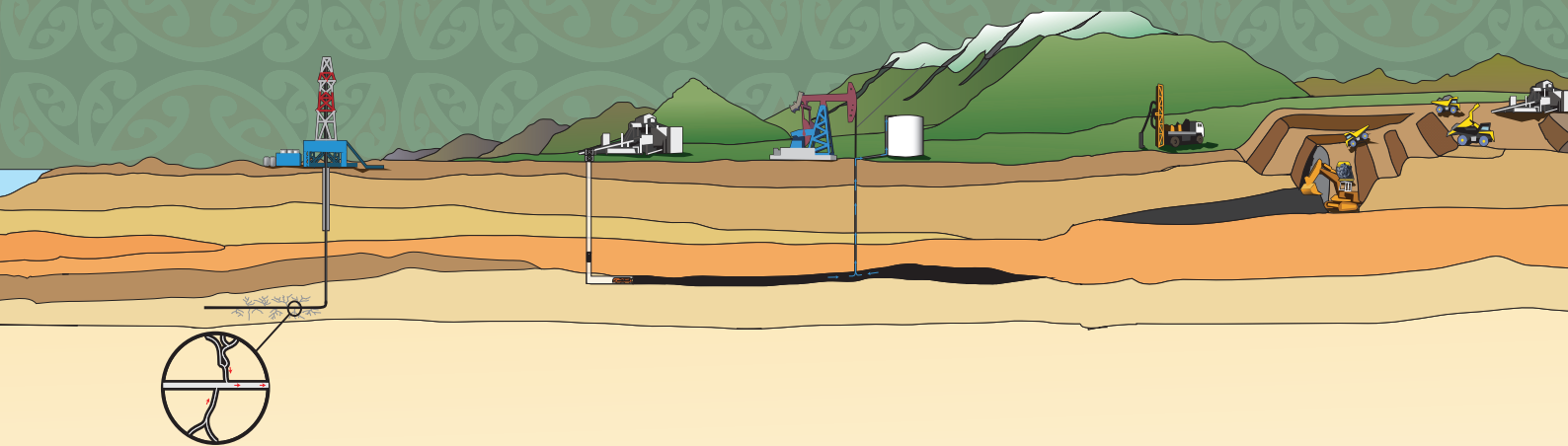


MĀORI and mining



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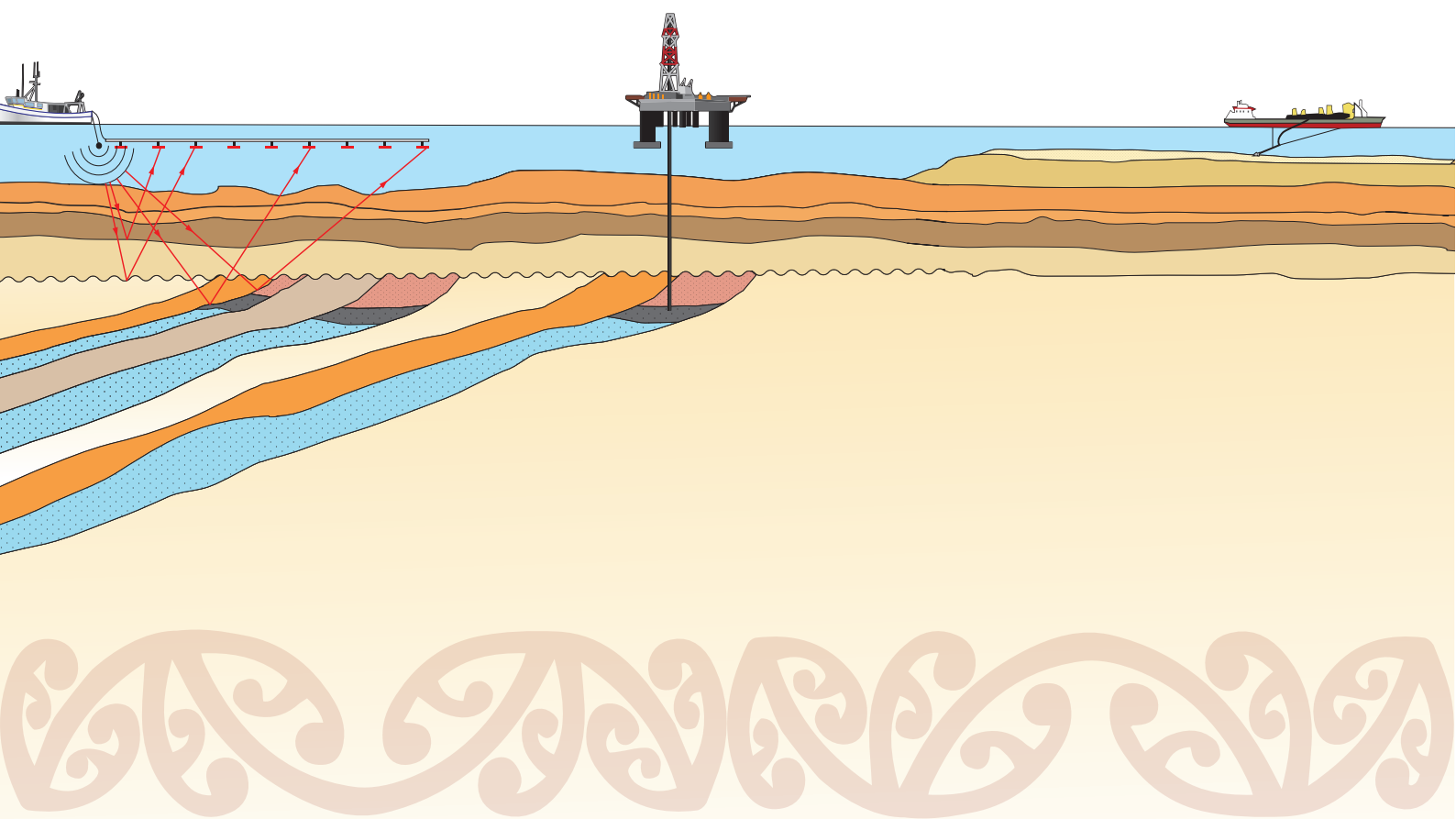
