STRATERRA

MINERALS FOR A SUSTAINABLE FUTURE

Mining in New Zealand

Opportunities and actions

Briefing to Ministers

November 2023

Contents

Straterra is the industry association representing mining in New Zealand.

We are funded by members in the minerals and mining sector and governed by a board made up of members from across the industry.

Straterra's member charter states: "Our purpose is to enable socially and environmentally responsible mining, providing minerals for a sustainable and resilient future and enduring value for all New Zealanders".

Find out more at www.straterra.co.nz

A land of opportunities

Mining in New Zealand is a story about opportunities. These are opportunities we want to see captured because of the many benefits they bring.

As the world races towards more reliance on technology and electricity, with generation mainly from renewable sources, it has become blindingly obvious that there will be no high-tech, low emissions energy transition without mined minerals. The catch is, the demand for these minerals vastly outstrips supply so the world needs more mines, and fast.

This is an exciting time for mining and a golden opportunity for New Zealand where responsible mining is undertaken to some of the most exacting standards in the world – advantage New Zealand.

Mining in some other parts of the world can be unregulated and unsafe. It is cheaper for some manufacturers to buy raw minerals from a child than from a regulated mine. The life expectancy of that child is not high.

Consumers are increasingly aware of this and ultimately, purchasers drive manufacturing processes when they say they want responsibly mined minerals in what they buy.

This is where New Zealand can excel, as we do with the provenance of other primary products and the food and goods manufactured from them.

Our provenance story for mining is as good as it gets. This can make New Zealand an attractive long-term investment prospect.

We have a high-wage workforce protected by strict health and safety and employment laws. Stringent environmental laws mean mine sites are protected from the day mining starts until long after it finishes, with the site returned to how it was, or sometimes better than it was, before mining began. Mining companies are engaged in some world-leading environmental work and many mine workers describe themselves as environmentalists.

Mining companies work with tangata whenua and respect mana whenua. Māori have significant interests in the resource sector and in retaining access to, and developing minerals for historical, cultural, and economic reasons. The percentage of the mining workforce that is Māori (24.6% in 2022) is much higher than the percentage of Māori in the general population (16.5%). Māori working in mining earn more than Māori working in all other sectors of the New Zealand economy.

It is time for New Zealand to follow what many other countries have done and adopt a strategic focus on what minerals we need now and, in the future, and where we are going to get them from. If we don't do this, we risk being left behind.

Access to mined minerals, with demand vastly outstripping supply, is a geopolitical issue that New Zealand needs to take seriously.

In this briefing we focus on the opportunities within mining in New Zealand. Science, research, and innovation that could see New Zealand being a serious contender in the global minerals supply chain, including with value added products, is already underway.

Mineral sands miners are up and running on the West Coast of the South Island, sourcing critical minerals for the low carbon future.

Gold and coal prices are high, making a strong contribution to the New Zealand economy via exports, royalties, and taxes, as well as jobs and input to regional economies. When New Zealand is pursuing a stronger trade relationship with India, it is worth noting that coal exporters have long and enduring relationships with that country. Coal is the number two export by value to India for New Zealand.

Greymouth-based NZ Institute for Minerals to Materials Research (NZIMMR) is setting up a gold refinery with plans to sell 'ethical gold' overseas. It is also looking at transforming mineral waste from the mining industry into advanced, high-value, carbon-based materials, such as carbon foam, which have applications in energy storage, the aeronautical and space industries, and building materials.

Straterra has been gauging the shift in public perceptions, with most New Zealanders understanding the role of mining in making their everyday lives better.

In essence, we are asking the Government to:

- **Be proud of the contribution mining makes to the economy and promote it.**
- **Enable research and development to increase New Zealand's contribution to both our own and broader global solutions for reaching climate change goals.**
- **Create enabling law and policy that allows responsible mining and creates pathways for new mines within agreed timeframes.**

Josie Vidal | Chief Executive Officer

Mining at a glance

Almost every aspect of our modern lives relies on mined minerals or mineral products. Mining is a key part of the primary productive sector in New Zealand.

New Zealand mines a small number of minerals but has potential for more, including for some of the minerals required to fuel a low carbon future and to advance technology. These include vanadium, lithium, rare earth elements, copper, nickel-cobalt, tungsten, silica, ilmenite, garnet, antimony, and phosphate.

If we do not mine in New Zealand, we import the resources we need and lose the opportunity to generate jobs and earn export receipts. We can choose to allow all mining to occur overseas, but that will often be in places with lower environmental and safety standards than we have in New Zealand, and sometimes in places where labour is exploited.

What we mine

New Zealand produces two types of coal – coking and thermal. Thermal coal is used as a source of energy for industry and coking coal is a mineral input mainly used to make steel and is exported. Coal in New Zealand is produced in open pit mines. Coal was part of the essential service supply chain in the Covid-19 Level 4 lockdown – primarily for dairy production and hospital services.

New Zealand's gold comes from two large hard rock mines, and a number of smaller alluvial gold mines around the South Island. Gold is used for jewellery, electronics, telecommunications, medical diagnostics, and for stability of financial markets as it holds its value. There are a number of new goldmines in the pipeline, including Federation Mining's Snowy River mine near Reefton.

Silver is a by-product of gold mining, used for jewellery, soldering alloys, dental alloys, battery contacts, electronics, and utensils, among many uses.

Sand and aggregate sourced from rock quarries and alluvial deposits, and other products produced by this sector, are essential inputs for construction, roading and other infrastructure development – directly, and in the form of concrete.

Titanomagnetite ironsands are used to make steel in New Zealand. Ironsand is also exported to steel manufacturers in Asia.

Mineral sands are being mined on the West Coast of the South Island for the minerals required to transition to green energy including ilmenite, garnet, zircon, gold, and rare earth elements.

Halloysite, a clay mineral, is exported for manufacturing premium quality porcelain and bone china.

Limestone is widely quarried as a soil conditioner and calcium source for pastoral farming, for cement manufacture, and in the form of lime for water treatment and a wide range of industrial uses, including in paint and paper manufacture.

Mining and the environment

Negative perceptions about mining are often based on mining's past, that today are not supported by evidence. Things have changed and modern exploration and extraction of minerals in New Zealand are undertaken responsibly.

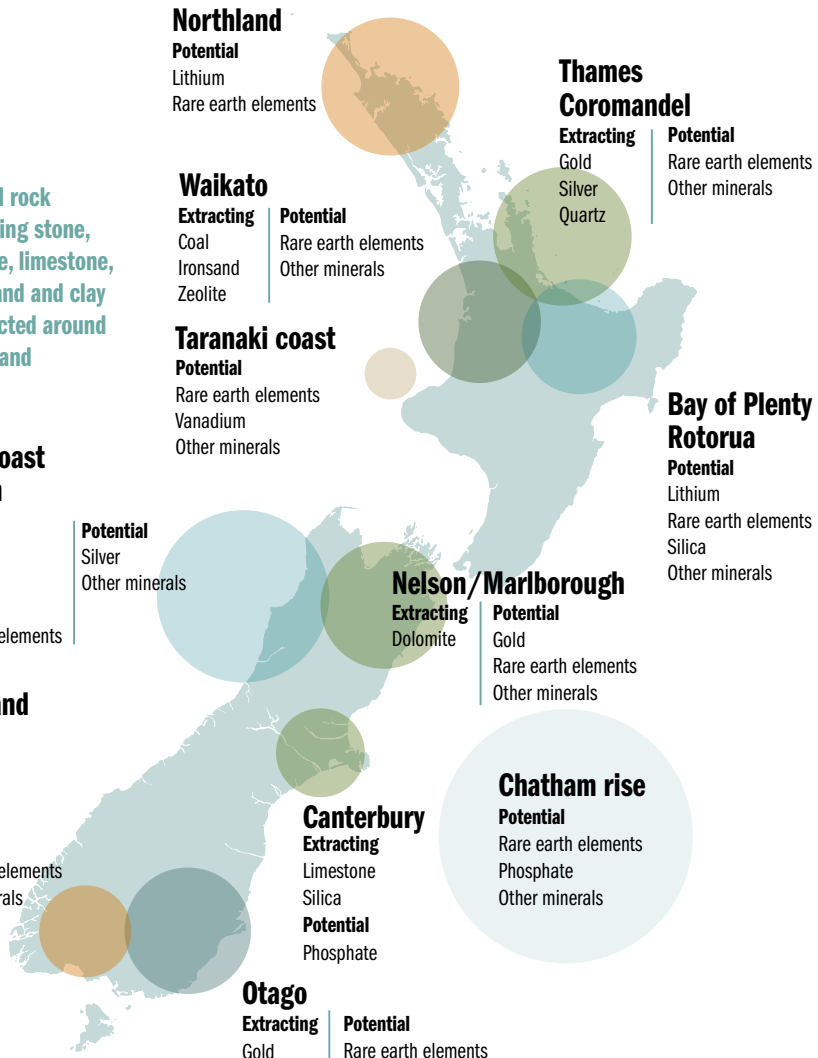
Our environmental and conservation management standards are among the best in the world.

