enforceable undertakings.
- Issuing a warning letter, official caution or penalty notices.
- Compliance audits.
- Reviews of EPLs.
- Investigations powers in Chapter 7 of the POEO Act.
- Prosecutions, including the ability to seek a range of court orders as set out in Chapter 8 of the POEO Act.
- Civil proceedings to remedy or restrain breaches of the POEO Act

The EPA can also establish Advisory Committees to provide advice to the EPA. For example, an independent expert panel has been established to advise the EPA on particular environmental issues relating to the community surrounding the Cadia mine near Orange. The panel includes representation from Science, Economics and Insights Division (SEI) of DPE.

The EPA has discretion to select the most appropriate tool(s), or act, to get the best environmental or human health outcome in response to either an environmental or human health issue.

The EPA's annual report, published on its website, includes information about completed prosecutions, enforceable undertakings and penalty notices under EPA administered legislation each year. The EPA publishes a wide variety of information about regulatory and compliance actions on its public register.

Environment Line is a one-stop pollution and environmental incident reporting service and is available 24 hours a day, seven days a week. Communities can report concerns of potential pollution incidents to Environment Line. Every call received is a valuable opportunity for the EPA to listen and act.

The EPA's Charter of Engagement outlines its commitment to everyone it works with, when considering a regulatory response to an environmental or human health issue, or to an individual event or circumstance of non-compliance.

When issues arise, the EPA may develop a tailored engagement strategy to ensure it is meeting with key stakeholders, listening to their concerns and updating the community about ongoing investigation and monitoring programs via timely updates. In response to community concerns, the EPA may conduct its own water, soil and air monitoring programs to understand the potential for pollutants to make their way into the community. Individual test results are provided to property owners and an opportunity is offered for them to discuss the findings with the EPA.

Resources Regulator

The Resources Regulator is a division of Mining Exploration and Geoscience, which is a group within the Department of Regional NSW.

The Secretary of the Department of Regional NSW is the 'regulator' (known as the NSW Resources Regulator) under the *Work Health and Safety (Mines and Petroleum Sites) Act 2013*. Powers and functions of the regulator under this Act are delegated to officers in the Resources Regulator. The Minister for Natural Resources and the Secretary of DRNSW have decision-making functions under the *Mining Act 1992* and these can be delegated to officers in Mining Exploration and Geoscience (including the Resources Regulator).

The Resources Regulator takes complaints and concerns very seriously and has a robust process in place to ensure complaints are investigated and appropriate action is taken. Regulatory responses to alleged improper conduct may be directed to a range of people including mine and petroleum site operators, contractors, people with statutory functions and workers.

The Resources Regulator's compliance and enforcement actions are driven by a risk-based approach and a flexible and robust intervention framework than can apply a variety of escalating enforcement actions to target specific risks or misconduct.

Low risk non-compliances are addressed through a collaborative process with industry, involving education through advisory services and publication. Moderate and higher risk non-compliances will be dealt with in an escalating manner with increasingly severe enforcement action taken based on the level of risk and potential for harm.

The Resources Regulator's compliance action is focused on proactive assessment of duty holders' performance using the following approaches:

- Targeted Assessment Programs (TAPs)

The TAPs strategy involves implementing a scheduled and targeted assessment program for mines developed around the Resources Regulator's identified critical controls. The TAPs program

comprises inspections across mine sites in NSW to ensure measures have been identified and implemented to facilitate sustainable rehabilitation and work health and safety outcomes.

The TAPs proactively assess how effectively a mine controls risks and manages compliance with the preventative and mitigating controls that are critical in planning for and implementing mine site rehabilitation and managing principal hazards risk. Each TAP focuses on the implementation of a specific critical control or compliance priority.

- Audit program

The Resources Regulator undertakes compliance audits of mining operations and exploration activities to assess whether title holders are meeting their compliance requirements under the Mining Act.

Audit reports also identify opportunities for improvement to strengthen the compliance management activities of the title holder. The Resources Regulator publishes checklists which provide an indication of some of the issues the Resources Regulator's auditors consider when undertaking audits onsite.

- Mine safety assessment programs

The Resource Regulator has planned work health and safety assessment programs to assess how effectively a mine or petroleum site is controlling risks associated mining-specific hazards. Planned assessment programs are coordinated based on industry and sector risk profiles.

These assessment programs include both targeted assessments and planned inspections. Targeted assessments may not necessarily be undertaken at every mine. They may be announced or unannounced and may occur on back shifts.

- Compliance Priorities

The Resources Regulator publishes compliance priorities every six months which outline objectives, compliance priorities, proactive assessment programs, strategic priorities, investigative priorities and reporting and activities outcomes.

The Resources Regulator will conduct awareness campaigns to help mine workers understand they have a role to play and an obligation to keep themselves and their workmates safe and deliver a timely reminder to mine operators to review their safety management systems and implementation of safety controls.