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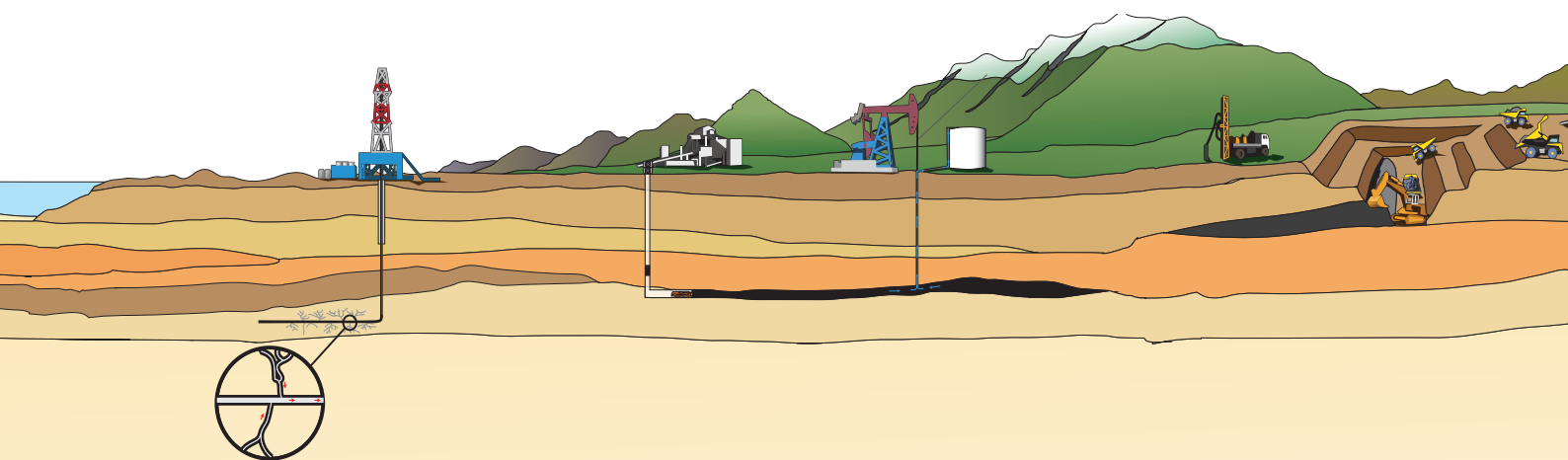
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Introduction

