

**Submission
No 75**

**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 Minerals Council

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Inquiry into the Current and Potential Impacts of Gold, Silver, Lead and Zinc Mining

NSW Minerals Council Submission – September 2023

Executive Summary

The NSW metals sector directly provides 8,000 regional jobs and is set to grow further

Today's NSW metals sector is world class and a significant contributor to jobs, prosperity and strong communities across many regional towns and cities in the State. The NSW metals sector employs close to 8,000 people and supports more than 2,600 supplier businesses, primarily across the Central West and Far West regions where the mining industry contributes 19% and 36% of Gross Regional Product respectively.¹

More mines are needed to provide the raw materials essential for our modern economy. There are significant economic opportunities for regional NSW as a result of growing demand for metals that are needed to transition the world reach net zero.

Gold, silver, lead and zinc are all important metals and mined alongside a range of other critical minerals such as copper, all of which are essential for modern energy, defence, communications, health and infrastructure.

There is a strong pipeline of 17 greenfield metals and minerals projects in NSW which, if they proceed, will provide ongoing jobs and direct economic investment to regional areas of NSW for decades to come and contribute to the objectives outlined in the NSW Minerals Strategy and NSW Critical Minerals and High Tech Metals Strategy.

A predictable and efficient regulatory framework is essential to facilitate the development of these projects and support a meaningful contribution by NSW to meet the growing demand for resources. As the International Energy Agency states in its 2021 report: *The Role of Critical Minerals in Clean Energy Transitions*²:

“... resource-owning governments can support new project development by reinforcing national geological surveys, streamlining permitting procedures to shorten lead times, providing financing support to de-risk projects, and raising public awareness of the contribution that such projects play in the transformation of the energy sector.”

It is critical that NSW positions itself to take advantage of these opportunities. If projects are unduly delayed, or the regulatory environment becomes too risky, investment opportunities will simply go elsewhere – including to jurisdictions with lax environmental regulation – and NSW will miss out.

¹ [NSW Mining Industry Expenditure Impact Survey 2021-22](#)

² <https://iea.blob.core.windows.net/assets/ffd2a83b-8c30-4e9d-980a-52b6d9a86fdc/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf>

Mining projects are subject to comprehensive, independent assessment and regulation

Mining is one of the most heavily regulated industries in NSW with a strong track record of compliance within a large and complex operational and regulatory system. The regulatory framework, along with operational practices, have evolved and adapted over many decades to ensure leading health, safety and environmental practices are employed by mining companies.

The modern regulatory framework for mining involves assessment and advice from multiple government agencies at both the State and Commonwealth levels. Independent experts are engaged to peer review sensitive aspects of projects and critique assessment reports commissioned by proponents. Independent regulators such as the Environmental Protection Authority (EPA), Resources Regulator and Natural Resources Access Regulator monitor ongoing compliance.

Local communities and First Nations people have a right to engage in the assessment process for mines to ensure their views can be heard and addressed throughout the process. This has been clearly demonstrated by the extremely thorough assessment process for several recent mine proposals, where hundreds of community members lodged submissions and provided evidence at hearings of the Independent Planning Commission.

After several years of baseline data collection, formal mine assessment processes can take 2-3 years and involve several iterations to project design to respond to issues raised by the community, government agencies and independent experts. If approval is granted, projects are subject to hundreds of conditions and require multiple secondary approvals from government agencies, as well as operational management plans that outline how the project will comply with its consent conditions. The consent conditions cover all health, environmental, social, cultural and economic aspects of the project.

Mines are also required to commit to ongoing monitoring and reporting to ensure approval conditions are being met, and this data is publicly reported. They are also subject to regular audits against approval conditions.

While any instances of non-compliance are concerning, the identification and investigation of alleged non-compliance by independent regulators shows that the regulatory framework is effective. There are a range of compliance and enforcement options available to regulators that allow regulatory responses to align with the severity of any non-compliance.

Under the existing comprehensive regulatory framework our regional communities and NSW more broadly will be able to enjoy the plethora of economic benefits associated with metals mining, both now and into the future. And these significant and enduring benefits can be provided while a strong and efficient regulatory system ensures the impacts on health and the environment are managed.

1 The NSW metals sector

Gold, silver, lead and zinc are mined alongside a range of other critical minerals in NSW

While the Inquiry's Terms of Reference specifically refer to gold, silver, lead and zinc, these metals are generally contained in polymetallic ores that are mined and processed to produce a range of different metals products.

A prime example of these polymetallic systems in NSW is the porphyry gold-copper systems in the Lachlan Fold Belt that host NSW's major gold-copper mining operations such as Cadia and Northparkes. As a result, several of NSW's major gold mines are also major copper mines, with Cadia now also producing molybdenum.

In other areas, such as in the far west of the state, ores are often associated with metamorphosed sedimentary rocks, such as the sediment hosted massive sulphide deposits at Broken Hill. These ores contain a range of metal sulphide minerals including galena and sphalerite, yielding metals such as lead, zinc, copper, silver and gold.

Around the New England area, intrusion-related deposits associated with granites host a range of critical metals including tin and tungsten alongside gold, lead, zinc and silver.

In a practical sense, the specific metals that are the subject of the inquiry are closely linked with the broader metals and critical minerals sector both geologically and in terms of the regulatory framework. Therefore, this submission largely addresses the NSW metals sector as a whole.

The NSW mining sector has strategic economic importance for NSW

Mining is a strategically important industry for the NSW economy, particularly in regional NSW. The NSW mining industry:

- Provides metals and minerals critical for delivering renewable energy, electric vehicles, and other new and emerging technologies
- Is by far the state's largest export industry by value, with coal, copper ore and concentrates and gold exports having a combined value of over \$46 billion in 2020/21³
- Directly employs around 40,000 people in NSW⁴, and supports the jobs of many thousands more people indirectly
- Directly spent \$16.7 billion on goods and services, wages and salaries, local government payments and community contributions in NSW during 2021/22⁵
- Supports almost 7,000 supplier businesses throughout NSW⁶
- Is expected to generate around \$5.5 billion in royalty payments to the NSW Government in 2022-23, with around \$11 billion in minerals royalty revenue expected to 2025-26⁷.