The Resources Regulator produces and shares its compliance priorities reports and related materials on activities to:

- ensure a consistent and responsive regulatory approach
- provide increased transparency and confidence in compliance and enforcement activities
- promote voluntary compliance by industry.

It also gives guidance on the high-level compliance expectations, enforcement processes and regulatory methods that ensure that obligations under the legislation are met.

The Resources Regulator has a range of compliance and enforcement actions available to it which are utilised based on the seriousness of the issue. The actions include:

- Inspections, audits or direct regulatory engagement
- Advisory letters
- Warning letters
- Cautions for low-level non-compliances
- Penalty notices for less serious breaches of the legislation

- Statutory notices and directions issued under the Mining Act and WHS legislation to direct a party to do or not do something, including stop work orders
 - Imposing additional controls or restrictions on an authority, licence or permit to mitigate against specific or potential risks
 - Injunctions and other civil proceedings
 - Suspension or cancellation of an authority
 - Enforceable undertakings, which are written, legally binding agreement proposed by a company or individual following an alleged contravention
 - Prosecutions for serious, ongoing or repeated breaches of legislation.
- Suspension or cancellation of authorisations

The Resource Regulator will consider the suspension or cancellation of an authority where serious contraventions have occurred or where the authority holder is unwilling or unable to return to compliance. Suspension and cancellation may occur in conjunction with other enforcement actions, such as prosecution.

- Enforceable undertakings

When an alleged contravention of the Mining Act, Work Health and Safety Act 2011 or WHS (MPS) Act has occurred, the Resources Regulator may accept an enforceable undertaking instead of initiating a prosecution.

An enforceable undertaking is a legal agreement that obliges an organisation to carry out specific activities to achieve improvements as well as delivering benefits to the mining industry and the broader community. The Resources Regulator has published enforceable undertaking guidelines and publishes details of accepted enforceable undertakings.

- Prosecutions

The most serious breaches of the regulatory framework require appropriately elevated regulatory responses. Prosecutions are undertaken for matters particularly grave in nature or matters of negligence and disregard.

The Resources Regulator has a strong record of pursuing WHS prosecutions. Notably, it was the first in Australia to successfully prosecute a Category 1 offence under WHS acts.

The Resources Regulator has finalised 123 prosecution matters with an additional 7 matters currently ongoing. Outcomes are wide ranging from large fines to enforceable undertakings with corporations and individuals.

Summaries of all finalised prosecutions are published on the Resources Regulator’s website.

3.5 the effectiveness of the current regulatory framework in terms of monitoring, compliance, risk management and harm reduction from mining activities

New South Wales has a robust environmental regulatory framework to protect human health and the environment from pollution from metalliferous mines. Details regarding the legislative and regulatory framework are outlined below.

Environmental Planning & Assessment Act (EP&A Act)

If an SSD application is approved, it is issued with a development consent in line with the requirements of the EP&A Act. A development consent contains a range of conditions that the proponent must comply with when undertaking the approved development.

DPE consults with other Government agencies in drafting consent conditions. The conditions are imposed under the EP&A Act and regulated by DPE. Consent conditions can take many forms including:

- Limit conditions which are direct and specific requirements the applicants must meet or implement. They are usually based on information presented in the EIS and on which the assessment of environmental impacts was based or on which the impact is considered to be acceptable. Examples of limit conditions include noise and air quality criteria, extraction or transport tonnage, authorised disturbance area, project life etc.
- Operating conditions which are prescriptive directions and actions that the proponent must implement while undertaking the development.
- Environmental performance measures that the proponent must meet either during or post operations. Development consents for mining projects often contain performance measures specific to water, rehabilitation or subsidence-related impact.
- Requirements to undertake further investigations, studies or analysis of certain matters to verify an issue that was raised during the assessment of the project.
- Requirements to undertake various monitoring programs to monitor and evaluate the development's environmental impacts. Mining-related development consents commonly require proponents to implement monitoring programs for noise, blasting, air quality, surface water, groundwater, biodiversity and social impacts. Monitoring programs are often presented in management plans that are prepared for the development. These plans are required to be prepared in consultation with relevant government agencies or councils.
- Review and reporting conditions requiring a proponent to report any incidents or non-compliance with the development consent; provide an Annual Review of the development which reports on the progress of the developments, reviews monitoring data and reports on compliance with the development consent.
- Conditions that provide landowners with the opportunity to request a review of air quality, noise or blasting impacts on their property.

Mine operators are required to commission and pay the full costs of an independent environmental audit of the development at least once every three years, and can be directed by DPE to undertake one at any point in time. Audits are to be conducted in accordance with DPE's *Independent Audit Post Approval Requirements Guidelines (2020)* and require an impartial expert to assess the development's compliance with the conditions of consent and review the environmental performance of the development.