Mining is temporary. When projects are completed, the land is typically returned to a restored, or enhanced, state. There are some examples of rehabilitated mines and conservation work underway at mines in New Zealand on the Straterra website www.straterra.co.nz.

> **"Mining underpins approximately half of the global economy and therefore, it has the greatest potential of any industry to positively influence social, environmental and economic development."**
>
> **Deloitte: Tracking the trends 2023**
> **The indispensable role of mining and metals**

Existing and potential mining

Industrial rock and building stone, aggregate, limestone, gravel, sand and clay are extracted around New Zealand



Northland
Potential
Lithium
Rare earth elements

Thames Coromandel
Extracting
Gold
Silver
Quartz

Potential
Rare earth elements
Other minerals

Waikato
Extracting
Coal
Ironsand
Zeolite

Potential
Rare earth elements
Other minerals

Taranaki coast
Potential
Rare earth elements
Vanadium
Other minerals

Bay of Plenty Rotorua
Potential
Lithium
Rare earth elements
Silica
Other minerals

West Coast Tasman
Extracting
Gold
Coal
Pounamu
Rare earth elements

Potential
Silver
Other minerals

Nelson/Marlborough
Extracting
Dolomite

Potential
Gold
Rare earth elements
Other minerals

Southland
Extracting
Coal

Potential
Gold
Silica
Rare earth elements
Other minerals

Canterbury
Extracting
Limestone
Silica

Potential
Phosphate

Chatham rise
Potential
Rare earth elements
Phosphate
Other minerals

Otago
Extracting
Gold
Silver

Potential
Rare earth elements
Other minerals

*This map is indicative only as permits change from time to time.

What are minerals that we mine used for?

COAL
- Wind turbines
- Cement
- Electricity
- Carbon fibre
- Food production
- Steel

GOLD
- Hi-tech health
- Electronics
- Aerospace
- Investment
- Jewellery
- Awards

SILVER
- Medicine
- Solar panels
- 3D printing
- Water purification
- Mirrors
- Jewellery

RARE EARTHS
- Speakers
- Wind turbines
- Telescopes
- MRI screening
- Hybrid cars
- Magnets

Workforce

Retrenchment of mining and policies which put it at a competitive disadvantage are likely to lead to permanent departures of miners and their families offshore, particularly to Australia where the mining sector is strong. This has been a feature in recent years and there are now almost twice as many New Zealand-born miners working in Australia than there are left working in New Zealand.

Keeping our workforce safe

Straterra supports MinEx, the national health and safety council for New Zealand's extractives sector, and its principal purpose to help the industry achieve its goal of being free from fatalities, injuries and occupational diseases. The Straterra chief executive sits on the MinEx Board.

Straterra endorses the MinEx briefing to Ministers which outlines the industry's views and recommendations for the regulatory regime.

Māori and mining

Māori have significant interests in the resource sector and in retaining access to, and developing minerals for historical, cultural, and economic reasons. Māori have been extracting mineral resources for centuries and today many Māori work and have business interests in the sector. The percentage of Māori employed in mining is much higher than the equivalent figure for the Māori in the population as a whole. The annualised income of Māori in mining is $78,624, much higher than Māori earn in all sectors, at $60,537.

Women in mining

Straterra is committed to promoting diversity and inclusion in the industry's workforce with events, awards, and information. Women make up 8.8% of the mining and exploration workforce.

NEW ZEALAND BORN MINERS

Working in Australia

4,478

Working in New Zealand

2,643

MĀORI WAGES

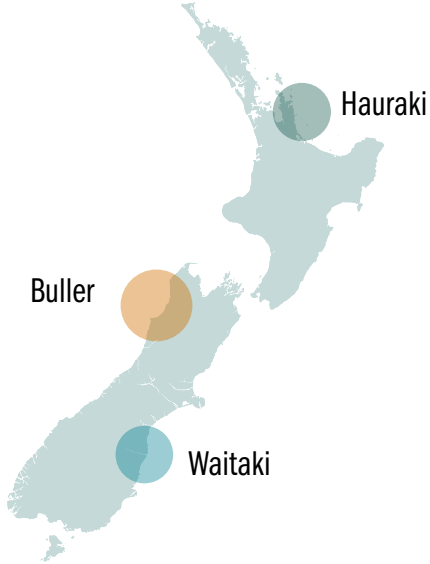
Mining

$78,624

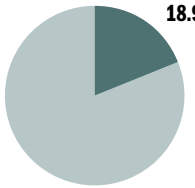
Total economy

$60,537

REGIONAL IMPACT

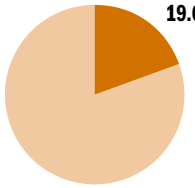


Hauraki



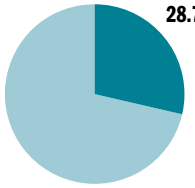
18.9% of GDP

Buller



19.6% of GDP

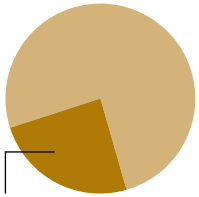
Waitaki



28.7% of GDP

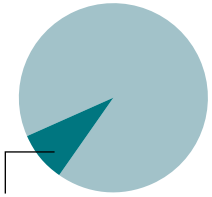
Mining is significant to regional job creation and economic impact

MĀORI IN MINING



24.6%
Mining workforce percentage that is Māori

WOMEN IN MINING



8.8%
Mining workforce percentage that is female

WHAT IS MINED IN NZ

Gold 5.8 tonnes
Thermal coal 1.6 million tonnes
Coking coal 1.3 million tonnes
Ironsands 3.5 million tonnes
Rock and sand 24.5 million tonnes
Limestone 1 million tonnes plus
Silver 3 million tonnes
Other (non-metals) 4 million tonnes

ECONOMIC CONTRIBUTION

$2.46
billion GDP

GOVERNMENT REVENUE

$200
million
From petroleum and minerals

ROYALTIES ON GOLD

$6.61
million

EXPORTS

$1 billion
Gold - top two exports to Australia
Coal - top two exports to India

HIGH WAGES
MINING
$100,100
NZ average $65,800

WORKFORCE
7,000
people

CONSERVATION IMPACT
Mining takes place on only
0.04%
of the conservation estate

PRODUCTIVITY
Highly productive
$520,767
value of amount produced per full time equivalent

$148,629 across the whole economy

Economics

Mining's economic contribution comes not only from the products that are created but also the people employed, tax, royalties and rates paid, and economic, social, and cultural activity generated in regions where mining takes place, as well as the wider economy.

As well as supplying the world with the minerals modern society needs, mining is a direct contributor to our economic prosperity.

In 2022 the mining sector (mining and exploration, excluding quarrying) was responsible for $2.46 billion of New Zealand's Gross Domestic Product (GDP).

