


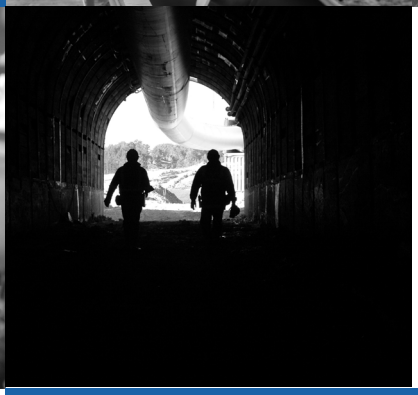

Mining and Quarrying

WORKFORCE DEVELOPMENT STRATEGY

MARCH 2021



mito

EXECUTIVE SUMMARY

To future proof the success of New Zealand's mining and quarrying workforce, this strategy provides a framework for the industry to plan its workforce development priorities over the next 5 - 10 years.

The strategy presents a set of goals that are aimed at creating a sustainable workforce that has the capabilities and skills required to meet current and future challenges.

The extractives sector includes mining, quarrying and tunneling, however, tunneling numbers have been excluded from this strategy due to the fluctuating nature of tunneling work. The strategy will however equally apply to tunneling operations, whose workers often move between tunneling and underground mining.

2020 marked the ten-year anniversary of the Pike River coal mine tragedy. The Government established a Royal Commission enquiry to identify what happened, why and what can be done to avoid future tragedies. The Royal Commission findings led to significant changes to improving health and safety in New Zealand, including the establishment of a dedicated Government Agency – WorkSafe, the introduction of the Health and Safety at Work Act 2015 (HSWA) and the establishment of the New Zealand Mining Board of Examiners.

Key factors influencing the mining and quarrying workforce include an ageing workforce, perception of the industry, ability to increase the diversity of the workforce, creating sustainable career pathways, improving qualification levels, retention of skills, improving health and safety and the social practices to support productivity and environmentally sound practices.

The key priorities to meet current and future skill requirements and the outcomes the industry seeks for its workforce development are:

1. Transforming the attractiveness of the industry
2. Creating sustainable career pathways supported by professional development
3. Retaining skills within the workforce to improve productivity
4. Continuing to grow a safety culture
5. Embracing social value to support environmentally sound practices.

This strategy was developed collaboratively with industry associations, professional bodies and employers. Special thanks to the Institute of Quarrying New Zealand (IOQNZ), the Australasian Institute of Mining and Metallurgy (AusIMM) and MinEx for their contribution to the development of this strategy. The strategy has been endorsed by the following organisations:

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MITO

Wayne Scott, Chief Executive
Aggregate & Quarry Association

Chris Baker, Chief Executive
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INTRODUCTION

Mining and quarrying is a strategically important industry to the New Zealand economy. The industry is a significant export earner with around half of the mining outputs exported. In 2019, the mining and quarrying industry contributed $3.1 billion to New Zealand's Gross Domestic Product (GDP), which is approximately 1% of the national GDP. In the domestic economy the sector supplies raw materials to support other industries such as construction, infrastructure, steelmaking and energy production.

The mining and quarrying industry is defined as all industries involved in mining and quarrying activities excluding oil and gas and petroleum exploration. The mining industry extracts buried material below the earth's surface to obtain minerals such as gold, silver, iron, ore, limestone and coal. The quarrying industry refers to extracting materials directly from the earth's surface. There are over 1,000 business units, employing close to 6,600 people[1] in the mining and quarrying industry.

The global COVID-19 pandemic is causing economic disruption worldwide. The New Zealand Government has responded with a broad range of initiatives to limit the economic impact and is monitoring the evolving global situation to support economic resilience, the well-being of New Zealanders and options for economic recovery. New Zealand's border remains largely closed with strict border controls and restrictions in place. This means labour market needs must largely be met within the current working age population base as immigration restrictions remain in place making international recruitment challenging for employers. This also presents an opportunity for employers to retain and grow existing talent that may have otherwise been attracted to global opportunities.

The Government has announced significant infrastructure investment of more than $5 billion to support employers to retain and create new jobs[2]. These projects are programmed to commence from 2021 onwards.

The Targeted Training and Apprenticeship Fund was introduced to support apprenticeships and targeted industries to train by offering free trades training from 1 July 2020 – 31 December 2022.