³ www.dfat.gov.au/sites/default/files/nsw-cef.pdf

⁴ ABS [Labour Force, Australia, Detailed, May 2023 | Australian Bureau of Statistics](#)

⁵ NSWMC [Expenditure and Jobs Surveys](#)

⁶ NSWMC [Expenditure and Jobs Surveys](#)

⁷ NSW Budget 2022/23 [Budget Paper 1](#)

The economic contribution of the NSW metals sector is significant and growing

Today's NSW metals sector is world class and a significant contributor to jobs, prosperity and strong communities across many regional towns and cities, particularly in the Central and Far West regions of NSW, including Broken Hill, Cobar, Orange, West Wyalong, Parkes, Dubbo and other areas.

The significance of the gold sector can be seen in the NSW trade statistics which show that in 2021/22 gold was the second most valuable goods export for NSW after coal.

Goods trade#:	
New South Wales' major exports, 2021-22 (b):	
	A\$m
Coal	41,533
Gold	4,427
Wheat	2,922
Aluminium	2,448
Refined petroleum	2,422
Beef, f.c.f.	1,907
Meat (excl beef), f.c.f.	1,585
Medical instruments (incl veterinary)	1,390
Measuring & analysing instruments	1,116
Oil-seeds & oleaginous fruits, soft	1,009

Source: DFAT

The results of NSWMC's latest *NSW Mining Industry Economic Impact Survey* show that in 2021-22, direct spending by NSW metals and minerals mines surveyed increased to \$2.4 billion, a \$100 million increase on the previous year and up from \$950 million over the last five years.

NSWMC Economic Survey - Metals and Minerals Economic Contribution 2017-18 to 2021-22

	2017/18	2018/19	2019/20	2020/21	2021/22
Direct Jobs	4,437	4,708	6,712	6,883	7,951
Supplier Businesses Supported	2,004	1,696	2,464	2,385	2,618
Total Spend on Jobs and Suppliers	\$0.95b	\$1.2b	\$2.3b	\$2.3b	\$2.4b

Over the same five-year period, the number of jobs supported by the metals and minerals mining sector in NSW increased from 4,400 to almost 8,000. The number of NSW businesses supplying metals mining operations has also increased over the last five years, from around 2,000 in 2017/18 to 2,620 last year.

The results of the economic modelling indicate that the mining sector contributes 19% of Gross Regional Product in the Central West Region, and 35% of Gross Regional Product in the Far West.

There is a strong pipeline of new metals and minerals projects in the planning system

The pipeline of metals and minerals projects in NSW has increased from 6 projects in 2018 to 19 projects in 2023. Seventeen of the projects are new (greenfield) mines. The development of greenfield

mines is crucial to maintain and grow the economic contribution of the sector as resources are depleted at existing mines.

The range of metals and minerals proposed to be mined in NSW is also broadening. There are now more proposals to mine scandium, cobalt, zinc, and lithium, in addition to proposals for the expansion of existing gold, copper and silver mining projects in NSW. Today, these metals projects have the potential to deliver almost \$10 billion in new direct investment and more than 9,000 jobs, mostly across the Central West and Far West of NSW.

It is clear NSW is well placed to take advantage of the rapidly increasing global demand for metals, critical minerals, rare earths and high-tech metals. The growth in metals project proposals is an opportunity to further build and diversify the NSW mining sector and represents a strong industry response to global demand.

Pipeline of Metals and Minerals Projects in NSW

Project Name	Capital investment in NSW (\$m)	Royalties (\$m)	Jobs created for NSW
Dubbo Project	1,678	102	650
Tomingley Gold Extension Project	281	44	230
Sunrise Nickel Cobalt	1,770	235	1,300
Bowdens Silver Project	310	38	230
Cowal Open Pit Continuation	134	76	330
McPhillamys Gold Project	500	80	136
Kempfield Silver Mine	60		240
Northparkes E22 Development	480		500
Broken Hill Cobalt Project	650	200	710
Copi Mineral Sands	450		450
Constellation Project (related to Tritton mine)			383
New Cobar Complex Underground Project	67	60	501
Nyngan Scandium Mine	124	40	135
Balranald Mineral Sands Project	681	96	775
Euston Mineral Sands Project	500		500
Federation Project (related to Hera Mine)	200	63	350
Platina Scandium Project	125	112	121
Hawsons Iron Ore Project	1,940	25	1,700
Flemington Cobalt Scandium Mine			
TOTAL	9,950	1,171	9,241