Protection of the Environment Operations Act (POEO Act)

The POEO Act regulates water pollution, including surface water and groundwater pollution, land pollution, noise pollution and air pollution from mining operations in NSW. It contains a range of regulatory tools available to the EPA to manage risks to human health and the environment.

An EPL from the EPA is required for mining for minerals. The EPA's risk-based licensing system aims to ensure that all environment protection licensees receive an appropriate level of regulation based on the level of risk they pose. The EPA undertakes risk assessments of all licensed premises in NSW in consultation with each licensee. The risk assessment examines site specific risks posed by each licensed premises to identify any environmental issues that a licensee needs to address and where the EPA needs to focus its regulatory attention. The EPA also examines the licensees' environmental management performance, which includes recognising any environmental management systems and practices a licensee has put in place.

Based on the results from the risk assessments licensees are allocated an overall environmental risk level (1, 2 or 3 - with 3 being the highest risk). These risk levels inform the level of regulatory and compliance oversight. The risk levels for each licence are published on the EPA's public register. Further information on the EPA's risk-based licensing approach is set out in the EPA licensing guideline.

The EPA may impose conditions on a licence, subject to the restrictions in the EP&A Act. The EPA must consider the matters listed in section 45 of the POEO Act when exercising its licensing functions.

An EPL may include conditions regulating all forms of pollution from the scheduled activities to which it applies (such as mining for minerals) and may also regulate pollution from any other activity carried on at the licensed premises, including noise, air, water and land pollution.

The POEO Act sets out examples of the types of conditions that the EPA may impose. A mining for minerals EPL will generally include conditions relating to dust monitoring, discharge to waters (volume and quality monitoring), ambient water quality monitoring, groundwater monitoring, concentration limits for a range of pollutants, testing methods, weather monitoring, recording of complaints, notification of environmental harm, details of any pollution reduction studies and programs.

The POEO Act includes duties to notify pollution incidents and to prepare, keep, test and implement pollution incident response management plans.

The EPA imposes monitoring requirements on the licensee via EPL conditions. The EPA may also take additional steps to monitor for environmental issues. For example, the EPA has installed additional air monitoring devices in the Cadia Valley, with support from DPE SEI. This includes:

- Installing wind-directional high-volume air samplers in the Cadia Valley to sample total suspended particles and monitor concentrations of trace metals in ambient air.
- Continuous monitoring of ambient particulate matter concentrations via DustTrack Aerosol Monitors.
- Establishing an incident monitoring station at Millthorpe, which continuously measures particles, visibility, some gaseous pollutants and meteorological variable. Data from the site are reported hourly as air quality category (AQC) ratings.
- Installing PurpleAir smart sensors at certain residences to provide information on how particulate matter may vary near Cadia Valley. The public may view data from the low-cost sensors in real-time on an online map on the PurpleAir website.
- Setting up automatic weather stations.

The EPA has also:

- Conducted sampling of surface soils for key metals at 30 sites within the Cadia Valley region.
- Offered and conducted water testing for rainwater dependent residential properties. General information about the testing is available on the EPA website and the EPA is providing test results to the property owners and an opportunity to discuss the findings with the EPA.

Air quality management

NSW has a comprehensive regulatory framework for managing and regulating air quality impacts from industry (including mining). It aims to ensure that: emissions are minimised as far as practicable; air pollutants are treated using up to date equipment and techniques, at the point where the emissions are released into the environment; and human health is protected from the harmful effects of air pollution at the point of exposure (where the air is breathed).

This includes requirements to achieve both performance standards at the point of emission, and health-based assessment criteria at the point where the community may be exposed.

SEARs generally require the proponent to carry out an air quality impact assessment in accordance with the EPA's Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Approved Methods), including the use of the health-based assessment criteria.

The Approved Methods lists methods for modelling and assessing the impacts of the emission of air pollutants from stationary sources in NSW by setting out:

- health and amenity-based impact assessment criteria for the protection of ambient air quality
- the process for assessing the impacts of air pollutant emissions on ambient air quality and the surrounding community.

The Approved Methods provides that an air quality impact assessment considers site-specific features such as meteorology, background air quality, location of the surrounding community and individual plant configuration. Air dispersion modelling is used to predict concentrations of air pollutants in the community. Predicted concentrations are compared to health-based assessment criteria to ensure human health is protected at the point of exposure in the community.

The Approved Methods provide that the impact assessment criteria should not be exceeded. The impact assessment criteria are ground level concentrations of air pollutants that must be met at the point where the community might be exposed to the pollutants from a source. Assessment criteria are used to inform the design of pollution control equipment and to assess the likely impact of a proposal.

The Approved Methods also states that principal toxic air pollutants must be minimised to the maximum extent achievable through best-practice process design and/or emission controls for principal toxic air pollutants. Principal toxic air pollutants are defined on the basis they are carcinogenic, mutagenic, teratogenic, highly toxic or highly persistent in the environment.