He Tirohanga Whānui – Māori and Mining Overview

Toi tū te marae a Tane

Toi tū te marae a Tangaroa

Toi tū te Iwi

If the world of Tane survives

If the marae of Tangaroa survives

The people live on¹

But the ancient Māori was also a developer of the earth and an exploiter of its resources which necessitated modifications to the natural world²

The involvement of Māori in mining is not new.

Since Polynesian ancestors first came to Aotearoa New Zealand, Māori have understood the value of extracting non-renewable resources. Māori quarried rock for tools, weapons, trade, demarcation, gardening and ornamentation. Minerals such as ironsand were used in the preparation of kokowai, the red-brown pigment that was mixed with oil and used to paint faces, buildings and waka.

Māori were also aware of the existence of offshore resources.

Taranaki iwi believed that a submerged reef off the coast had once been an island of bituminous matter which had burnt to below sea-level, while on the northern East Coast the inflammable gas vent was named in reference to Te Ahi-o-te-Atua ('the fire of the gods'³).

Māori willingly took part in the new extractive technology of the nineteenth century – gold-mining – with one area in the Skipper's Canyon near Queenstown named 'Māori Point' after Māori miners Raniera Ellison, Henare Patukopa and Hakaria Haeroa who discovered gold there in 1862⁴.

Māori have long been aware of the link between the economic value of mining and the legislation under which it is conducted.

In August 1869, chiefs from Ngāti Maru, Ngāti Whanaunga and Ngāti Tamaterā petitioned the local government which had unilaterally reduced not only Māori revenues from the Hauraki goldfields but potentially extinguished native title⁵.

In the late 1930s there was vociferous opposition by Sir Apirana Ngata to the nationalisation of oil, largely on the basis that it was a direct loss of a property right, and therefore Māori should have received compensation⁶.

Māori have benefitted from their ownership of minerals. For example, the Taharoa C Block shareholders have earned over \$50 million in royalties from their ironsand leases since 1972⁷, and Ngāi Tahu are starting to see the economic benefits from the ownership of all naturally occurring pounamu in their rohe.

This history should be borne in mind when considering the new challenges that Māori face to respond to government and companies' consultation requests to explore for and extract mineral resources in traditional tribal rohe.

The last few years have seen increased demands on Māori collectively and individually to develop their responses. These demands have been driven in part by the current Government's economic agenda⁸ which in turn is responding to a global demand for resources of former 'third world' countries like China and India.

Combined with the development of technologies that allow new forms of resource extraction⁹, it is unsurprising that there have been an increased number of applications for new gold mines, ironsand mining, and exploration for oil and gas both on land and offshore. Almost 90 new oil exploration and production wells are planned in New Zealand over the next few years¹⁰.

The issues facing Māori are the issues facing all Indigenous peoples globally.

However, while the phenomenon is global, the response is local and specific as each new application process, permitting regime or legislative change has arisen.