2 Global demand for minerals and metals

More mines are needed to supply the clean energy transition and modern economies

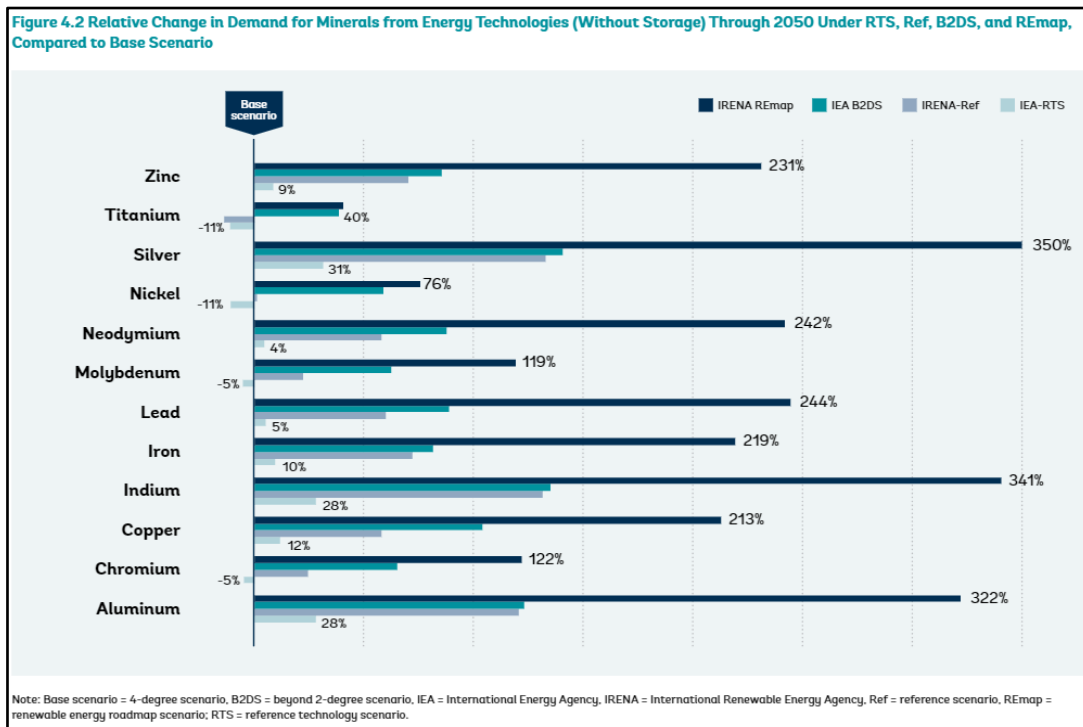
A range of global megatrends combined with ongoing population and economic growth will drive increasing demand for minerals and metals in the coming decades. This demand will need to be met by growing supply from new and expanded mining operations, including in NSW.

A significant driver of demand is meeting global energy transition targets. As noted by McKinsey:

The transition to a net-zero economy will be metal-intensive. As the move toward cleaner technologies progresses, the metals and mining sector will be put to the test: it will need to provide the vast quantities of raw materials required for the energy transition. Because metals and mining is a long lead-time, highly capital-intensive sector, price fly-ups and bottlenecks will be unavoidable as demand outstrips supply and price volatility creates uncertainty around the large up-front capital investments needed for production.⁸

Under every climate change scenario modelled in the World Bank’s *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition*, there is a significant increase in metals and minerals required.⁹ As noted in the report:

A low-carbon future will be very mineral intensive because clean energy technologies need more materials than fossil-fuel-based electricity generation technologies. Greater ambition on climate change goals (1.5°C–2°C or below), as outlined by the Paris Agreement, requires installing more of these technologies and will therefore lead to a larger material footprint.



Source: World Bank [Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition](#)

⁸ [The raw-materials challenge: How the metals and mining sector will be at the core of enabling the energy transition | McKinsey](#)

⁹ World Bank [Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition](#)



Similarly, the International Energy Agency spells out the dramatic increase in supply for metals and minerals in its 2021 report: *The Role of Critical Minerals in Clean Energy Transitions*¹⁰, particularly those that will be required to facilitate the development of advances in clean energy technologies. As the IEA notes:

Rapid, orderly energy transitions require strong growth in investment in mineral supplies to keep up with the pace of demand growth ... Diversification of supply is also crucial; resource-owning governments can support new project development by reinforcing national geological surveys, streamlining permitting procedures to shorten lead times, providing financing support to de-risk projects, and raising public awareness of the contribution that such projects play in the transformation of the energy sector.

¹⁰ <https://iea.blob.core.windows.net/assets/ffd2a83b-8c30-4e9d-980a-52b6d9a86fdc/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf>

Gold, silver lead and zinc are important elements in our modern economies

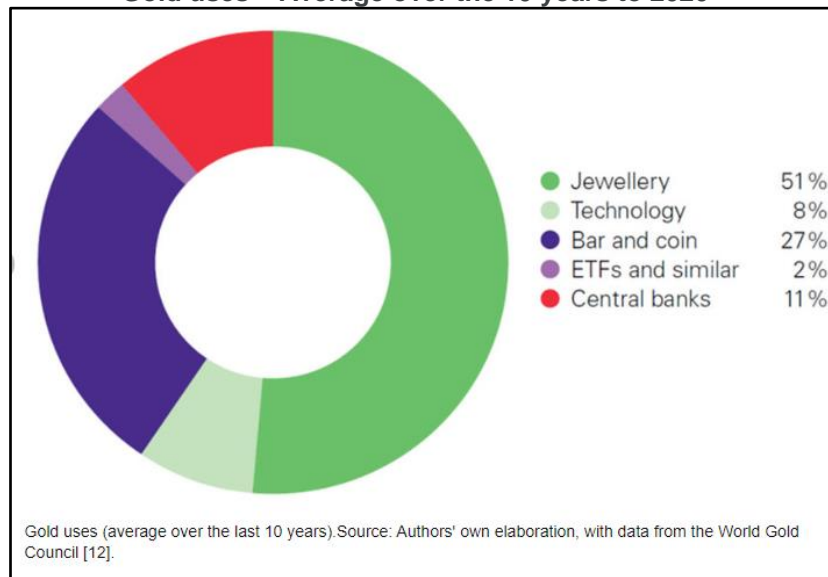
Gold, silver, lead and zinc are all important metals in our modern economy. Furthermore, copper – commonly mined alongside these metals – is widely acknowledged to be central to the energy transition.

Gold

As noted above, gold is NSW's second most valuable goods export and will continue to be a major source of economic activity in the NSW metals sector in the coming decades, with the expansion of existing mining operations and promising new exploration discoveries being made. The primary sources of demand for gold are outlined below:

- Jewellery: the primary demand for gold comes from jewellery, with the metal having high cultural significance across multiple cultures worldwide. Gold for jewellery and other decorative applications generates around 50% of overall gold demand
- Investments: gold is a central part of global financial markets and is important to the investment strategies of both private investors and central banks, including the Reserve Bank of Australia¹¹. Gold is a tangible, safe and liquid asset that provides good long term returns and is an important tool used to diversify investments and to hedge against inflation or currency fluctuations. Around 40% of gold demand relates to use in investments
- Technology and medicines: gold's conductivity and corrosion resistance make it ideal for use in certain electronics applications. It also plays an important role in a range of other technological and medical applications¹². These uses contribute roughly 10% of demand for gold.