The sector faces significant labour market challenges:

- It is expected that the labour market will decline over the next two years
- Competition for scarce skills will increase, particularly in occupations such as machinery operators and drivers
- Recruitment from overseas will be limited as New Zealand's borders remain closed in the short term
- The current workforce is ageing and relatively immobile with almost 30% of employees 55 years and older
- The sector is heavily male dominated with only 14% of the workforce being female
- Young people are not being attracted to the sector. Only 15% of all employees are below 30 years of age.

Qualification levels are low and at risk of declining with approximately 46% of the workforce recorded as having no post-school qualifications. Certificates of Compliance (CoCs) which are a legal requirement to operate, appear to be concentrated amongst older employees.

The mining and quarrying industry is considered a high-income industry in New Zealand. The average earnings across the industry is $98,500 per annum. This is significantly higher compared to $59,100 per annum for the national economy.

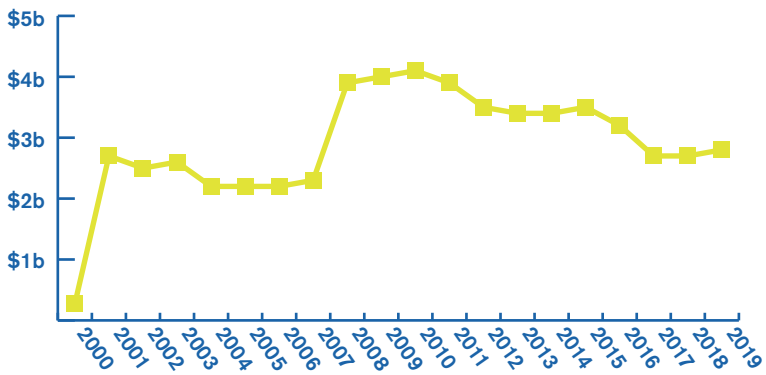
The GDP per full-time equivalent (FTE) employee is more than $537,000, compared to less than $130,000 across the New Zealand economy. This means that labour productivity in mining and quarrying is more than four times higher than the national average.

Mining and Quarrying GDP

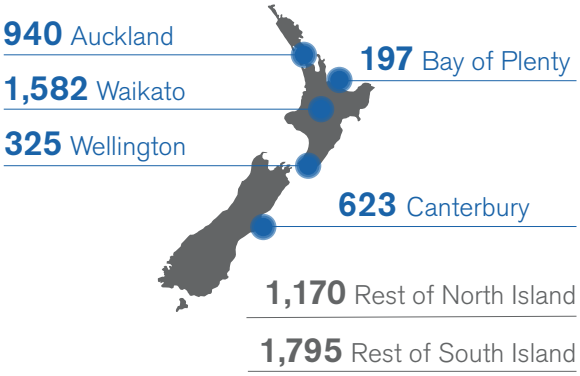
$3.1 billion

Accounting for
1.0%
of the total New Zealand GDP

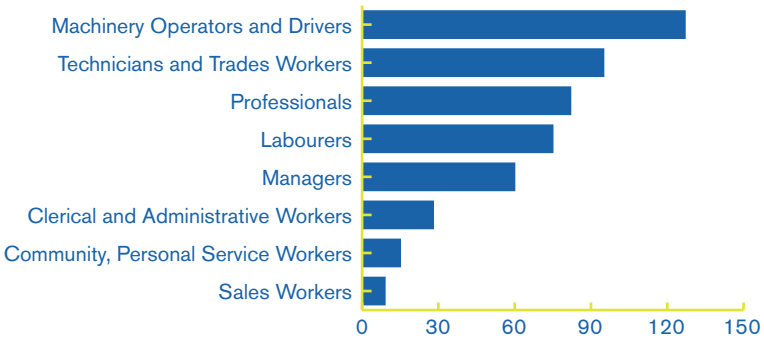
Mining and Quarrying GDP



Regional Employment



Employment Changes 2022-2025



Employment

6,631 filled jobs

Accounting for
0.3%
of the total workforce

Business Units

1,046 business units

Accounting for
0.2%
of the total New Zealand businesses

Gender

86% Male

14% Female

in the Mining and Quarrying industry

52.4% Male

47.6% Female

in the New Zealand workforce

FACTORS THAT WILL SHAPE THE INDUSTRY OVER THE NEXT 5-10 YEARS

The health and well-being of New Zealand's population, environmental considerations, Government projects, changing workforce demographics and strong demand for raw materials will require a mining and quarrying industry that is responsive, adaptive and innovative to ensure continued success when planning its workforce requirements.