The Approved Methods adopts the National Environment Protection (Ambient Air Quality) Measure standards as impact assessment criteria for common air pollutants such as particulate matter, sulfur dioxide and nitrogen dioxide. Impact assessment criteria also exist for other air pollutants not covered by National Standards. This includes criteria for lead, copper fumes, copper dusts and mists amongst a range of other air pollutants. These criteria are health based for inhalation exposure. Amenity based criteria are also provided for dust deposition.

Air pollution

Under the POEO Act, an occupier will commit an offence if air pollution from their premises is caused by the occupier's failure to:

- maintain plant in an efficient condition, or
- operate plant, carry out maintenance work on plant or deal with materials, in a proper and efficient manner.

In addition, the POEO Act makes it an offence to emit air pollutants from a point that exceeds a 'standard of concentration' as prescribed in the Protection of the Environment Operations (Clean Air) Regulation 2022 (Clean Air Regulation). For sources of air pollutants where a prescribed limit does not exist, or the emissions are not point source emissions, the occupier must prevent or minimise air pollution through practicable means.

Emission limits for point sources can be set within EPLs. The EPA cannot specify EPL conditions that allow poorer quality air emissions than specified in the Clean Air Regulation. The EPA may also impose air monitoring requirements within in an EPL.

Water pollution

The POEO Act and the Protection of the Environment Operations (General) Regulation 2022 provide the statutory framework for managing water pollution in NSW, including from mining activities.

The main ways that the EPA regulates potential water pollution include EPLs and environment protection notices. The POEO Act sets out the matters the EPA must consider when exercising licensing functions, which include:

- the pollution that will be caused and its impact on the environment
- practical measures that can be taken to prevent, control, abate or mitigate the pollution and protect the environment from harm, and
- the environmental values of water affected by the proposed discharge and the practical measures that can be taken to restore or maintain those values.

The environmental values of a waterway include all the uses of a waterway such as human and commercial activities, environmental uses, and community values. The environmental values of water are defined in the POEO Act Dictionary as those in the National Water Quality Guidelines.

The National Water Quality Guidelines provide an agreed framework for assessing and conserving ambient water quality according to whether the water is suitable for the relevant environmental values. They include an extensive list of chemical and other parameters that can affect waterways. Default guideline values are provided that help guide local decision-making in achieving environmental values.

The National Water Quality Guidelines sit within the National Water Quality Management Strategy that all States and Territories have adopted for managing water quality.

Mining Act 1992 (Mining Act)

A mining lease under the Mining Act is required before the start of mining operations. A mining lease gives the holder the exclusive right to mine for minerals over a specific area of land. To be granted a mining lease, applicants must demonstrate that:

- there is an economically mineable mineral deposit within the area of the proposed lease, and
- they have the financial and technical resources to carry out mining in a responsible manner.

An exploration licence under the Mining Act is required to undertake exploration for minerals.

The Resource Regulator ensures that mines are operating in accordance with the conditions of their mining titles and codes of practice. This includes responding to notifications of breaches of title conditions, inspection of sites, issuing directions where compliance issues are detected and a strategy of encouraging progressive rehabilitation.

Codes of practice developed under the Mining Act to regulate exploration activities include:

- Environmental Management
- Produced Water
- Rehabilitation
- Community Consultation.

The Mining Act was updated in 2022 to ensure that it remains fit for purpose for the ongoing responsible development of resources in NSW. These changes are intended to achieve more effective decision making over the lifecycle of a mine, from exploration through to rehabilitation. The amendments included improved compliance tools which discourage illegal and fraudulent activities. Mining for mercury was also ruled out to ensure Australia's compliance with the Minamata Convention on Mercury.

The Mining Regulation 2016 was amended in late 2022 and March 2023 to support these Act amendments, including to enhance compliance. The amendments also included minor changes to definitions under Schedule 8A to confirm the application of the rehabilitation conditions under the Schedule to ancillary mining activities carried out in conjunction with a mining lease.

Rehabilitation requirements were strengthened in 2021 to prescribe new mining lease conditions in the Mining Regulation 2016 and set clear, achievable and enforceable requirements for rehabilitation. All mines in NSW have now transitioned to these new conditions. The new conditions require lease holders to develop, implement and achieve rehabilitation outcomes and implement a forward program to ensure progressive rehabilitation across mines in NSW.

3.6 the effectiveness of current decommissioning and rehabilitation practices in safeguarding human health and the environment,

Decommissioning and rehabilitation is an important phase in the lifecycle of a mining project. The current legislative and regulatory framework has controls in place to ensure that these phases of a mining project are appropriately managed to safeguard human health and the environment.

Conditions on mining titles are applied to ensure any disturbed land is left in a safe and stable condition and that local communities are not unduly affected. Rehabilitation of affected land occurs progressively and in phases during operations.