Gold uses – Average over the 10 years to 2020¹³



¹¹ <https://www.rba.gov.au/qa/gold-holding.html>

¹² [Gold | Geoscience Australia](#)

¹³

https://www.researchgate.net/publication/349449532_Modeling_Precious_Metal_Returns_through_Fractional_Jump-Diffusion_Processes_Combined_with_Markov_Regime-Switching_Stochastic_Volatility

Silver

Silver is the best conductor of electricity of all the metals. The primary source of demand for silver is in industrial applications, largely relating to electronics.

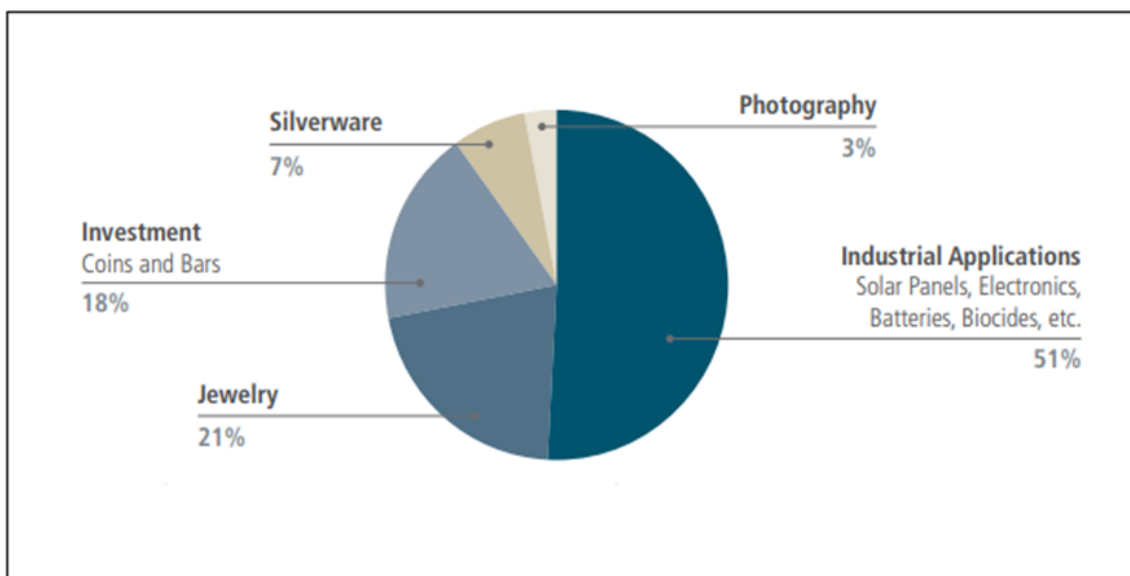
Silver is contained within almost all electronic devices including computers, mobile telephones and televisions. It is an important component in electric vehicles (EV's) and is widely used in the aviation and space industries.

One of the fastest growing sources of demand for silver is for use in photovoltaic cell technology (solar panels), where it is used as a conductive layer on silicon solar cells.

Demand for silver in solar panels has tripled over the last decade and now contributes around 14% of global demand.¹⁴ A recent University of NSW study highlights that newer, more efficient solar technologies use more silver per watt of power, and for the most efficient panels, the increase in silver per watt is more than double the predominant technology in use today. The study forecasts that the solar sector alone could exhaust between 85 per cent to 98 per cent of global silver reserves by 2050, absent of any changes in solar technology.¹⁵

Silver has a vast array of other applications across industrial and medical applications, water purification, investment, silverware, jewellery, and photography.¹⁶

Silver end uses



Source: Source: GFMS Definitive, Metals Focus, The Silver Institute, UBS

Zinc

The primary use of zinc globally is galvanising steel, whereby a zinc coating is applied to steel to prevent corrosion. Zinc demand is therefore closely linked to demand for galvanised steel, which has significant importance in the construction and automobile sectors.

¹⁴ <https://www.silverinstitute.org/silver-supply-demand/>

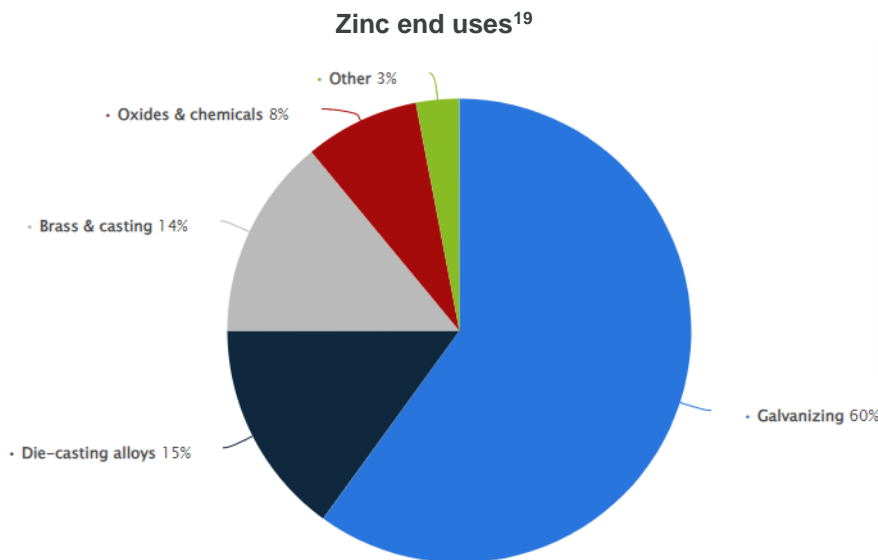
¹⁵ <https://onlinelibrary.wiley.com/doi/full/10.1002/pip.3661>

¹⁶ [40 Common Minerals and Their Uses](#)

Commodity Insights forecasts world zinc consumption to grow around 12% from 13.7 million tonnes (Mt) in 2019 to 15.3 Mt in 2030, driven by growing urbanisation and transport infrastructure, partially offset by reductions in the automotive sector as a result of the switch to EVs which require less zinc.¹⁷

Zinc is also combined with other metals to create alloys, such as with copper to create brass. Zinc oxides are used in a range of applications including sun cream.