For example:

- a proposal to extend mining licenses into 'Section 4' Conservation lands drew iwi leaders into discussions with the Government at short notice, and with criticism from some that the Government was doing "backroom deals"¹¹;

- in 2010-2011, Te Whānau ā Apanui and others engaged in protest against Brazilian energy exploration company, Petrobras, with a 2012 challenge in the High Court on both Treaty and environmental grounds¹². Petrobras has since surrendered its East Coast permits for economic reasons¹³;
- in May 2012, iwi joined other community members in protest against Northland being opened up to gold and mineral prospecting after aerial geomagnetic surveying of the region was carried out in 2011 without landowner consent and on land under Treaty claim¹⁴;
- in 2013, the Kaikōura Rūnanga has objected to platinum exploration of Te Tapuae o Uenuku mountain which has 'toponui' status and is of "immense cultural significance"¹⁵.

Not all Māori have opposed mining or the permitting of mining exploration.

- Labour Māori politician, Shane Jones, and Te Rarawa leader, Haami Piripi, have both stated publicly that mining might offer much-needed employment in Northland¹⁶
- in July 2012, Te Ao Mārama and Te Rūnanga o Ngāi Tahu gave consent to Greymouth Petroleum Ltd to carry out petroleum exploration and drill a well site on private land on Stewart Island¹⁷;
- in 2011 Waikato-Tainui's executive chairperson, Tukuroirangi Morgan, approached a mining company in Australia and suggested his iwi start a training and job programme for Tainui people who wished to move to Perth¹⁸;
- in August 2012, Ngāti Pukawa did not oppose the underground Favona mine¹⁹;
- In November 2012, the Māori Economic Development Panel recommended that the Iwi Chairs' Forum have a "mandate and role to work with Government to unlock the potential of New Zealand's nationally significant... resources"²⁰.

That Māori hold differing views should come as no surprise as there are deep divisions amongst New Zealanders generally over developing and growing the country's extractive industries.

There are entrenched views for and against such development in general and in the context of specific proposals. There are also individuals and groups who feel that they don't know enough to take a stand or who have mixed feelings.

Māori have responded to the issue of mining in three main ways: as an economic opportunity, provided that there are environmental safeguards; as a discussion around Treaty rights; or as an environmental issue requiring strong opposition in order to carry out traditional and enduring relationships with Papatūānuku, Tangaroa and future generations.

Given the long history of and involvement in extractive industries – almost 800 Māori were directly employed in the industry at the last Census²¹ with many more employed in Australia²² – and the diversity of responses, there is no single view of how Māori should respond to the prospect of mining in either their home location or in Aotearoa generally.

What is apparent is that there is no practical and easily accessible resource that allows whānau, hapū or iwi to draw together and assess the often bewildering, and sometimes contradictory information to inform decision-making.

Aims and Organisation

The 2009 Manila Declaration of the International Conference on Extractive Industries and Indigenous Peoples recommended that Indigenous communities "coordinate research on mining companies, processes and investment sources to empower communities, build strategic plans and ensure recognition and respect for our (Indigenous) rights"²³.

This publication goes some way to responding to that recommendation, as well as assisting readers to "understand the forces at work, the factors, historical and economic, that have produced the present situation"²⁴.

The following chapters are a brief survey of the inter-related and complex issues that make up the mining debate in Aotearoa. The authors are conscious that while not a new debate, it has become more pressing for Māori as individuals and collectives to develop a clearer understanding of how to best think about and act when they are confronted with mining activity in their region.

The authors' focus is on mineral extraction, as defined by the 1991 Crown Mineral's Act, and so does not cover the significant development of Māori geothermal development²⁵.

In **Chapter One** Andrew Gorman and Luke Easterbrook provide visual examples of the most common mining processes in Aotearoa noting the issues associated with each type of mining, expanded on more fully in Chapter Five.

Also included is a map locating New Zealand's extensive Exclusive Economic Zone. The Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 was recently passed to assess and regulate environmental effects beyond the 12 nautical mile zone. With one of the largest exclusive economic zones in the world (16 times New Zealand's land area), New Zealand has 'sovereign rights' for the purposes of "exploring and exploiting, conserving and managing natural resources of the waters, seabed and subsoil²⁶". With most of this area still uncharted, it is increasingly of both scientific and commercial interest. How Māori values influence or are reflected in this new frontier has not yet been determined.