The Resources Regulator proactively regulates rehabilitation by title holders under the Mining Act and the conditions of the relevant mining lease by:

- Ensuring rehabilitation outcomes are considered upfront as part of the mine design.
- Ensuring specific rehabilitation objectives and completion criteria are consistent for each domain with specific focus on achieving the final land use.
- Ensuring rehabilitation is carried out progressively, that is, as soon as reasonably practicable following disturbance. This includes requiring annual reporting that demonstrates how rehabilitation is progressing against approved performance measures and timeframes.
- Compliance and monitoring to enforce rehabilitation obligations and ensure that exploration and mining-affected land is left in a safe and stable condition. The Resource Regulator uses a risk-based framework to guide actions and ensure that rehabilitation activities achieve the final post-mining landform and land use(s) approved under the development consent.
- Requiring Rehabilitation Security Deposits whereby a bond must be provided before exploration and mining activities begin. The security deposit covers the full rehabilitation costs and is now required to be reviewed annually to maintain currency. The security deposit is only returned once rehabilitation is completed to a satisfactory standard. Mine inspectors regularly assess the surface disturbance (or proposed disturbance) of a mine or exploration site to calculate the security deposit.

Currently about \$3.7 billion is held in security deposits for mine site remediation and rehabilitation.⁷

In certain circumstances, the EPA may require financial assurances as a condition of an EPL to manage certain environmental liabilities. However, the EPA's Financial Assurance Policy makes clear that a financial assurance is not intended to duplicate any other financial security already provided to the NSW Government, for example a rehabilitation security deposit.

⁷ Update on the latest published figures in the *Resources Regulator annual report 2021-22* (November 2022), <https://www.resourcesregulator.nsw.gov.au/sites/default/files/2022-12/resources-regulator-annual-report-2021-2022.PDF>,

Regulatory tools and powers available

The Resources Regulator has a wide range of regulatory tools and powers under the Mining Act to ensure that rehabilitation is undertaken progressively and that sustainable final land use outcomes are achieved. These regulatory tools and powers include:

- publishing industry guidance materials good rehabilitation practices
- education and facilitation of knowledge transfer across industry
- targeted assessment programs
- compliance and mandatory audits
- statutory audits
- escalation of compliance and enforcement measures as appropriate including cautions, penalty infringement notices, prosecutions through to suspensions and cancellations.

The Resources Regulator's approach to rehabilitation is outcomes focused while being flexible to allow for industry to develop and implement innovative and best practice methodologies specific to a site. Rehabilitation must be undertaken progressively over the life of the mine to achieve the approved final land use.

The Rehabilitation Information Release Dashboard has a detailed and integrated geospatial overview of rehabilitation assessments.

Mine Rehabilitation Portal

The Mine Rehabilitation Portal is an Australian first and allows mining companies across the state to submit, analyse and report on their rehabilitation activities in a consistent and streamlined way. The portal also assists the Resources Regulator in monitoring and regulating rehabilitation requirements for mining activities. The Mine Rehabilitation Portal's central purpose is to collect spatial data related to mine rehabilitation and closure from title holders and to store this spatial data in a centralised geodatabase.

3.7 the effectiveness of New South Wales Government agencies to regulate and improve outcomes including:

3.7.1 the measurement, reporting and public awareness

Measurement, reporting, and public awareness are important measures to effectively regulate and improve outcomes. Government agencies use regulatory tools to obtain data from mine owners and operators so that performance against regulatory obligations can be measured and data published. These measures are generally requirements of legislation and/or implemented through regulatory instruments such as the conditions of development consent or an EPL. For example, under the POEO Act, all licensees must:

- Make their pollution monitoring data publicly available within 14 days of obtaining the data and/or receiving a specific request for a copy of the data. Licensees who maintain a website must make the monitoring data related to pollution available in a prominent position on their website and licensees who do not maintain a website must provide a free of charge copy of the pollution monitoring data on reasonable written request from any person.
- Submit an annual return to the EPA, including a statement setting out the extent to which the licence conditions and regulations under the POEO Act have been complied with and certain details of any non-compliances.

In addition, the POEO Act requires the EPA to maintain public register containing matters such as details of EPLs, variations to EPLs, compliance audits, annual returns, environment protection notices, penalty notices, enforceable undertakings, civil proceedings, and prosecutions.

This is typical of the types of measures in place under the legislative and regulatory framework to facilitate measurement, reporting and public awareness by relevant Government agencies.

Further, it is the core business of Government agencies to engage in broader accountability, education and engagement activities to increase public awareness on relevant matters. Examples include:

- Producing annual and other reports about regulatory activities.
- Opportunities for public participation and submissions on matters of community interest.
- Public health and safety events, campaigns and programs such as ‘stay safe from lingering lead’.
- Publishing information and guidance material.

3.7.2 the provision of various protective materials

The WHS (MPS) Regulation includes provisions requiring the management of risks to health and safety at mines and petroleum sites, including the use of personal protective equipment by workers. The Resources Regulator ensures compliance with these obligations by mine operators, including through the issuing of improvement notices and, where necessary, prohibition notices.