Exports

Mining generates more than $1 billion in export earnings a year. Gold is in our top two largest exports by value to Australia; and coal is in our top two largest exports by value to India.

Fiscal contribution

Mining contributes significantly to central and local government coffers from taxes, mineral royalties, and rates.

Royalties vary depending on what is mined and where, but the 2020-21 figures show Government revenue from petroleum and minerals royalties was about $200 million.

Royalties on gold were $6,614,855.

Regional contribution

Mining's contribution to regional New Zealand is significant in terms of job creation and economic impact. It is concentrated in small parts of the country so its impact on the economic development of certain regions is important.

For example, mining is 18.9% of Hauraki's GDP; 19.6% of Buller's GDP; and 28.7% of Waitaki's GDP. To put this in perspective, in Wellington, the contribution to GDP of the entire public service is 12%.

Jobs

The extractives sector directly employs about 7,000 people and is responsible for many more jobs created indirectly. This figure includes mineral mining (4,877) and quarrying (2,118) and it excludes oil and gas.

Mining is one of the most productive sectors in New Zealand as measured by output per hour worked, which translates into high wages.

Productivity and incomes

A feature of the mining sector is its high productivity. This means it makes a disproportionately large contribution to New Zealand's economic growth and has the potential for more.

Productivity in the mining and exploration sector was $520,767 per full time equivalent (FTE) worker in 2022 compared with $148,629 across the economy (according to Infometrics). In fact, the resource sector, including mining, is the number one ranked sector for productivity in New Zealand.

This high productivity translates into high wages. The average annual wage in mining was $100,100 (compared with $65,800 for the economy as a whole) in 2021.

Mining productivity is also high in terms of area of land used. It is the highest-value use of productive land in terms of the annual return earned from it and is conducted over a relatively small footprint.

Opportunities

The International Energy Agency tells us that mining capacity needs to expand swiftly to build the range of technologies and infrastructure needed to meet the world's net zero targets of 2030 and 2050. This includes critical minerals and bulk materials – steel, cement, and aluminium – for a range of technologies and infrastructure, from wind turbines and EV batteries to electricity grids.

Mining investment globally is expected to increase by US$100 billion (NZ$168 billion) annually to meet these targets.

Straterra wants New Zealand to be able to seize the once in a generation opportunity the world's move to green technology and a low carbon future offers.

This document highlights some of those opportunities within the New Zealand context of caring for people and the environment.

Critical minerals

New Zealand has a role to play in supplying the minerals needed to build a low carbon, clean technology future.

We have some critical minerals, beneath our feet and in our seabed, with potential to add billions of dollars to export receipts, as well as create jobs and boost regional economies. Such development would also increase productivity and give a greater tax take for the Government.

What are critical minerals?

Critical minerals can be defined as minerals that are essential to the economy, and their supply is limited.

What are they used for?

Pretty much everything we use every day started with mined minerals. Some minerals have become "critical" as the world pursues renewable energy targets and clean technology, and demand for them vastly outstrips supply.

China is the largest producer of many of the world's critical minerals.

An International Energy Agency (of which the New Zealand Government is a member) report on The Role of Critical Minerals in The Clean Energy Transitions says:

> **"An energy system powered by clean energy technologies differs profoundly from one fuelled by traditional hydrocarbon resources. Solar photovoltaic (PV) plants, wind farms and electric vehicles (EVs) generally require more minerals to build than their fossil fuel-based counterparts. A typical electric car requires six times the mineral inputs of a conventional car and an onshore wind plant requires nine times more mineral resources than a gas-fired plant. Since 2010 the average amount of minerals needed for a new unit of power generation capacity has increased by 50% as the share of renewables in new investment has risen."**

...by the end of the decade more than 50% of monthly vehicle sales in New Zealand need to be electric to meet the country's emissions reduction targets.

Waka Kotahi NZ Transport Agency

Minerals needed for an EV

Car body and chassis
Iron
Manganese
Vanadium
Molybdenum
Aluminium
Magnesium

EV battery
Lithium
Cobalt
Nickel
Carbon

Windscreen
Cerium

EV motor magnet
Dysprosium
Neodymium

Bearings/brakes
Copper

Opportunities

Vanadium, tungsten, lithium, nickel-cobalt, copper, phosphate, rare earth elements, silica, ilmenite, garnet, and antimony are some of the critical minerals New Zealand has within reach, in addition to gold, silver, coal and other minerals we mine.

Many of these minerals are highly sought after and are attracting high unit prices as demand outstrips supply. They are also subject to geopolitical rivalries and New Zealand's trade and intelligence partners have established agreements to ensure security of supply.

With enabling policy, law and investment settings, New Zealand can mine for export, or, as Australia is doing with some critical minerals, we could potentially mine, process, and manufacture into consumer products, such as batteries, all within New Zealand. This would create employment, reduce product costs, and lower environmental impacts if items were produced locally rather than imported.

But it can take decades to discover and develop mineral resources and establish processing and manufacturing capability. Government strategy needs to be enduring and have a long-term view to ensure policies to enable mining well into the future.

Status

New Zealand's critical minerals list has been worked on by government since 2019, but nothing has been publicly released.

What's happening elsewhere?

Countries that have critical mineral strategies include the United States, United Kingdom, Japan, Germany, Canada, and Australia.

The Australian Government has a Critical Minerals Strategy 2023-2030. Individual states have developed further state specific strategies.

To accelerate the development of the Queensland critical minerals sector, the Queensland Government is establishing a dedicated office – Critical Minerals Queensland. This office will be responsible for delivering on the Queensland Critical Minerals Strategy. The office will serve as a centralised point for industry stakeholders and investors, facilitate investment in research and development, market Queensland internationally, and lead government action in the sector to help achieve the strategy's objectives.

From 1 September 2023, the Queensland Government has reduced the rent for new and existing exploration permits for minerals, other than coal, to $0 for five years. This is designed to encourage further exploration for critical minerals.

Austrade, the Australian Government's trade and investment agency, has developed a comprehensive Australian Critical Minerals Prospectus 2022 to market its capabilities to the world.

Actions

- **Straterra would like to see this Government act with urgency to release a critical minerals list and work with industry on a critical minerals strategy, capitalising on New Zealand's potential.**
- **We would like to see the New Zealand Government invest in research and development of critical minerals, as governments in other jurisdictions are doing. There is potential for collaborative work.**
- **We believe the Government needs to reduce the regulatory burden to attract investment in mining and processing, which in turn will open manufacturing opportunities and will have New Zealand well placed to benefit from demand that outstrips supply of critical minerals.**

Seabed mining

Some of the critical minerals the world needs lie in New Zealand's marine jurisdiction (Exclusive Economic Zone and Continental Shelf). We need a regulatory framework which allows us to access them, with minimal and manageable impacts on the environment.

Opportunities

Under a framework where the New Zealand Government supports mineral prospecting, exploration, and mining with enabling law and policy, there is a role for seabed mining.

While consents have yet to be granted before mining can occur, there are mining permits for the ironsands rich in vanadium off the South Taranaki coast, and significant deposits of rock phosphate and other potentially valuable minerals on the Chatham Rise, east of New Zealand.

Successive appeals against these consents mean the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (EEZ Act), which was designed to regulate activities such as seabed mining, needs to be reviewed so that the Act can fulfil that intent.

New Zealand is the ideal country to set the highest standards for seabed mining, as we have done for mining on land.

We have some of the most protective employment and health and safety laws, and stringent environmental regulations already in place for mining.

Twenty-five percent of the sand used in New Zealand – mainly Auckland – is dredged from the seabed in the Auckland Harbour and Kaipara Harbour.

Other jurisdictions

Other jurisdictions have developed legislation, regulations and policy approaches to seabed mining including the United Kingdom, United States of America, and Japan.

Some Pacific Islands have advanced their plans for seabed mining, including Nauru and Cook Islands.