Wind turbines and solar panel structures also rely heavily on zinc for corrosion protection. The World Bank is estimating about 98% of renewable energy's demand for zinc will be driven by its use in wind turbines. Another potential purpose comes from using them as a zinc-ion battery as a possible replacement for the renowned lithium-ion battery.¹⁸



Lead

Geoscience Australia states that vehicle batteries account for 80% of current lead usage, while the remaining 20% includes underwater cable sheathing, solder, casting alloys, chemical compounds, ammunition, soundproofing material in the construction industry, weighting, glassware and radiation protection.

Lead use in large storage batteries could lead to increased demand for lead in the future. For example, the growth in demand for electric bikes, particularly in China, has led to electric bikes now consuming more than 8% of world lead production.²⁰

The World Bank notes that the use of lead-acid batteries in vehicles will most likely decrease as they are replaced by lithium-ion batteries. Lead is, however, forecast to continue to be used in stationary storage. Also, as climate scenarios become more ambitious, lead, vanadium, and iron will continue to show increases – albeit smaller than other metals – in lead-acid or redox flow batteries.²¹

¹⁷ [Commodity Outlook 2030.pdf](#)

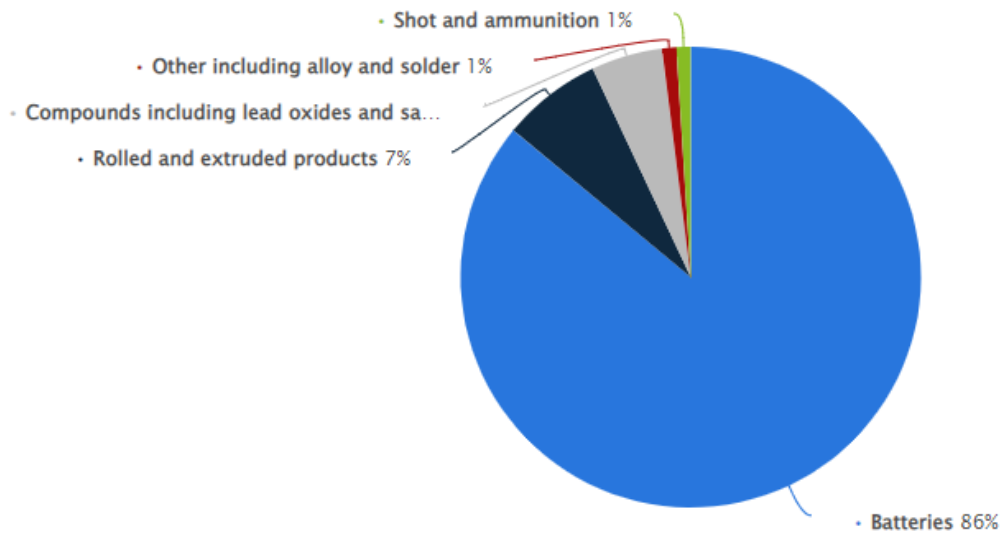
¹⁸ [Zinc: A versatile metal powering the renewable energy movement | Finance News Network.](#)

¹⁹ [Statista](#)

²⁰ [Zinc-Lead-Silver | Geoscience Australia](#)

²¹ [Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition](#)

Lead end uses²²



²² Statista

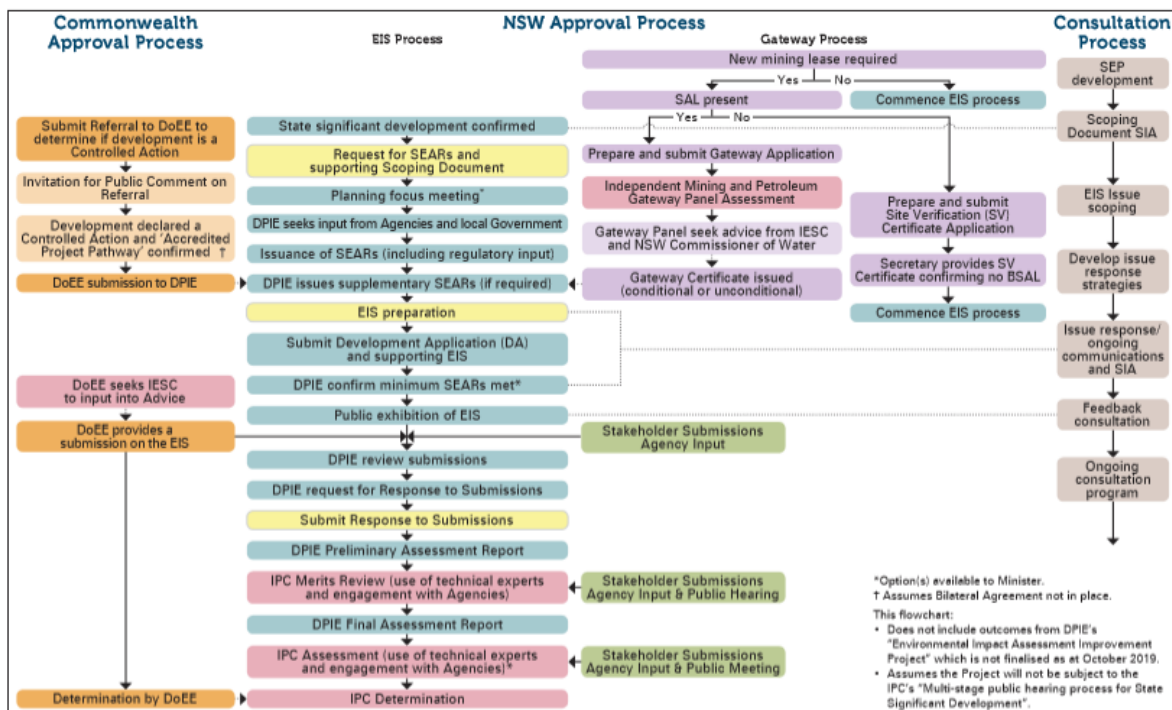
3 The regulatory framework for mining in NSW