1. Industry Image and Perception

New Zealand's population is becoming increasingly diverse. The mining and quarrying sector is heavily male dominated with only 14% of the workforce being female. Employees of European descent represent 83% of the workforce, with the remaining 17% comprising Māori, Pasifika and other ethnicities. The current workforce is ageing and relatively immobile, with close to 30% of employees over the age of 55, and a further 25% aged between 45 and 55 years.

Young people are not being attracted into the sector. Only 7% of employees were below the age of 25 and only 15% were younger than 30 years of age. This suggests that despite the high earning potential that exists within the sector, there appears to be a lack of knowledge of the opportunities within the sector by those not already involved. Skill development and early career entry pathways are an opportunity for the sector to engage with training providers, secondary schools and school leavers.

Social values and environmental sustainability are becoming increasingly important to people when making career choices and choosing tertiary education options.

Globally, the social and environmental impacts of the extractives industries are being increasingly questioned as communities and individuals become aware of the social and environmental costs associated with these industries. Community acceptance and support of mining activities is often confined to those communities that depend heavily on the industry for employment and economic development. In the quarrying industry, the more dispersed and localised nature of activity suggest that in principle community opposition is generally less of an issue than in mining.

The industry is generally perceived as dirty, involving long hours of manual labour, with high health and safety risks. This perception leads to challenges in attracting talent. A change in perception is necessary to better portray the industry as one which requires a variety of highly technical expertise and skill sets.

To address the perception of the industry and lift the industry image, it must respond to the changing social values of the community and work to become an industry of choice for prospective employees. This will make the industry an attractive career option for secondary and tertiary graduates, as well as career changers and new immigrants to New Zealand when the borders re-open.

2. Technology

The New Zealand mining industry has a small workforce containing a range of specialist skills in small numbers. The quarrying industry similarly contains small numbers of specialist employees, but also relies on larger numbers of lower-skilled employees that can fulfil a range of tasks. Labour productivity across the mining and quarrying sector is more than four times the national average.

These factors suggest that the major gains from mechanisation and automation have largely been realised, and that limited scope therefore exists for significant productivity increases to be achieved through the refinement or increased deployment of existing technologies. In the quarrying industry, which relies on a larger workforce containing a higher percentage of lower-skilled employees, it is uncertain whether opportunities exist for further large-scale mechanisation and/or automation.

Digital effectiveness ranks number three of the top ten business risks facing mining and quarrying[3]. While the adoption of technology has become business as usual within the mining and quarrying industry, there are questions regarding how well people are adjusting to it. It is more an opportunity than a risk now, and the one issue miners are challenged with is how they can better manage the influx of automation in the digital age. For the industry to improve its operational efficiency, as well as its health and safety performance, it needs to innovate and think how the technology used can be improved.

The development and application of technologies in mining and quarrying are likely to focus on issues such as improving operational efficiency or health and safety performance. Examples might include the deployment of autonomous safety technology in operating equipment, or the automation of exploration activities in remote areas.

To take advantage of the rapid increases in technology, the mining and quarrying industry will require a workforce capable of adapting to, and utilising these technologies to support employer productivity.

3. Workplace Safety

New Zealand underwent its most significant workplace health and safety reforms in 20 years when the Health and Safety at Work Act 2015 (the Act) was introduced, and WorkSafe New Zealand was formed. Under the Act, employers have a responsibility to do everything 'reasonably practicable' to keep their employees and the public safe.

Given the nature of the work involved, it is critical for the mining and quarrying industry to have an effective health and safety culture. This requires tight alignment to the regulations in place to reduce the number of high potential incidents[4].

All employees in the mining and quarrying industry occupying roles that are considered safety critical, are required to hold Certificates of Competence (CoCs) in fields relevant to their specific roles and activities. All CoC holders must also comply with industry requirements regarding Continuous Professional Development (CPD).

CoCs must be renewed every five years. Responsibility for the issuance and renewal of CoCs lies with WorkSafe and the New Zealand Mining Board of Examiners. MITO is involved in the development of training standards for CoCs and in certain instances, arranging training for CoC holders. It is essential that industry work more closely with the vocational education sector to ensure training standards meet industry needs.

There are a high percentage of CoC holders that are older employees. It is critical for industry operations that they have sufficient employees that hold the required certification. This provides an opportunity for industry to look to grow its talent base by creating career pathways for individuals to move into roles that allow them to achieve the skill sets required to hold these important roles and gain the necessary experience from this group of experienced certified employees.