Status

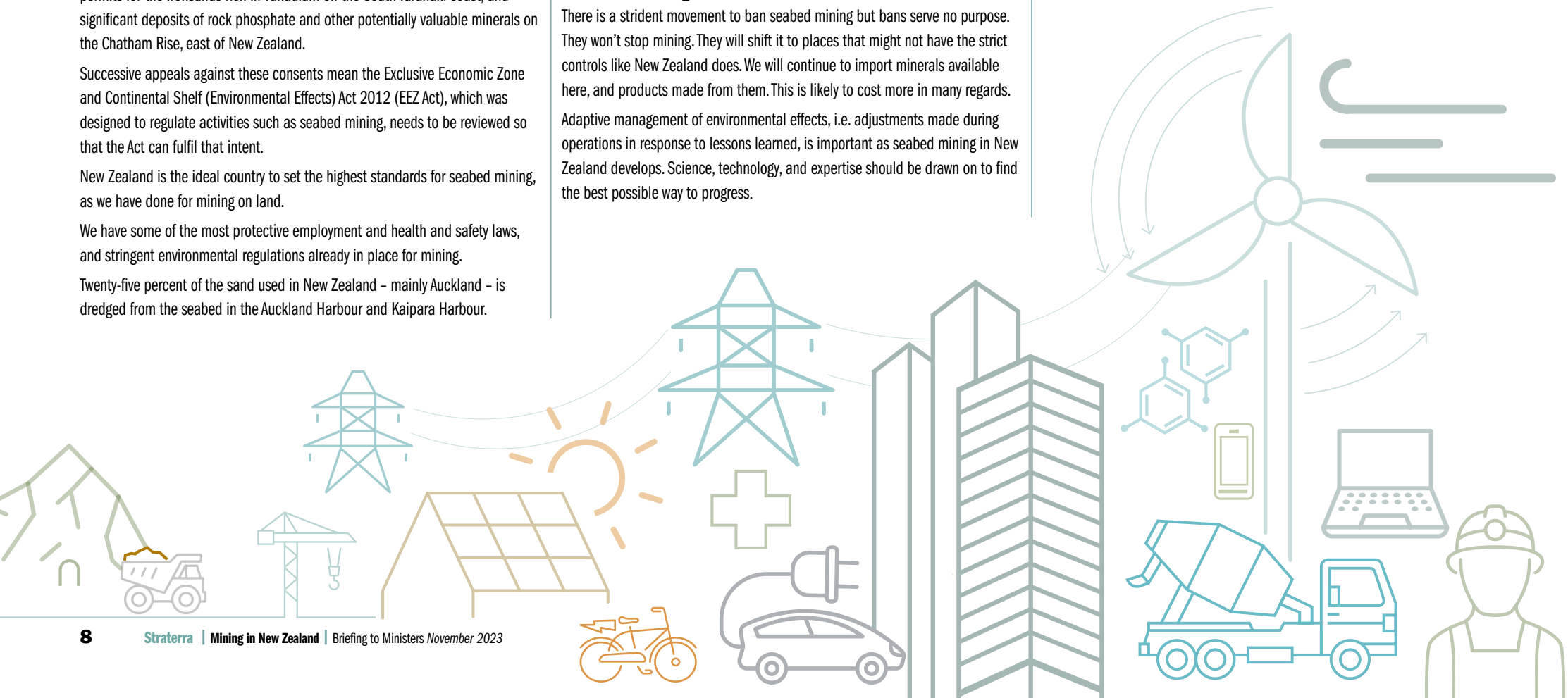
The Environment Select Committee undertook an inquiry into seabed mining in 2023. The status of that inquiry is unknown. No report from the select committee was made publicly available prior to the 2023 General Election.

Bans solve nothing

There is a strident movement to ban seabed mining but bans serve no purpose. They won't stop mining. They will shift it to places that might not have the strict controls like New Zealand does. We will continue to import minerals available here, and products made from them. This is likely to cost more in many regards.

Adaptive management of environmental effects, i.e. adjustments made during operations in response to lessons learned, is important as seabed mining in New Zealand develops. Science, technology, and expertise should be drawn on to find the best possible way to progress.

We have some of the most protective employment and health and safety laws, and stringent environmental regulations already in place for mining



Forecasts suggest Solar PV could make up 6% of New Zealand electricity supply by 2035.

EECA New Zealand

Minerals needed for solar panels

Solar panel
Cadmium
Tellurium
Molybdenum
Beryllium
Germanium
Gallium
Indium
Silver
Silicon

Semi-conductor
Boron
Phosphorous

Frame
Aluminium
Titanium
Zinc
Magnesium

Pacific Islands back seabed mining

Nauru's Ambassador to the International Seabed Authority Margo Deiye has spoken about allowing seabed mining for the metals to produce the batteries required to reduce greenhouse gas emissions.

"We need to take our own development into consideration while everyone else emits their greenhouse gases.

"The misunderstanding is that any human activity does not have risks – every activity has risks.

"But the risk of not doing anything with this current climate crisis, is much bigger for us and it's an existential threat for the Pacific."

Cook Islands Prime Minister Mark Brown has said pursuing seabed mining is "the right thing to do for our country".

He has said, as a small island nation vulnerable to external shocks, deep-sea mining offers the long-term prospect for development, diversification, and future prosperity.

"We are the ones in charge of our destiny, and it is Cook Islanders that will continue to make decisions about how our Cook Islands resources are developed."

> **"...as a small island nation vulnerable to external shocks, deep-sea mining offers the long-term prospect for development, diversification, and future prosperity"**
>
> **Cook Islands Prime Minister Mark Brown**

Actions

- As part of a minerals strategy, including the role of critical minerals, Straterra would like to engage with the Government on unlocking the potential for seabed mining in our territorial waters and EEZ.
- We would like the Government to review the EEZ Act in collaboration with the minerals sector to identify barriers to seabed mining and allow for the original intent of the act to support mining. We recommend allowing for the case-by-case development of the natural resources of New Zealand's EEZ, while meeting environmental objectives.
- When consideration is given to offshore wind farms, particularly off the Taranaki coast, due consideration is given to avoiding mineral-rich sites so they can be mined for the very minerals needed to build wind turbines.

Environmental management

Mining is sometimes criticised for its environmental impact but, in fact, modern mining in New Zealand is conducted responsibly and its recent environmental track record is excellent by international standards.

Our environmental standards and contribution to researching and protecting indigenous biodiversity and conservation projects separates New Zealand from some other mining countries and these are aspects of the industry worth noting as positive.

Mining companies in New Zealand pride themselves on their environmental management and engagement and consultation with all stakeholders and partners, including Māori, and those living near mine sites

Mining regulation

Like all land-based activities, mining impacts the environment, but under New Zealand's regulatory regime, mining projects are only approved if they meet high environmental standards. A high bar for mining companies to establish rationale and justification to mine is demanded, as is appropriate.

Applications to mine are considered on a case-by-case basis by independent experts before any approval is given and consents are required for any activity that disturbs or impacts the environment; vegetation clearance; taking and discharging water; dust; noise; disturbance of land; waste dumps; tailings storage facilities; mining activities; processing facilities; and the like ... the list is long and thorough.

Before granting consents, decision-makers specify conditions aimed at ensuring acceptable impacts. It is essential that the new resource management system continues to allow case-by-case consideration, as discussed later in this briefing under the section on resource management reform. This existing system works well for all concerned.

Above and beyond regulations, the mining industry and those who work in it can only operate well with the community's acceptance, and it is essential to meet the highest environmental standards. Mining companies in New Zealand pride themselves on their environmental management and engagement and consultation with all stakeholders and partners, including Māori, and those living near mine sites. This engagement is broad and includes contributions to the social fabric of communities. This might mean funding sporting, educational, and community environmental activities, as well as taking part in these activities.

In addition to minimising environmental disturbance as much as possible, miners can make an important contribution to broader environmental management. For example, financial contributions from the sector have been used to help eradicate pests and weeds harmful to indigenous biodiversity, including on conservation land, and in wetland creation and restoration. Weeds and pests are pervasive across New Zealand and are far more destructive of biodiversity than mines, which have a small footprint.