The development assessment process for mining projects is rigorous and transparent

The mining industry is one of the most heavily regulated industries in NSW.

The assessment process for proposed resources projects is comprehensive, involving rigorous consideration of all relevant issues over many years against multiple pieces of State, Commonwealth and local legislation, regulations, policies and guidelines as projects evolve through exploration, inception, approvals, operation, closure and rehabilitation phases. This includes a comprehensive review of health, environmental, social, cultural and economic impacts.

Most mining projects in NSW are assessed as State Significant Development (SSD) under the *Environmental Planning & Assessment Act 1979* (EP&A Act). A wide range of issues are investigated as part of the assessment and decision-making process.



The specific assessment requirements for each project are tailored to address the nature of the individual project and its environmental and social context. The requirements are outlined in the Secretary's Environmental Assessment Requirements (SEARs).

SEARs reference a full range of consultation and assessment requirements to be addressed in the Environmental Impact Statement (EIS). The table below contains an extract of a recent metals project's SEARs and gives a sense of the breadth of issues that are studied and assessed throughout the process.



Extract of Secretary's Environmental Assessment Requirements for a Metals Project

Specific Issues	<p>The EIS must address the following specific issues:</p> <p>Land – including:</p> <ul style="list-style-type: none"> ● an assessment of the likely impacts of the development on the soils and land capability of the site and surrounds ● an assessment of the likely agricultural impacts of the development, including identification of any strategic agricultural land; ● an assessment of the likely impact of the development on landforms (topography), including the long term geotechnical stability of any new landforms on site; and ● an assessment of the compatibility of the development with other land uses in the vicinity of the development in accordance with the requirements of Clause 12 of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007, paying particular attention to the agricultural land use in the region; <p>Air Quality– including:</p> <ul style="list-style-type: none"> ● an assessment of the likely air quality impacts of the development in accordance with the Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW, having regard to the EPA's requirements (see Attachment 2A and 2B); and ● an assessment of the likely greenhouse gas impacts of the development; <p>Human Health – including:</p> <ul style="list-style-type: none"> ● a Human Health Risk Assessment addressing how the development's environmental impacts in relation to air quality (including heavy metals) and noise may impact on the health of the local community; and ● monitoring and management measures to reduce risk to human health; <p>Water – including:</p> <ul style="list-style-type: none"> ● an assessment of the likely impacts of the development on the quantity and quality of the region's surface and groundwater resources (including, but not limited to, Lawsons Creek and Price Creek), having regard to the EPA's, DPI's and OEH's requirements (see Attachment 2A and 2B); ● an assessment of the likely impacts of the development on aquifers, watercourses, riparian land, water-related infrastructure, and other water users, including: <ul style="list-style-type: none"> ○ a detailed site water balance, including an assessment of the reliability of water supply imported to the site, and management of excess water, supported by sensitivity analysis; and ○ an assessment of the water quality and management of the imported water, including spill/leak management. <p>Noise and Blasting – including:</p> <ul style="list-style-type: none"> ● an assessment of the likely operational noise impacts of the development (including construction noise) under the Noise Policy for Industry (EPA), and the Voluntary Land Acquisition and Mitigation Policy, and having regard to the EPA's requirements (see Attachment 2A and 2B); ● if a claim is made for specific construction noise criteria for certain activities, then this claim must be justified and accompanied by an assessment of the likely construction noise impacts of these activities under the Interim Construction Noise Guideline; ● an assessment of the likely road noise impacts of the development under the NSW Road Noise Policy; and ● an assessment of the likely blasting impacts of the development on people, animals, buildings and infrastructure, and significant natural features, having
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	<p>regard to the relevant ANZECC guidelines;</p> <p>Biodiversity – including:</p> <ul style="list-style-type: none"> • an assessment of the likely biodiversity impacts of the development, in accordance with the Framework for Biodiversity Assessment, and having regard to OEH’s requirements (see Attachment 2A and 2B); and • a strategy to offset any residual impacts of the development in accordance with the NSW Biodiversity Offsets Policy for Major Projects; <p>Heritage – including an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, having regard to OEH’s requirements (including the Heritage Division) (see Attachment 2A and 2B);</p> <p>Transport – including an assessment of the likely transport impacts of the development on the capacity, condition, safety and efficiency of the local and State road network, having regard to Mid-Western Regional Council’s and RMS’s requirements (see Attachment 2A and 2B);</p> <p>Visual – including an assessment of the likely visual impacts of the development on private landowners in the vicinity of the development and key vantage points in the public domain, paying particular attention to the creation of any new landforms and minimising the lighting impacts of the development;</p> <p>Hazards - including an assessment of the likely risks to public safety, paying particular attention to potential subsidence risks, bushfire risks, and the handling and use of any dangerous goods, having regard to the EPA’s requirements (see Attachment 2A and 2B); and</p> <p>Social & Economic – including:</p> <ul style="list-style-type: none"> • an assessment of the likely social impacts of the development on the local and regional community generally in accordance with the Social Impact Assessment Guidelines for State Significant Mining, Petroleum Production and Extractive Industry Development (2017), including the likely impacts of the development on the local community, cumulative impacts (considering other mining developments in the locality), and consideration of workforce accommodation; and • an assessment of the likely economic impacts of the development, paying particular attention to the: <ul style="list-style-type: none"> ○ significance of the resource; ○ economic benefits of the development for the State and region; and ○ demand for the provision of local infrastructure and services.
<p>Consultation</p>	<p>During the preparation of the EIS and subsequent assessment process, you must establish and operate a Community Consultative Committee (CCC) for the development in accordance with the Community Consultative Committee Guidelines: State Significant Projects dated November 2016.</p> <p>You should also consult with relevant local, State or Commonwealth Government authorities, infrastructure and service providers, community groups and affected landowners.</p> <p>The EIS must describe the consultation that was carried out, identify the issues raised during this consultation (including by the CCC), and explain how these issues have been addressed in the EIS.</p>