3.7.3 the ability to ensure the health of at-risk groups

Children and lead

As the Broken Hill example referred to earlier in this submission shows, children are an at-risk group. This is because children’s hand-to-mouth behaviours increase the risk of ingesting lead and children absorb into the body higher proportions of ingested lead than adults.

For the last 8 years the overarching response to lead impacts in Broken Hill has been led by the EPA, with the health response delivered jointly with Maari Ma Health Aboriginal Corporation and the Far West Local Health District.

Maari Ma and FWLHD have conducted blood lead screening of children, case management for impacted children, education of families and assessments of homes to identify potential lead exposure pathways.

The EPA has coordinated the overall program, including program governance, commissioned and conducted research into lead in Broken Hill to expand the evidence base, managed a website and developed a range of resources to educate the community, delivered incursions into schools to educate children directly, contracted Public Works Advisory to manage remediation works at the homes of the worst impacted children, and contracted the remediation services provider.

A dedicated NSW Government “lead smart” website⁸ provides information to the community on how to minimise exposure to lead from dust and food and regular community events are held to keep this issue in front of the community.

A holistic, long-term strategy to address environmental lead in Broken Hill is now being developed by the Broken Hill Environmental Lead Response Group, a multi-stakeholder group to be chaired by the Premier’s Department. The Group will enable a whole-of-government response, assessing current and potential new measures with a view to their feasibility, cost effectiveness, and scope of impact for the community.

⁸ <https://leadsmart.nsw.gov.au/>.

Additionally, the Resources Regulator is currently reviewing all rehabilitation obligations for the Broken Hill mines to ensure that they are approved in line with the new Schedule 8A requirements of the Mining Regulation 2016. Furthermore, a key focus of the Resources Regulator's compliance program at Broken Hill aims to maximise opportunities to progressively rehabilitate disturbed areas no longer used as part of active mining operations.

At-risk groups and particulate matter

Dust from mining activities can affect some people's health more than others. Everyone can be affected by particulate matter but some people are at higher risk including:

- infants and children
- older adults
- people with respiratory conditions such as asthma, bronchitis and emphysema
- people with heart disease
- people with diabetes.

The regulatory framework provides for prompt and comprehensive action to be taken to address excessive dust emissions from mine sites to protect the community, particularly at-risk groups. For example, the EPA is working to ensure that Newcrest's Cadia Holdings Pty Ltd mine is operating in compliance with its environmental obligations in a way that minimises impacts from their operations, and to safeguard the community and the environment. The detailed steps the EPA has taken to address the management of dust and other air pollutants at the Cadia gold mine is available on the EPA website.⁹ However, it includes:

- requiring Cadia to adjust underground mining operations to be compliant with the law
- lowering dust production levels and improving dust control and monitoring measures
- appointing an independent expert panel to provide advice to the EPA
- installing smart sensors on properties and high-volume air samplers in the Cadia Valley.

Mine workers

Mine workers are an at-risk group because mining is an occupation with known inherent workplace risks. As work health and safety regulator for mines, the Resources Regulator engages with mine operators and encourages them to take extra steps to ensure the safety of contractors and inexperienced workers as they may be over-represented in fatalities and injuries. Additional safety measures include tailored information and training, increased supervision and implementing workplace or job re-design.

The Resources Regulator ensures compliance with the obligations to protect the health and safety of workers in at-risk groups, including through the issuing of improvement notices and, where necessary, prohibition notices. Details about the regulatory framework for ensuring work health and safety of mine workers is addressed below.

3.7.4 the suitability of work health and safety regulations, and

The WHS (MPS) Act and WHS (MPS) Regulation set out NSW's legislative framework for managing WHS risks associated with mining.

The WHS (MPS) regulatory framework builds on the *Work Health and Safety Act 2011* to address the unique hazards and risks in the mining industry. In addition to the enforcement powers under the *Work Health and Safety Act 2011*, the regulatory framework allows for stop work orders and the issuing of improvement and prohibition notices in additional circumstances.

⁹ <https://www.epa.nsw.gov.au/working-together/community-engagement/updates-on-issues/cadia-gold-mine>.

The regulations apply to all mines and petroleum sites in NSW and cover various aspects of work health and safety issues unique to these sites, such as exhaust emissions, use of plant, high-risk activities, sampling and analysis, emergency plan testing, emergency exits, and duty to notify the Resources Regulator of certain incidents. The regulations are based on the national model WHS Regulations for mining and the additional tri-state mining provisions agreed by NSW, Queensland and Western Australia.

Historically, mining has been one of the most dangerous occupations and while the NSW mining industry is at the forefront of health and safety the process of mining remains an inherently hazardous one. Instances of multiple worker fatalities arising from a single event and large-scale environmental degradation continue to occur in other jurisdictions, even in countries with well-developed mining industries. Notably, NSW has its own specific mine safety laws which identify the existence of these risks as 'principal hazards'.