Rehabilitation

An important condition of a successful mining application is the commitment to restore or rehabilitate mine sites. Unlike most other land uses, mining has a finite life. After a mine or quarry operation ends, the land is restored as required by the consent conditions and reapplied to new uses or returned to the community, often as a public facility.

From the moment mining begins, rehabilitation work starts. As mining proceeds, completed areas of mining are typically filled in and/or re-contoured using waste rock, covered in topsoil, and sown in vegetation appropriate to the location.

Conservation land or native forest will be returned to its previous state with plantings, translocation of native wildlife, pest management, and with time doing the rest.

New land uses or facilities may be created by mining. An open pit or tailings dam may be formed into a pond, lake, or wetland, for conservation or community use. Roads may be retained as part of the transport network. The Macraes gold mine in East Otago built a trout hatchery; Newmont Waihi Gold restored a river that had been damaged by historic gold mining; Stockton mine on the West Coast of the South Island is breeding Roroa (Great Spotted Kiwi) and protecting them from predators.

More detailed examples of mining companies' environmental work can be seen in videos and case studies on the Straterra website (www.straterra.co.nz) and on our Mining Means Progress social media channels – Instagram and Facebook.

We are happy to arrange visits for Ministers, and their officials, to see this work for themselves and to gain a greater understanding of the contribution mining makes to New Zealand.

Reporting

As part of the industry's commitment to improving environmental impacts, reporting on Environmental, Social and Governance (ESG) initiatives is becoming increasingly important. Mining companies are measuring and reporting on their business sustainability using verified methodologies.

Industry award programmes are giving more prominence to innovative environmental initiatives, such as cleaner burning of coal, managing acid mine drainage, and ecological restoration of mine sites.

Actions

- Straterra recommends the Government continues an effects-based, case-by-case approach to proposals for mining that addresses the balance between social, cultural, environmental, and economic priorities.
- Straterra recommends environmental management is contained within appropriate law and not tacked on to laws and policies in a haphazard and detrimental way. Terminology needs to be consistent and defined and consideration given to how such law is implemented at local government level.
- The Government acknowledges that we can protect the environment and mine for the minerals we need to retain and progress modern living for the good of everyone.
- Ministers are invited to visit mines around New Zealand.

Enabling policy and law

In the past six years a lot of work has gone into policy and law that has impacted the mining industry. Some of that has been aimed at stopping coal mining and restricting where mining can happen. Neither of those approaches make sense.

Mining can only take place where the minerals lie, and coal still has an important role to maintain international competitiveness as alternative fuels are established in New Zealand and around the world. We continue to supply coal to key export markets including China, India, Japan, Australia, and South Korea.

This briefing outlines where Straterra thinks changes are needed in policy and law to ensure mining in New Zealand can continue and modestly grow while meeting strict employment and health and safety requirements, and stringent environmental regulations.

Investment

Minerals exploration and mining is capital intensive and investment in the industry is essential.

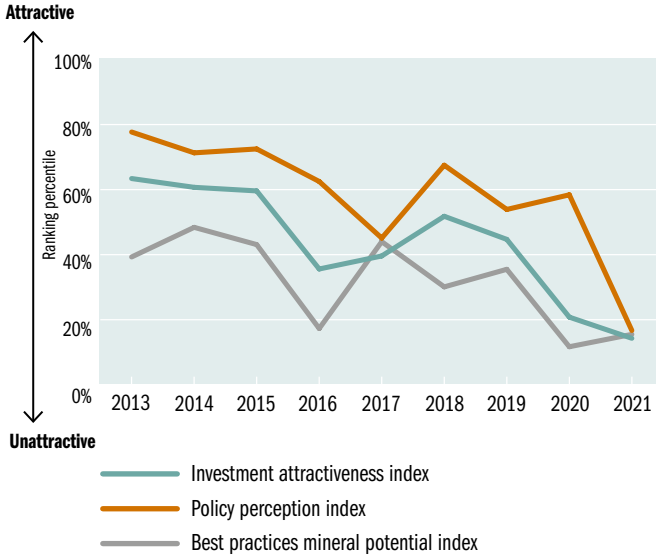
For New Zealand to attract and retain the necessary investment, we need stable policy settings for mineral exploration and mining, as well as for overseas investment. In recent years the confidence of overseas investors has declined, mostly due to perceived anti-mining sentiment within government policy.

It can take many years to get from prospecting to minerals coming out of a mine and there being a return on investment. So, while the return is high, investors need to have confidence in the country for the duration of their investment.

Overseas investment

Much of the existing investment is sourced from overseas with demonstrated economic benefits for both New Zealand and the local communities where mining occurs. Overseas investment provides a larger pool of funds and is accompanied by access to new expertise, technology, and links to global distribution systems.

INVESTMENT ATTRACTIVENESS IN NZ MINING SECTOR



Investment attractiveness

Unfortunately, the New Zealand minerals sector has taken a considerable fall in its rankings as an attractive place to invest. The Canadian Fraser Institute's annual global survey of mining and exploration companies showed a decline in New Zealand's ranking of investment attractiveness from the 41st most attractive jurisdiction (out of 112) in 2013 to the 72nd out of 84 in 2021. The biggest driver of this decline is the policy perception index in which we rank at 70th out of 84, just ahead of Papua New Guinea.

The Government's role in promotion

The Government has an important role in promoting mining in New Zealand as an attractive investment by removing barriers to new investment and implementing policies conducive to the minerals sector, as set out in this briefing.

Importantly, the Government needs to be seen as supportive of mining if the country is to attract investment, much of which comes from overseas given the large amounts required to get mines up and running.

Amendments to the Crown Minerals Act that passed prior to the 2023 General Election, removed the Government's obligation to promote mineral prospecting, exploration, and mining in New Zealand which Straterra opposed. We advised this was likely to have added to the negative international perception that New Zealand is not friendly to the minerals sector.

Straterra believes New Zealand has not fully taken advantage of the demand for critical minerals required to build a low carbon, clean technology future.

As outlined in the critical minerals section of this briefing, decision-makers in New Zealand need to fully understand the global picture and encourage investment here. This is so that we are not left behind as other countries effectively advance low emissions policies in a highly competitive environment for critical minerals.

We believe the Government should reintroduce a proactive campaign programme marketing New Zealand to international investors and showcasing New Zealand minerals as investment opportunities.

This will be increasingly beneficial to New Zealand as changing patterns of demand emerge, particularly for high-value and critical minerals in New Zealand.

Greenwashing and virtue signalling

As stated elsewhere in this briefing, modern mining in New Zealand is responsible with high environmental and employment standards.

Unfortunately, in recent years we have seen an unwelcome trend from some businesses and organisations keen to portray an anti-mining position to boost their sustainability credentials. For example, many banks and investment funds are signalling an intention not to invest in mining.

This virtue signalling is alarming as it denies the reality that minerals are used by everyone and that mining in New Zealand is not environmentally destructive, unsafe, or anti worker in the way it may be perceived by the perpetrators' targeted audiences.

This sentiment does not separate regulated mining in New Zealand from unregulated and unsafe mining in other parts of the world where there is use of child and slave labour and appalling working conditions. In this briefing we have outlined that there are strong reasons to support mining in New Zealand rather than in these unregulated markets as we can trace the provenance and assure customers that minerals have been responsibly mined.

Straterra's work indicates there is broad public acceptance of the value of mining when it is framed as providing people with most of the items they need for a high-quality life; and that mining's contribution to a low-emissions future and efforts and requirements to minimise environmental impacts are understood. We will continue this work and we know some of the science agencies are also keen to continue surveying work on societal perceptions and the management of mineral resources.

We believe the Government has a responsibility to ensure a balanced, evidence-based view of how mining is portrayed to the public and investors. We would like the Government to promote the provenance of mined minerals from New Zealand as part of the NZ Inc brand that endorses ethical employment and environmental standards. We are pleased the Financial Markets Authority is monitoring greenwashing in the financial products industry.