A wide range of technical expertise is engaged throughout the assessment process

Well before formal development applications are lodged, baseline environmental and community data is collected to inform project design. Several years of baseline data is commonly collected before formal project applications commence.

Once an application is made and the SEARs are issued, each of the SEARs are subject to detailed expert investigation and assessment that forms the basis of the project's Environmental Impact Statement.

The formal assessment process for a recently determined metals and minerals project took almost three years to complete. The process involved:

- An Environmental Impact Statement with a main report and over 22 separate appendices of technical assessment reports by a qualified experts
- Independent review of various aspects of the technical assessment including: Human Health Risk Assessment and subsequent technical response by the applicant; Acid and Metalliferous Drainage review and subsequent technical response by the applicant; peer review of several key aspects of the geochemistry studies, Economics expert review and subsequent technical response by the applicant; Social Impact Assessment review and subsequent technical response by the applicant; and several technical responses relating to risks associated with lead exposure to community facilities within the region
- Approximately 3 years' assessment period including feedback from 14 public authorities on the original application, and additional advice provided on refinements to the project put forward to address issues including advice from the EPA and NSW Health.

Independent experts are engaged to peer review key aspects of the proponent's project

Where a particular issue poses elevated risks to the environment or community, or is particularly contentious, additional steps are taken to ensure the rigour of the assessment and provide additional confidence in the results.

The Department of Planning and Environment will often commission its own independent peer reviews of the reports submitted by proponents. Any findings of these reviews must be addressed by the proponent in updated assessment reports for further consideration by the government agencies and the IPC.

Community input is central throughout all stages of the assessment process

There are multiple and ongoing opportunities for First Nations and community input throughout the process, with the proponent, government agencies and the Independent Planning Commission (IPC). These opportunities include:

- Community engagement activities by the proponent, which begin at the exploration stage – well before the formal development application process – and continue throughout the assessment process, to help identify key issues of importance to the community and to inform the detailed assessment for the Environmental Impact Statement
- Formal Community Consultative Committees that are established and operated in accordance with NSW Government guidelines
- Formal submissions on the Environmental Impact Statement to the Department of Planning and Environment, to which the proponent must review and prepare a response.

- Formal submissions to the IPC, with a recent project attracting a total of 1,916 written submissions to the IPC
- Opportunities to appear before the IPC to present views and evidence about the project during public hearings. An IPC process for a recently determined mine included 3 days of public hearings with 80 speakers presenting to the Commission.

Final decisions on most projects are made by the Independent Planning Commission

Where an SSD application attracts more than 50 objections, the application is referred to the IPC for the final determination on whether the project is approved or rejected.

The IPC “operates independently of the Department of Planning and Environment (DPE) and other government departments and is not subject to the direction or control of the Minister for Planning, except in relation to procedural matters”²³.

The IPC reviews all of the proponent’s documentation, government agency advice, expert reports, public submissions and evidence presented during the public hearings before reaching its final decision.

The overall assessment process is very transparent

All assessment documentation, correspondence, expert peer reviews, input from government agencies, submissions, transcripts of public hearings, and transcripts of meetings held between the IPC and the proponent are published online, along with the assessment report prepared by the Department of Planning and Environment and the IPC’s Statement of Reasons for Decision and consent conditions if the project is approved.

All of this material is easily accessible and is published as it is prepared throughout the assessment process so that any interested person can review.

Detailed approval conditions require ongoing monitoring and reporting of environmental impacts

If approved, mining projects are typically subject to over 100 conditions that dictate the terms on which it can proceed, including operational conditions, mitigation measures, monitoring, compliance and reporting requirements.

Furthermore, the proponent is required to obtain additional approvals/licenses from various NSW Government agencies and the Commonwealth Government before it can proceed. This includes (but is not limited to) an Environment Protection Licence from the EPA, which includes additional conditions and ongoing monitoring and compliance requirements over the operational life of the mine.

There are numerous management plans required to be prepared in consultation with government agencies that outline how the project will comply with the conditions of consent. These management plans cover all aspects of the mine’s operation.

²³ [Independent Planning Commission - About our agency](#)