The Resources Regulator undertakes regulatory activities in this industry sector with known extreme risks to workers and these risks must be managed appropriately. The existence of the Resources Regulator as a specialist regulator for mining in NSW acknowledges the level of risk and highly technical aspects of the modern mining sector in NSW.

The Resources Regulator carries out activities with a special emphasis on the hazards and risks which are specific to the mining industry and which may pose an unacceptable risk to large numbers of people if not appropriately managed. Accordingly, the strategies adopted, and techniques used by the Resources Regulator are different from more generalist regulators and are targeted towards the specific characteristics and risk profiles of the mining industry and its industry constituent sectors. Identifying targeted intervention strategies and activities is therefore prioritised by the need to prevent catastrophic, multiple fatality events, reduce occurrences of serious injury; and reduce occurrences of significant environmental harm (including failure to rehabilitate mined land).

The Resources Regulator's safety inspectors are required to have industry-specific qualifications and experience to ensure they have the necessary expertise to understand and regulate the unique and significant risks associated with mining.

In 2020 an independent statutory review of the Work Health and Safety (Mines and Petroleum Sites) laws found that mine health and safety laws in NSW remain among the best in the world.¹⁰ The review considered the provisions of the WHS (MPS) Act and WHS (MPS) Regulation, and stakeholder views on their operation. The review also found that the objectives of the WHS (MPS) Act remain valid and its terms generally appropriate for securing those objectives.

The WHS (MPS) Regulation was remade in September 2022 and implemented recommendations of the 2020 review. These changes were designed to:

- establish a safer and more modern work health and safety system that aligns with developments in industry best practice and the features of the mining industry in NSW
- improve clarity and transparency for industry and the Resources Regulator
- improve the flexibility of how the regulation is applied and decreasing regulatory burden.

A list of the improvements included in the 2022 remake are available on the Resources Regulator website.¹¹

The NSW Government has two advisory boards to ensure the WHS framework for mining addresses contemporary issues and facilitates effective communications with the mining industry:

¹⁰ Kym Bills, (October 2020), *Statutory Review of the Work Health and Safety (Mines and Petroleum Sites) Act 2013 and Regulation*

¹¹ <https://www.resourcesregulator.nsw.gov.au/news-articles/new-whs-mines-and-petroleum-sites-regulation>

NSW Mine Safety Advisory Council

The NSW Mine Safety Advisory Council was established to provide advice to the Minister for Natural Resources on WHS issues in mining. Priority areas include a focus on health surveillance, airborne contaminants, and reducing serious safety incidences.

Council members include nominees from the mining industry, mine workers, government and independent experts in work health and safety.

Mining and Petroleum Competence Board

The Mining and Petroleum Competence Board advises the Minister for Natural Resources and the NSW Resources Regulator on the setting of standards for competence, and the requirements to maintain those standards for exercising functions at a mine that impact on the health and safety of any person.

3.7.5 the capacity to respond within existing resources

The Government has a network of resources across NSW to respond to matters in a timely and effective manner. Resources dedicated to regional areas enable proximity between government oversight and minerals mining operations. This is complemented by centralised systems to receive enquiries, complaints and notifications of incidents that can be triaged and responded to promptly. For example, Environment Line as a one-stop pollution and environmental incident reporting service that is available 24 hours a day, seven days a week. An overview of relevant resources to respond to on-the-ground matters for key agencies is provided in the table below:

Agency	Description
DPE	Five compliance teams located across NSW for oversight of state significant projects.
EPA	Staff in 12 regional centres in NSW including Albury, Armidale, Bathurst, Coffs Harbour, Dubbo, Grafton, Griffith, Narrabri, Newcastle, Port Macquarie, Queanbeyan, and Wollongong.
Resources Regulator	More than 150 inspectors and staff located close to mining areas in offices at Armidale, Broken Hill, Dubbo, Orange, Lithgow, Maitland and Wollongong, including a dedicated Mine Safety Investigation Unit for mine work health and safety.
NSW Health	Staff in 15 local health districts throughout NSW providing district-health services and public health expertise.

3.7.6 the adequacy of existing work, health and safety standards for workers

The 2020 independent review of the WHS (MPS) laws found that mine health and safety laws in NSW remain among the best in the world.¹² NSW coal dust exposure limits are the most rigorous in Australia and NSW was the first mining jurisdiction in Australia to implement an exposure standard for diesel particulate matter. Mine operators are required to report exceedance of these standards to the Resources Regulator.

The regulatory framework meets the requirements of international conventions such as ILO 176 on Safety and Health in Mines. The framework has been developed to ensure it provides appropriate regulation of mining-specific hazards, particularly in underground mining.