Permitting timeframes

Straterra is in ongoing discussions with New Zealand Petroleum and Minerals – the regulator – around processing timeframes for prospecting, exploration, and mining permits. We have had some serious concerns about the delays impacting negatively on investment with the excessively long wait times putting off investors. We would encourage further investment in this area of the Ministry of Business, Innovation and Employment given its direct impact on investor perceptions and return on investment.

We believe there should be set timeframes to permitting and access agreement processes that give assurance to investors that mining can be undertaken in a timely manner without compromising important regulatory requirements.

Actions

- **Straterra would like the Government to remove barriers to new investment and implement policies conducive to mining as set out in this briefing.**
- **We would like the Government to show leadership and mirror the industry in speaking positively about mining, backing our unique New Zealand provenance where we can guarantee mining operations meet the highest employment, health and safety, and environmental standards.**
- **We ask that the Government reinstate a proactive programme of marketing campaigns, including at international mining events and on trade missions, to promote New Zealand to international mineral investors and to export markets.**
- **The Government restores the promotional intent to the Crown Minerals Act 2023.**
- **Set processing timeframes are implemented in the minerals permitting and access agreement processes.**

Investment case study

Federation Mining's Snowy River Gold Project

Federation Mining has received Crown funding (Crown Holdings/Provincial Growth Fund – NZ$15 million) for its Snowy River gold mine near Reefton, on the West Coast of the South Island. The mine is accessing the Birthday Reef, which is considered one of the richest and most consistent gold reefs discovered anywhere in the world. AustralianSuper has been the other main funder to date.

The Snowy River project is fully permitted and currently employs 60 staff. Federation has appointed a financial advisor to assess funding options for continued development of the Snowy River project through to the production phase. This will include funding for the construction of the processing plant which will provide employment opportunities for an additional 100-plus direct employees during construction and ongoing operation, with positive flow-on effects in the local community. The projected direct and indirect employment is over 300 people on the West Coast.

There are many benefits from processing the gold on the mine site, most notably the contribution to the economy, including secure employment.

The funding process will consider a range of options which may include debt, third party investment in the asset, a corporate merger, or a combination of these alternatives. The evaluation of these funding options is expected to conclude in late 2023. An Initial Public Offering (IPO) may also be considered as part of the ongoing funding package.

Investment will be critical to the continuation of the mine, with production expected in 2024 and an inferred resource of 700,000 ounces of gold. The price for gold has been consistently over NZ $3,000/oz since March 2023.

Federation engages regularly with all its stakeholders and reports on environmental, social and governance (ESG) performance. Its environmental work includes planting of more than 12,000 native plants on site and in passive water treatment ponds, along with more than 800 trees offsite around the West Coast in partnership with Trees That Count. Federation has worked with the West Coast Regional and Buller District councils to restore riverbank erosion following local flooding events.

Since the Snowy River Project began, Federation has invested more than $90,000 across 30 local community groups and volunteer emergency services in Reefton, Ikamatua, Westport and Greymouth.

Success for Federation will be of great benefit to not only the West Coast, but also to the wider New Zealand economy.

Resource management reform

Mineral deposits are limited in quantity, location, and availability, due to the way they are formed by nature. They can only be sourced from where they are physically located and where a mining company is able to access them cost-effectively.

This means access to such deposits must not be shut off through regulatory bans. A resource management system which provides for flexible case-by-case assessment of mining proposals on their merits works well. This was a feature of the Resource Management Act (RMA) which was replaced just prior to the 2023 General Election.

Natural and Built Environment Act (NBEA)

While there were acknowledged weaknesses of the RMA, it is uncertain that the new regime will deliver as well as the RMA did.

If the NBEA is retained, we believe amendments will be necessary and it will be important that the resources sector is involved in that process.

It is also essential that the National Planning Framework (NPF), which will be key to the success or otherwise of the new regime, is operable.

National planning framework / national direction

We support the concept of national direction as delivered by national policy statements under the RMA and by the proposed NPF under the new NBEA.

However, the national policy statements are defective in many ways, not least with inconsistencies across instruments, and will need to be remedied in the new resource management system.

Gateway tests

We support the concept of a gateway test for the extractives sector to be given a consenting pathway as is provided for in some of the existing national policy statements[1] but as mentioned, there are a number of flaws that need to be fixed for these to be workable for the mining sector.

For example, the instruments should focus on the effects of the activities they are intended to regulate and should not be used to discriminate between mined minerals.

For example, in many of the instruments mineral extraction (mining) has a higher bar than aggregate extraction (quarrying) in that mining needs to be nationally significant before a consenting pathway is given whereas quarrying only needs to be regionally significant.

The gateway test in the indigenous biodiversity and natural wetland regulations contains sunset clauses and other exclusions for coal. The effects of mining in these areas depend on the mining method not the mineral being extracted. There is no case for these instruments to differentiate coal from other minerals to achieve unrelated policy goals (emissions reduction and climate change policy goals). We note that coal's contribution to emissions occurs when it is combusted, not mined, and if the coal destined for combustion is not produced locally, then it will be imported and still burned here. That is likely to add to emissions as New Zealand tends to have higher quality coal and sea transport needs to be factored in.

It is important these exclusions are not replicated in the NPF or future relevant national policy statements that impact mining.

Examples of inconsistencies in the gateway tests that will need to be clarified include the use of the term public benefit (which will need to be interpreted), national and regional significance, and functional need with varying uses of these terms across the instruments. We look forward to the opportunity to elaborate on these.

Significant Natural Areas / National Policy Statement for Indigenous Biodiversity

Like many primary sector and resource development representative groups, we see huge problems with the requirement for councils to have to identify and protect Significant Natural Areas (SNAs) and other areas given special status. This will result in large tracts of land being off limits unnecessarily with land users not being given access to the full mitigation hierarchy, which allows offsetting and mitigating of impacts. The lack of legal clarity around these "protections" will likely be challenged in court. This could be avoided with better stakeholder engagement and drafting.

Flexibility

Provision of case-by-case assessment of resource proposals needs to be continued under the new resource management system. We argue such flexibility is preferable to overly restrictive or prohibitive regulations that unnecessarily prevent activities that can be well managed.

One example is the Wildlife Act which protects wildlife in New Zealand and needs to be reviewed. We argue that a case-by-case approach would work well here, and an elegant solution would be that provisions of the Wildlife Act serving to protect wildlife should not need to apply where parties hold a resource consent. The Wildlife Act has not been updated since 1953. The mining industry would need to be consulted on any review of this act given the significant amount of work mining companies do to research, protect and if necessary, relocate wildlife for its protection (either temporarily or permanently).

Actions

- **Straterra recommends the new resource management system retains flexible case-by-case assessments of resource use proposals so that applications to mine are considered on their merits by independent experts.**
- **Straterra recommends that under national direction instruments, the gateway tests which provide a consenting pathway for mining should be the same as those for quarrying and there should be no mineral exclusions, including coal.**
- **Straterra asks that the extractives industry is consulted on any revisions of the acts governing the industry including the RMA replacement acts and their explanatory frameworks and the Wildlife Act.**

[1] National Policy Statement for Freshwater Management 2020 and National Policy Statement for Indigenous Biodiversity 2023

Climate change

Mining and climate change are often misleadingly, and unfairly, conflated. Mining is in fact part of the solution to climate change.

Mining emissions

Mining emissions stem mostly from burning the diesel used to extract, transport, and process minerals. It is an energy intensive sector but its emissions fall roughly in the middle ranking of New Zealand industries.

There are many examples of companies in the extractives sector taking proactive steps to decarbonise. Electric conveyors are now common in plants where electricity is available, and operators are moving in increasing numbers to electric and hybrid offroad vehicles and machinery. But it needs to be acknowledged that electric versions of some of the plant and machinery required for mining simply do not exist yet, and that electricity supply to some remote mining sites is challenging. For that reason, some mining companies are keen to explore on-site renewable electricity generation.