The issue of Māori values is picked up in **Chapter Two** by Michelle Thompson-Fawcett and Hauauru Rae who identify key principles that Māori consider when using and managing natural resources.

Concepts such as whakapapa, kaitiakitanga, manawhenua, rangatiratanga, taonga, mauri, wairuatanga, whanaungatanga, manaakitanga, kotahitanga, ahi kā, and ki uta ki tai are integral to the way that Māori across Aotearoa think about the natural world.

A critical focus is recognition of the Māori worldview that intricately links all spiritual, physical and philosophical aspects of the environment and that prescribes an interwoven relationship between the environment and people.

An analysis of a selection of iwi planning documents, iwi submissions to the Crown, Waitangi Tribunal Reports and Cultural Impact Assessments suggests that exploitation is permissible only to that extent that:

- it is sustainable;
- the adverse effects are not detrimental to the stability of the environment;

- the adverse effects are avoided or are mitigated;
- there are benefits for hapū/iwi.

In **Chapter Three** Jacinta Ruru and Abby Suszko provide a broad overview of key legislation that enables mining to take place in Aotearoa.

The chapter considers these rules and in particular the rights and responsibilities Māori have to own and govern minerals, and to participate in Crown processes for permitting others to explore and exploit minerals.

While Māori have taken a case to the Waitangi Tribunal in relation to petroleum and been successful in arguing their case under Treaty principles, the Government has ignored the Tribunal's findings. To date, the only successful case in arguing ownership of a mineral under the Treaty of Waitangi is Ngāi Tahu's ownership of pounamu. Māori have not yet brought a case for ownership of minerals under the common law doctrine of native title.

In **Chapter Four** Diane Ruwhiu and Rachel Turner consider the economics of mining as well as examining some case studies of successful international Indigenous approaches. They remind us that mining is an economic activity, and therefore companies are in business to earn profits.

The issue for Māori is how to judge amongst competing values, including the non-financial and often non-quantifiable ones outlined in Chapter Two. Because Māori hold such values, this affects how assets are managed with more emphasis on the conserving and protecting of assets for future generations which requires a long-term view about returns on capital investments.

From an economic perspective, Māori are not large investors in the mining sector with only \$5 million of value being attributable to the Māori economy²⁷. However, there are some cases of Māori Trusts involved in joint-venture partnerships with mining companies, and with more iwi achieving Treaty Settlements, there are likely to be further opportunities.

Given that this is the likely scenario, the chapter examines the potential access points for an economic return to Māori communities. Lyn Carter's brief case-study references provide comparative models

that Māori might consider. For example, she cites an Australian not-for-profit company that aims to increase the skill-base of aboriginals in mining, perhaps akin to Tukuroirangi Morgan's attempts to set up a training programme for Tainui people.

In **Chapter Five** Janet Stephenson looks at some of the environmental impacts of mining, noting that 'environment' includes people, communities, and cultural issues, a perspective that is consistent with a Māori worldview.

She notes that each type of mining extraction has its own set of environmental issues and that generalisations cannot be made easily. While the focus of the chapter is on the types of practices that can create poor environmental outcomes, there are cases in New Zealand of good mining practices.

The chapter also briefly covers hydraulic fracturing or 'fracking', which has been the subject of a recent report from the Parliamentary Commissioner for the Environment. While the Commissioner did not recommend banning fracking, she did find that:

- New Zealand has a complex regulatory and oversight system that may not be fit for purpose and that makes transparent decision-making difficult; and
- there is as yet no 'social licence' for fracking with local communities sceptical about its risks and benefits.

The Commissioner's comments highlight two issues for Māori. The first is around the myriad legal requirements governing mining activity as outlined in Chapter Three and the potential for ultimate responsibility to be passed off as someone else's, described by one international commentator as "political failure to manage the risk nexus"²⁸.