¹² Kym Bills, (October 2020), *Statutory Review of the Work Health and Safety (Mines and Petroleum Sites) Act 2013 and Regulation*

The regulatory framework requires mine operators to develop and implement a written safety management system in consultation with workers at the mine. The safety management system is to control and manage safety and health risks to workers, specifically principal mining hazards that may cause multiple fatalities if not properly controlled, such as hazardous atmospheres, strata collapse, inundation by water, fire and explosion, and airborne contaminants. The safety management system must also have control plans for specific issues such as mechanical and electrical engineering safety and monitoring of the health of workers.

The regulatory framework includes managing the risks to workers of hazardous substances and chemicals. The regulatory framework identifies specific plant used in mining that must be design and item registered with the regulator to ensure it achieves appropriate safety standards before it can be used, such as mine shaft winders and diesel engine systems in underground coal mines.

Mining activities that are known to be high risk must be notified to the Resources Regulator by the mine operator before it can be undertaken. The notification must detail how the activity will be undertaken safely, for example the construction, alteration, and decommissioning of tailings dams.

Safety-critical roles (statutory functions) are identified in the regulatory framework to ensure they are being carried by suitably qualified, skilled and experienced individuals who hold practising certificates. Mine operators are required to identify who is carrying out those roles at the mining operation.

The legislative framework includes codes of practice which have been developed to provide guidance on the management of risks at mining including:

- Mine shafts and winding systems
- Electrical engineering control plan
- Mechanical engineering control plan
- Emergency planning for mines
- Inundation and inrush hazard management
- Roadway dust analysis in underground coal mines
- Safety management systems in mines
- Strata control in underground coal mines

Codes of practice are admissible in court proceedings under WHS legislation. Courts may regard a code of practice as evidence of what is known about a hazard, risk or control. They may also rely on the code in determining what is reasonably practicable.

A series of codes of practice have also been approved under the *Work Health and Safety Act 2011* and are available from SafeWork NSW.

3.8 whether the regulatory framework for heavy metals and critical minerals mining is fit for purpose and able to ensure that the positive and negative impacts of heavy metals and critical minerals mining on local communities, economies (including job creation) and the environment are appropriately balanced

The Government is committed to appropriately balancing the positive and negative impacts of mining on communities, economies and the environment, including through an effective legislative and regulatory framework that protects human health and the environment.

The integrated assessment process for SSD is designed to provide a comprehensive and balanced consideration of the potential environmental, social and economic impacts relating to the development of large minerals mining projects. If development consent is granted, regulatory authorities are well positioned to effectively implement the regulatory framework because they have been engaged throughout the SSD process on the relevant issues and provided the opportunity to advise at multiple stages of the process. Further, the regulatory authorities have a comprehensive set of tools embedded in the regulatory framework including EPLs and mining leases to manage ongoing mining operations, rehabilitation obligations, and work health and safety.

3.9 any other related matters

3.9.1 Dams Safety

Dams Safety NSW is the regulator for matters relating to declared dam¹³ failures, which includes tailings dams at mining sites. Its regulatory focus is on the prevention of dam failure. Dams Safety NSW makes recommendations regarding the impact of mining on dams in two ways: (1) submission to DPE following review of major projects, (2) reviewing mining applications and making recommendations to the Resources Regulator for mining operations falling within notification areas¹⁴. Dams Safety NSW has published the *Guideline – Mining Near Declared Dams* that describes how the legislative provisions for mining near a declared dam are administered and suggests methods to reduce risks to declared dams from mining activities.

3.9.2 Noise

Noise can impact people's health. Noise from mines can come from off-road vehicles and blasting. Short-term health impacts can include interference with speech, sleep disturbance and interruptions to work. Prolonged exposure to noise can result in anxiety and other health effects. The impacts of noise can depend on the noise level, its characteristics and how it is perceived by the person affected.

The EPA may set noise limits and conditions within an EPL and may also make recommendations to planning authorities on appropriate noise limits and conditions. The EPA has published the *Noise Policy for Industry* to provide a framework and noise levels for the assessment and management of noise impacts from industrial developments, including mines.

¹³ Dams Safety NSW 'declares' those dams which have a potential to threaten downstream life, or cause major property, environmental, or public welfare damage.

¹⁴ A notification area is an area that underlies or surrounds the wall of a declared dam.

4 Appendices

4.1 Appendix A – Glossary

Abbreviation	Meaning
Clean Air Regulation	Protection of the Environment Operations (Clean Air) Regulation 2022
DPE	NSW Department of Planning and Environment
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EPL	Environment Protection Licence
EP&A Act	Environmental Planning and Assessment Act 1979
Mining Act	Mining Act 1992
NSW DPI	NSW Department of Primary Industries
POEO Act	Protection of the Environment Operations Act 1997
SEARs	Secretary's Environmental Assessment Requirements
SEI	Science, Economics and Insights (division of DPE)
WHS (MPS) Act	Work Health and Safety (Mines and Petroleum Sites) Act 2013
WHS (MPS) Regulation	Work Health and Safety (Mines and Petroleum Sites) Regulation 2022