It is important to note, New Zealand's mining techniques are less emissions intensive and have a lower environmental impact than in many other countries.

Mining and the low carbon economy

The minerals sector contributes significantly to the low carbon economy and will be key to addressing climate change, as outlined throughout this briefing.

Wind turbines, solar panels, batteries, electric vehicles, and technology all contain minerals. For example, there are at least 17 mined minerals in a wind turbine, including rare earth elements (REEs), vanadium, and other valuable minerals that could be mined in New Zealand.

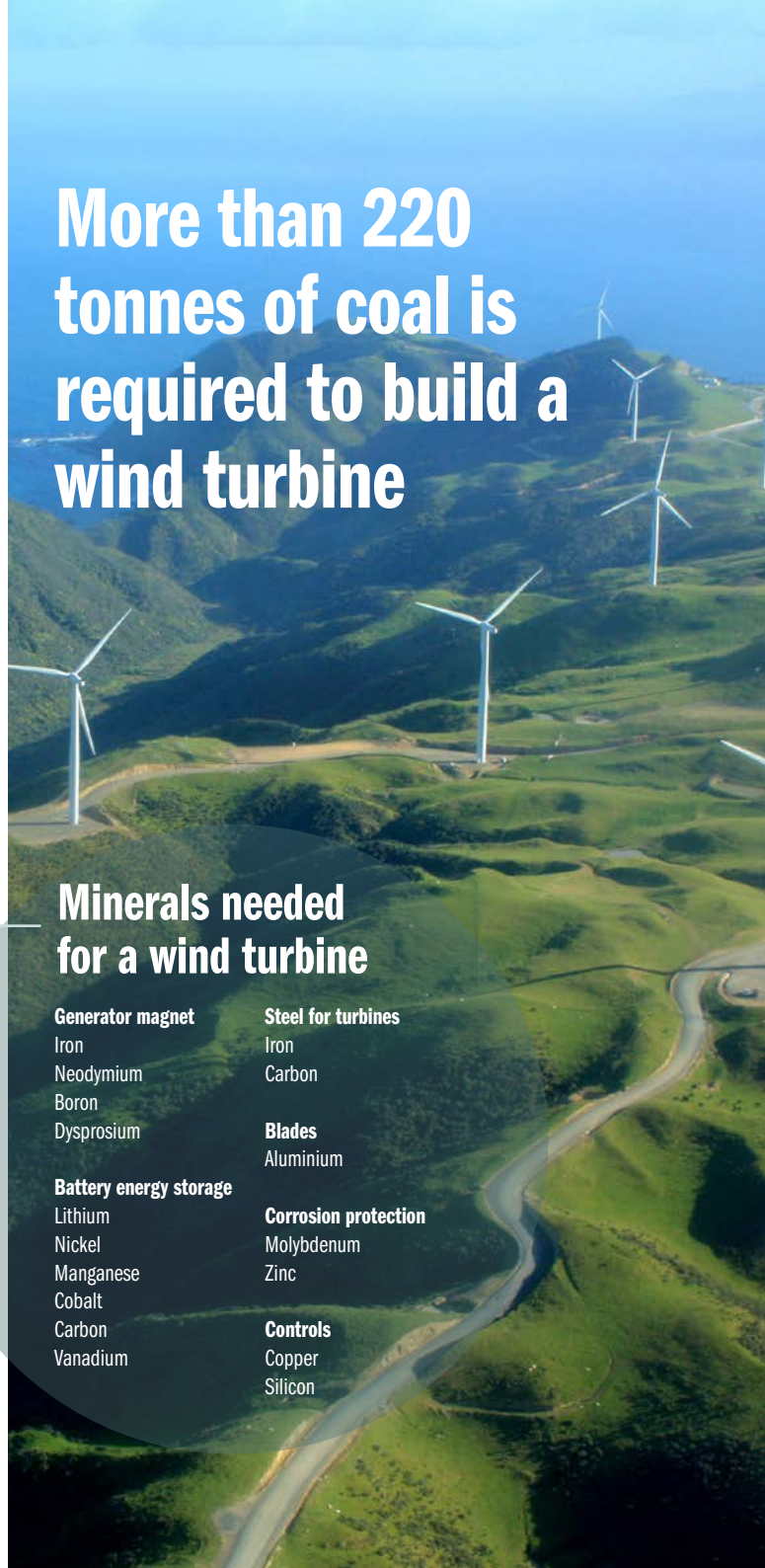
Mining's role in the low carbon economy will increase as technologies develop. The World Bank has reported repeatedly on this topic, including many warnings that demand will far outstrip supply for the minerals needed to reach zero carbon targets.

As the world transitions towards a lower-carbon economy, New Zealand has the potential to supply more "green" or critical minerals.

Climate change adaptation

Minerals and aggregates, including coal (as a mineral component of steel), have an essential role in New Zealand's adaptation to the changing climate. For example, aggregates and steel-reinforced concrete are needed to strengthen sea walls to adapt to sea level rise and provide flood protection. They are needed to make infrastructure more resilient to resist high-intensity storms and extreme weather events.

Mining and the environment, not mining or the environment



More than 220 tonnes of coal is required to build a wind turbine

Minerals needed for a wind turbine

Generator magnet
Iron
Neodymium
Boron
Dysprosium

Steel for turbines
Iron
Carbon

Blades
Aluminium

Battery energy storage
Lithium
Nickel
Manganese
Cobalt
Carbon
Vanadium

Corrosion protection
Molybdenum
Zinc

Controls
Copper
Silicon

Coal

Coal is one mineral mined in New Zealand which contributes to emissions when consumed. The emissions occur when it is combusted, not mined (other than a small quantum of fugitive emissions of methane).

Miners produce coal to meet the demands of New Zealand businesses striving to be competitive; processes such as steel making that have no current technological alternative at scale; and to supply electricity to keep the power on.

Consuming imported rather than locally produced coal does nothing to reduce emissions; rather, the carbon miles of transport add to emissions. New Zealand's high-quality coal has lower emissions intensity than coal from many other countries and many other fuels, which is why it is sought after in our export markets.

Government policy should not penalise coal miners if the goal is to reduce coal emissions as industry will simply import coal, and New Zealand will lose exports. The principle here is you cannot remove something from the market until there is something to replace it that is accessible, affordable, and readily available. Affordability is something that needs to be assessed through the energy transition so that the most vulnerable are not the most penalised.

Coal is used as a backup fuel for electricity generation. That back up occurs in dry years when the hydropower is limited; at times when the wind isn't blowing and the sun is not shining; and, in times of gas outages. Continuing with coal in this back-up role is more cost effective than building new generation capacity which would have to be very extensive to cover all weather scenarios. Competitively priced electricity would make New Zealand's increased electrification goal easier to achieve, reducing overall energy emissions in the process.

Emissions reduction

Straterra strongly supports global action to reduce carbon emissions and New Zealand's goal of achieving net zero emissions by 2050. New Zealand needs to play its part in global commitments to meet the objectives of the 2015 Paris Agreement.

To reduce New Zealand's emissions, it is essential that policies do not lead directly to increased global emissions through domestic economic activity being closed and/or shifting offshore. Integral to this is that we maintain the international competitiveness of affected sectors of our economy.

Any initiative to reduce emissions should be assessed in terms of its impact on both global and local emissions, as well as its impact on the local economy and the people in New Zealand.

We support the Emissions Trading Scheme to reduce emissions, but we do not support Government incentives to switch out of fuels, such as the Government Investment in Decarbonising Industry (GIDI) Fund, because of the distortions they create.

Actions

- Straterra urges the Government to acknowledge there will be a need for a small percentage of electricity generation that requires coal, as back up for when renewable sources are not viable (no water, wind, sun, etc), as well as for industrial applications.
- We ask that the Government acknowledges mined minerals are essential to strengthen infrastructure to adapt to climate change, and to build a low carbon economy.
- We ask that affordability, accessibility, and security of supply are the key considerations given to Government policy around decarbonisation and renewable energy sources.