Qualifications are an important resource for employers to develop technical, problem-solving, digital, interpersonal, communication, management and leadership skills in their people. Developing employees with strong and competent leadership skills supports a health and safety culture and encourages the development of industry role models.

4. Reform of Vocational Education

The purpose of the Reform of Vocational Education (RoVE) is to create a cohesive vocational education system with employers, learners, regions and communities at its centre. To do this, in the future:

- Workforce Development Councils will provide skills and workforce leadership for the industries they represent, provide investment advice to the Government, develop qualifications, set standards and moderate assessments
- Vocational education will be available throughout all regions of New Zealand via a single New Zealand Institute of Skills & Technology - Te Pūkenga, wānanga and private training establishments
- One unified funding system will encourage education and training that meets the needs of learners, employers and communities
- All organisations involved in vocational education will have clear roles and will uphold and enhance Māori-Crown partnerships.

The mining and quarrying industry will be part of the Manufacturing, Engineering and Logistics Workforce Development Council – Hanga-Aro-Rau. The transition of responsibilities to the new entities will be completed by 31 December 2022.

5. Political and Government

Governmental regulation and policy changes can make a big difference to how the mining and quarrying industry operates, how it is perceived by the public, and the barriers to potential industry entrants. There is generally broad political support for the mining and quarrying industry, within Government policy settings including a transition away from the use of fossil fuels.

As the quarrying industry is widely distributed, with over 1,100 quarries spread across New Zealand, local government structures play a larger role in regulation than it does for the mining industry.

Coal mining is likely to continue in New Zealand for the foreseeable future. A high percentage of New Zealand's production of coking coal is exported, primarily to markets such as China, India and Australia for use in steel manufacturing and other energy intensive industries. The long-term future for mining of lower-grade coal is less certain.

While the overall national regulatory framework is seen to be relatively well-established and stable, the legal and regulatory framework will change in the coming years. The Crown Minerals Act of 1991 exists to benefit New Zealand by promoting the prospecting, exploration and mining of Crown-owned minerals.

There are a number of Government agencies and councils that are responsible for regulating mineral activities in New Zealand. These include the New Zealand Petroleum and Minerals (NZP&M), WorkSafe, Department of Conservation (DoC), regional and district councils and the Environmental Protection Authority (EPA).

The Resource Management Act 1991 (RMA) is a significant piece of legislation which covers the management of New Zealand's environment. It covers how our natural and physical resources can be managed sustainably. A review of the RMA was submitted to the Government for consideration in 2020.

The resource and consent processes vary between the different councils throughout New Zealand which results in high levels of variability in time and costs associated with establishing mines and quarries.

With any legislative changes, the mining and quarrying industry will need to look at ways they can raise the industry profile and improve industry perception.

6. Social Value and Sustainability

The mining and quarrying industry is increasingly taking into consideration its activities in a more holistic way, taking account of the wider economic, social and environmental effects of its actions.

"Social Value" serves as an umbrella term for these broader effects, and organisations which make a conscious effort to ensure that these effects are positive can be seen as adding social value by contributing to the long-term wellbeing and resilience of individuals, communities and society in general.

Māori have significant interests in the mining and quarrying industry. Effective engagement with iwi and hapu will be increasingly important in ensuring community acceptance of mining and quarrying operations.

An exception to the broad community support is coal mining. New Zealand is a part of the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. Many successive governments have committed to reduce the levels of greenhouse gas emissions as part of the country's ratification of the Paris Agreement. The focus made on these advancements could translate to an increasingly negative view of the local coal mining industry. The industry is safe for the foreseeable future with coking coal continuing to be exported for manufacturing use, but it is likely to face an increase in public scrutiny of its health and safety practices, its operational practices and its environmental stewardship.

The environmental issues associated with the extractives industries can be problematic and will present ongoing challenges if not addressed or prioritised. There will be increasing pressure on companies to adapt their cost structures and develop the capacity to mitigate or remediate any adverse environmental effects arising from their operations.

Alongside traditional measuring factors such as national GDP and the return on individual financial income, are newer indicators which have emerged as a result of globalization. As New Zealand continues engagement in discussion on the wider environmental impacts affecting our world, it will be important for the mining and quarrying industry to keep close watch on decisions that will affect the industry. With an ever-tightening regulatory environment, industry should consider how they can proactively address these issues on their own terms.