Typical Conditions of Approval			
<i>Total conditions of NSW SSD Consent – 143</i>			
Administrative – 25	Operations Specific Environmental Conditions – 91	Additional Procedures – 9	Environmental Management & Reporting – 18
<i>Management Plans Required to be approved by Planning Secretary before work commences</i>			
Noise and Blasting	Air Quality & GHG	Water Management	Hazardous Materials
Biodiversity	Heritage	Traffic	Social Impact
Rehabilitation Strategy	Bushfire	Acid Mine Drainage Plan	
<i>Examples of Conditions related to Inquiry ToRs</i>			
<p>Air Quality and Greenhouse Gas Management Plan B31. The Applicant must prepare an Air Quality and Greenhouse Gas Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: (e) include an air quality monitoring program, undertaken in accordance with the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (EPA, 2022) and Ambient Air Monitoring Guidance Note(EPA, 2022), (or latest versions thereof), that:</p> <ul style="list-style-type: none"> - uses monitors, including real-time monitoring, to evaluate the performance of the development against the air quality criteria in this consent and to guide day to day planning of mining operations, including reactive air quality mitigation measures; - monitors particulates, deposited dust and metal concentrations including lead at locations representative of the nearest and/or most affected residences; - includes real-time monitoring of lead particles in dust at representative locations; - adequately supports the air quality management system, including a trigger-action-response protocol and contingency measures for elevated particulate matter, dust or metal concentrations; - includes record keeping and a protocol for identifying any air quality-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events. 			
<p>WATER Materials Classification Verification Program B36. The Applicant must prepare a Materials Classification Verification Program to validate the acid mine drainage risk classification system to the satisfaction of the Planning Secretary. This program must:</p> <ul style="list-style-type: none"> - be prepared by a suitably qualified expert(s); - be based on a sampling and testing program that has been approved by the Planning Secretary, that includes: - static geochemical testing to verify the proposed classification of waste rock material as non-acid forming (NAF) or potentially acid forming (PAF); and - kinetic geochemical testing to quantify acid generation and duration rates (including lag time and longevity) from PAF waste rock; 			
<p>SOCIAL B89. The Applicant must prepare a Social Impact Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:</p> <ul style="list-style-type: none"> - include a research and monitoring program to assess and report on lead impacts including but not limited to: - the collection of baseline data; - best practice lead level monitoring and tracking over time, including but not limited to blood level monitoring; - monitoring of sources that may contain contaminants that could affect human health, including dust and surface water bodies; and - the effectiveness of mitigation measures in place to minimise impacts on human health and agricultural industries; 			
<p>NOTIFICATION OF LANDOWNERS/TENANTS C3. Within one month of the date of this consent, the Applicant must:</p>			

- notify in writing the owner of any privately-owned land within 2 kilometres of the approved open cut mining pit/s that they are entitled to ask the Applicant for an inspection to establish the baseline condition of any buildings or structures on their land, or to have a previous property inspection report updated;
 - and notify the tenants of any mine-owned land of their rights under this consent; and
- C4. Prior to entering into any tenancy agreement for any land owned by the Applicant that is predicted to experience exceedances of the recommended air quality and/or noise criteria, the Applicant must:
- advise the prospective tenants of the potential health and amenity impacts associated with living on the land, and give them a copy of the NSW Health fact sheet entitled "Mine Dust and You" (NSW Health, 2017) (or latest version); and
 - advise the prospective tenants of the rights they would have under this consent,

NOTIFICATION OF EXCEEDANCES

C5. As soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any noise, blasting or air quality criterion in PART B of this consent, the Applicant must provide the details of the exceedance to any affected landowners, tenants and the CCC.

C6. For any exceedance of any air quality criterion in PART B of this consent, the Applicant must also provide to any affected land owners and/or tenants a copy of the NSW Health fact sheet entitled "Mine Dust and You" (NSW Health, 2017) (or latest version

Source: [Typical conditions of consent](#)

Human and environmental risks are minimised owing to the comprehensive and rigorous assessment process undertaken by technical experts and independently reviewed as outlined above, and importantly the ongoing monitoring, auditing, reporting and compliance requirements of multiple government agencies.

Multiple independent regulators monitor ongoing operational compliance

After obtaining the multiple approvals required to commence, a mining operation is subject to ongoing monitoring, reporting and compliance requirements over the life of its operations. Typically for mine sites this involves regulatory oversight by the following separate statutory bodies:

- **Environment Protection Authority** – the EPA issues environment protection licences (EPL) under the *Protection of the Environment Operations Act 1997* (POEO Act) that contain a range of pollution discharge or concentration limits, monitoring and reporting requirements for air, water, blasting, noise, odours and waste. There are a range of reporting requirements, including regular environmental monitoring data reports, annual returns, and requirements to report pollution incidents and exceedances of licence conditions, as well as to prepare Pollution Incident Response Management Plans. EPA compliance officers undertake site inspections and audits
- **Department of Planning and Environment (DPE)** – the Department of Planning and Environment (DPE) undertakes compliance and enforcement activities to ensure projects are carried out according to the project approval or development consent. Proponents are subject to a range of reporting requirements, including Annual Reviews as well as requirements to notify DPE of any instances of non-compliance or environmental incidents, along with requirements to commission independent audits. DPE compliance staff undertake site inspections and audits
- **Resources Regulator** – the Resources Regulator's compliance and enforcement focuses on the *Mining Act 1992*, with a focus on mine rehabilitation, as well as mine safety legislation. The Resources Regulator's inspectors undertake compliance audits to ensure rehabilitation is being undertaken in accordance with proposed rehabilitation plans and objectives
- **Natural Resources Access Regulator** – NRAR is an independent compliance agency that monitors and enforces compliance with the water laws.

The compliance and enforcement framework for mining is effective

Mine sites are dynamic, operationally complex and are required to comply with hundreds of approval and licence conditions, as well as legislative, regulatory and policy requirements. Whilst any instances

of non-compliance are concerning, they are relatively infrequent when considered in this context and most non-compliances are of a minor or administrative nature.

There are multiple avenues for potential instances of non-compliance to be identified. One of the primary mechanisms is self-reporting by companies when incidents occur or monitoring data indicates that approval conditions are exceeded. Community members are also encouraged to make reports to regulators where they believe there may be instances of non-compliance.

The ongoing collection and public reporting of environmental monitoring data, independent environmental audits and ongoing engagement with local communities both informally and through formal Community Consultative Committees, keep the community up to date with how the mine is performing.

Where incidents occur, or non-compliance is identified, there is a range of potential regulatory responses available to regulators. This allows responses to align with the nature of any potential non-compliance, and can range from warning letters through to prosecutions.

NSW Minerals Council