The second relates to the idea of the 'social licence to operate', which, despite the current government's policy direction, remains in question.

Stephenson's chapter gives example of Māori developed tools, such as cultural impact assessments that attempt to address these two issues. It may be that a tool more specific to mineral resources, such as the Canadian IBA tool, would be a useful complement to these home-grown models.

Definitions

(Crown Minerals Act 1991)

Mining

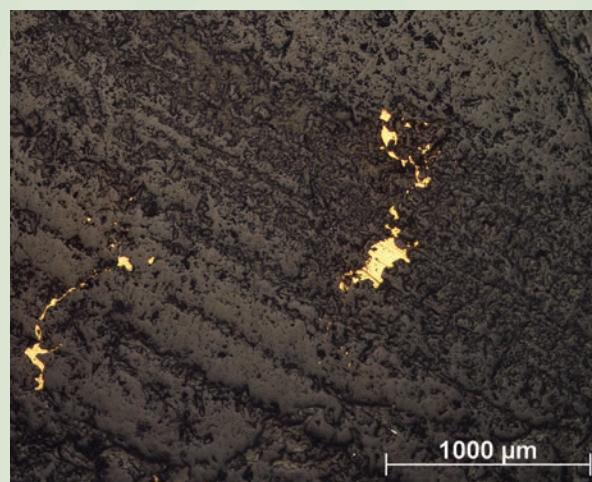
"to take, win, or extract, by whatever means, a mineral existing in its natural state in land, or a chemical substance from that mineral, for the purpose of obtaining the mineral or chemical substance; but does not include prospecting or exploration."

Mineral

A mineral is:

"a naturally occurring inorganic substance beneath or at the surface of the earth, whether or not under water; and includes all metallic minerals, non-metallic minerals, fuel minerals, precious stones, industrial rocks and building stones, and a prescribed substance within the meaning of the Atomic Energy Act 1945."

(Uranium and plutonium are 'prescribed' substances).



▲ Reefton gold at the micro-scale.