Straterra strongly supports global action to reduce carbon emissions and New Zealand's goal of achieving net zero emissions by 2050. New Zealand needs to play its part in global commitments to meet the objectives of the 2015 Paris Agreement

Mining on conservation land

There is a current pathway for applications to mine on specific areas of the conservation estate, other than national parks. A range of permits, access agreements, concessions, as well as resource consents, must be secured before access is given.

Mining activity on national parks and other conservation land listed in Schedule 4 of the Crown Minerals Act is understandably not permitted/excluded, and the mining industry fully supports this.

Any blanket ban of mining on conservation land is not necessary and would be counterproductive. It would prevent the consideration of applications to mine critical minerals now and in the future. Existing mines are well regulated and contribute to conservation efforts, as well as to the economic, social, and cultural activities in their vicinity. New mines, regardless of what is being mined, would do the same.

This current regulatory regime works well from the perspective of protecting the environment, so a ban is not necessary.

The high regulatory requirements, combined with the geological and economic characteristics of minerals (they are sparsely distributed and difficult to develop), mean that mines on conservation land are few and far between. Mining occurs on 0.04% of New Zealand's conservation estate.

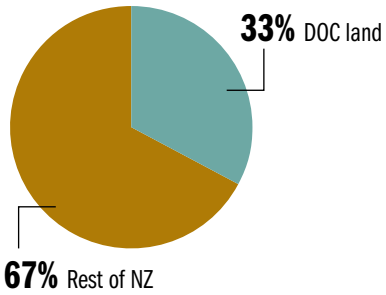
A case-by-case assessment of minerals exploration and mining projects provides excellent environmental safeguards and we support this. There is no evidence that biodiversity is adversely affected long term because of mining on the very small footprint of the conservation estate where it occurs.

Value of conservation land

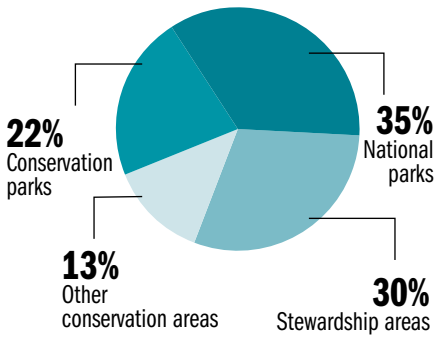
The conservation estate makes up about 33% of New Zealand's land area. It includes a range of land types and conservation values. Of that, 35% is in national parks, and therefore listed in Schedule 4 of the Crown Minerals Act.

The remainder of the conservation estate has varying conservation values, from low to high, under various defined land classes. Stewardship areas, which make up 30% of the total area of conservation land, were added in 1987 as part of the re-organisation of Crown land. This classification was a "statutory holding pen", not based on any assessment of conservation values. The Department of Conservation (DOC) was to act as steward for this land until its destiny was determined.

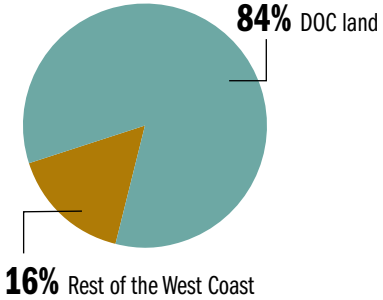
NEW ZEALAND LAND



CATEGORIES IN THE CONSERVATION ESTATE



WEST COAST, SOUTH ISLAND

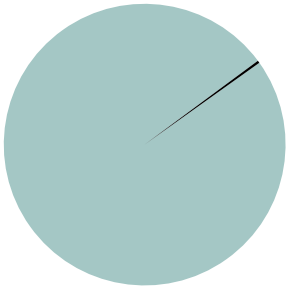


Mining's small footprint

It has been estimated that mining occurs on 3,500 hectares or 0.04% of the conservation estate. The footprint is so small because of the tight regulatory regime and the nature of economic mineral deposits. Such deposits tend to be sparsely distributed in the landscape, and therefore, challenging to discover, evaluate for their economic potential, and develop.

Other economic land uses on conservation land including hydroelectricity generation and transmission, ski fields, roads, carparks, and other tourism infrastructure, dwarf the footprint of mining. Unlike many of the other permitted conservation land uses, mining has a finite life and once mining ends, land is rehabilitated and returned often in better condition than before mining. Roads and hydro lakes on conservation land, on the other hand, have permanently removed any conservation value on that land.

AREA OF LAND MINED ON THE CONSERVATION ESTATE



Mining's footprint on conservation land is small and temporary – about 0.04 percent of the conservation estate has been mined

Any blanket ban of mining on conservation land is not necessary and would be counterproductive. It would prevent the consideration of applications to mine critical minerals now and in the future

Critical minerals and conservation land

It is notable that New Zealand's mineral deposits – including for strategic or critical, low-carbon economy minerals (discussed on pages 6 and 7) – often correspond to areas of conservation land. A GNS Science study published in 2018 found 79% of land prospective for rare earth elements in New Zealand lies in the conservation estate. The same study found 69% for nickel-cobalt, and 66% for lithium prospectivity in the conservation estate. These are among minerals of strategic importance for the global transition to a net zero carbon economy.

New Zealand needs to develop ways of effectively realising this potential, while safeguarding conservation values. The existing case-by-case approach to approval allows for this.

The unintended consequences of bans

The Government has progressed a policy to ban mining on conservation land. As well as being unnecessary, as outlined above, there are unintended consequences that should be considered including, but not limited to:

- Reduced access to aggregates, particularly on the West Coast of the South Island, greatly increasing the cost of building and maintaining roads, flood defences and other infrastructure. Because 84% of this region is conservation land, this is largely where these vital resources must be accessed to be economic. This fact was illustrated by DOC quarrying conservation land for track works at Franz Josef Glacier.
- Increased "carbon miles" from transporting aggregates and other mineral resources longer distances to sites for use, including from overseas, thereby leading to increased global carbon dioxide emissions.
- Importing minerals instead of producing them in New Zealand (where we have a comparative advantage) places a further burden on our country's balance of payments.
- Reduced pounamu recovery: an exemption for pounamu may be under consideration in this policy for cultural reasons and legislative requirements. Note, however, that most pounamu is recovered in association with other minerals, particularly alluvial gold, so any exemption would not deliver benefits in practice.
- Mining provides the critical mass that supports the West Coast transport infrastructure, the rail link to Canterbury in particular. A ban would, over time, reduce economic activity on the West Coast, and threaten the commercial viability of the Midland Line.
- Significantly reduced revenue to the Crown from minerals royalties and land access fees and compensation payments to DOC – the latter being used to fund pest and weed control and other improvements to the conservation estate.

Stewardship land review

A review of stewardship land classification has been put on hold through the election period.

We question the need for such a review as a way to achieve protection of high value conservation land because such protections already exist in the current regulatory regime. We don't see the conservation land classifications as relevant under a system which allows mining and other activities to be considered on a case-by-case basis.

We support the Ngāi Tahu Mana Whenua Panel recommendation for the review that there be no reclassification of stewardship land to national parks and we agree that economic, cultural, and social value of land needs to be considered in such assessments.

Some parties propose excluding stewardship land from "no new mines on conservation land" as an acceptable compromise. While preferable to a blanket ban on all conservation land, we do not support this for the reasons outlined above.

Actions

- **Straterra recommends that policy work to implement banning mining on conservation land be abandoned, noting that mining on this land is already strictly regulated under numerous laws.**
- **Straterra recommends that the review of stewardship land be abandoned and that use of conservation land continues to be consented, or not, under the existing stringent regulatory regime, in a timely manner.**

A case-by-case assessment of minerals exploration and mining projects provides excellent environmental safeguards. There is no evidence that biodiversity is adversely affected long term because of mining on the very small footprint of the conservation estate where it occurs

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