For the mining and quarrying industry to be the industry of choice for employees, it will need to have sustainable practices that reflect the environmental and social values of the community. This means the industry will need to innovate as it will undergo a cultural shift over the next ten years.

7. Skills and Career Pathways

Demand in the labour market is expected to fluctuate over the coming years. Occupations most affected by a forecast decline in the labour market will be those closely associated with the core operational activities in the sector, reflecting in the short-term a decline in the demand for mining and quarrying outputs.

From 2022 onwards, labour demand is expected to reverse with increases of 0.8 % per annum. By 2025 total employment is forecast to be slightly above pre-COVID-19 levels. Demand for skilled and semi-skilled roles will be higher than current levels. Roles will be re-established as demand increases. Roles where this demand is expected to increase are machinery operators and drivers, technicians, trades and professional roles. An increase in management roles is also forecast, proportional to the overall increase in demand.

There will be competition for skills and roles where those occupations are in short supply globally. Machinery operators and drivers create a skills risk for the industry, where these skills are lost to other industries that are competing for the same skill sets.

To create skills and career pathways the industry needs to continue to work with the vocational education sector to develop a range of training products and qualifications that support diversity objectives along with health and safety and operational requirements for those who are new to the industry through to supervisory and management roles. Work-based training is one solution to retaining employees and bridging skill gaps. The development of micro-credentials and work-related qualifications will also assist in attracting and retaining workers.

Secondary school programmes are designed for school students to explore and experience the industry, creating an opportunity for employers to connect with youth in their local communities. Qualifications are an important resource for the industry to develop their skills. With training fees covered by the Targeted Training and Apprenticeship Fund to 31 December 2022, industry has an opportunity to support their workforce to upskill and develop their talent base.

The industry needs to develop a workforce that matches skills to demand, improves diversity, prepares for an outflow of skills through changes in employment demand and experienced employees reaching retirement age. There will be increasing competition from other industries for skilled employees. Supporting a workforce to be qualified on-the-job is a key strategy to sustaining a skilled workforce and to supporting employer resilience in an uncertain economic climate.

References

1 Source: Mining and Quarrying Environmental Scan (2020) Infometrics

2 Source: Labour Party New Zealand; available at https://www.labour.org.nz/news-d2020-infrastructure-investment

3 Source: Ernst and Young (2020) Top 10 business risks and opportunities – 2020; available at https://www.ey.com/en_za/mining-metals/10-business-risks-facing-mining-and-metals

4 Source: WorkSafe Extractives Industry Quarterly Report (2020); available at https://worksafe.govt.nz/dmsdocument/32396-extractives- quarterly-report-q4-april-to-june-2020/latest

PRIORITIES FOR THE MINING AND QUARRYING INDUSTRY

GOAL 1
Attracting Talent

Strategy (Attract)

- Promote and raise the industry profile
- Create a more diverse workforce (age, gender and ethnicity)
- Increase industry participation in secondary school programmes
- Champion career pathways.

GOAL 2
Training Industry

Strategy (Train)

- Embed qualifications into business practices
- Increase participation in industry training
- Lift the literacy, numeracy and digital literacy levels of the workforce
- Lift qualification levels in the workforce.

GOAL 3
Retaining People

Strategy (Retain)

- Develop management practices and skills
- Increase recognition of employees through regular employee engagement
- Ensure company and industry vision, culture and values are clearly communicated to ensure all employees are aligned and engaged
- Incorporate continuous professional development to support career progression and to ensure that all people have the right skills for their roles.

GOAL 4
Continuing to Grow a Safety Culture

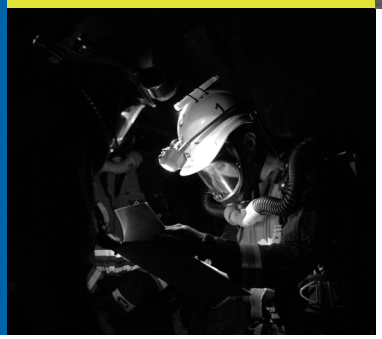
Strategy (Keep Safe)

- Support the development of regulations that protect the workforce
- Promote and implement continuous professional development
- Recognise industry role models
- Benchmark and promote industry best practice.

GOAL 5
Embracing Social Value

Strategy (Futureproof)

- Embrace social value to ensure environmental sustainability and future industry success
- Promote innovation to enable the industry to become more competitive and resilient
- Benchmark and implement good practicable skill development solutions
- Increase transparency to develop recognition internally and externally.



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