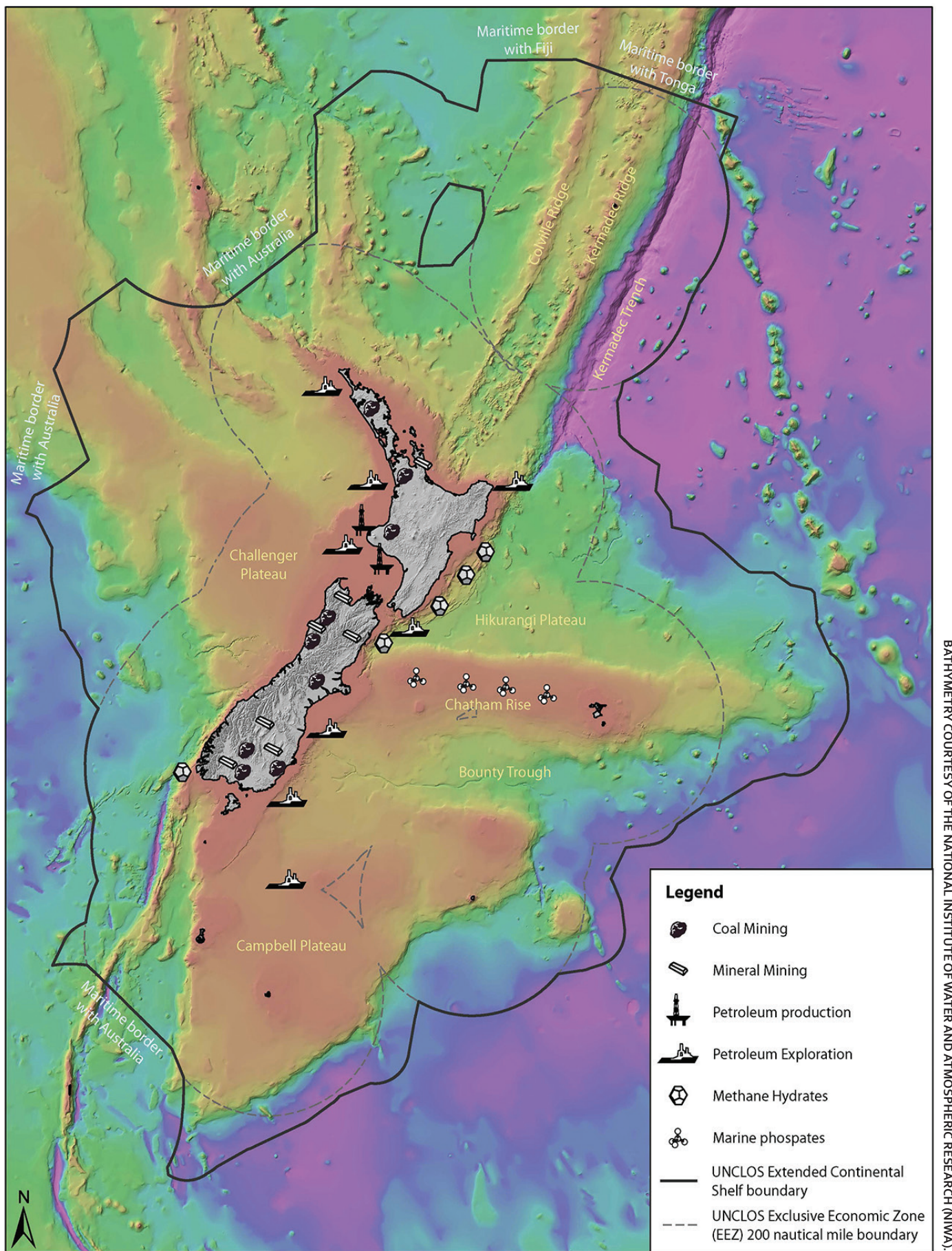
PHOTO COURTESY OF ANT RAYNER

The Commissioner's report considers the role of fracking in the wider global climate change debate. This debate is the "big environmental issue that sits behind"²⁹ any examination of mining and mining practices. Groups, such as the Iwi Leaders forum, have stated that the burden of the cost of mechanisms such as the Emissions Trading Scheme (ETS) should not fall disproportionately on Māori. They have argued that discussions about global climate change must consider "sustainability and kaitiakitanga" and that traditional energy sources such as coal and gas should have higher costs associated with them in order to encourage consumers to move to renewable sources³⁰. As Stephenson notes, global climate change cannot be considered under the Resource Management Act 1991. While there are implicit principles in the iwi and hapū planning documents cited in Chapter Two, how Māori think about global climate change and thus put in place policy or procedure to account for it, is not so readily seen.

Māori collectives are being asked to develop positions on mining using existing processes and approaches. Meanwhile, individual whānau are expressing their viewpoints, sometimes in contradiction to their own iwi. Whether it is possible to gain and keep Māori agreement for mining – a social licence – in the same way that mining companies gain legal licences to mine, remains to be seen.

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New Zealand's Exclusive Economic Zone

Chapter One

Te Hātepe – The Process of Mining

"The total quantity of gold brought up to Collingwood, procured in three weeks by five natives, has been 520z, which they obtained chiefly by fossicking with their knives"¹.

Natural resource distribution and extraction in New Zealand is greatly affected by our unique geological environment. Much of the Earth's crust beneath us was once located along the edge of the ancient supercontinent, Gondwana. Over the last 100 million years or so, that crust has drifted away from its Gondwanan neighbours, Australia and Antarctica, and thinned to such an extent that most of it has sunk beneath the sea. However, this block of crust, which scientists refer to as Zealandia, is now located at a relatively young junction between two of the world's tectonic plates that are sliding and squeezing together.

These squeezing forces are responsible for the earthquakes and volcanoes that we experience, but they are also responsible for thickening up the crust to form the hills and mountains – and for bringing resources that were once deep in the crust up to the surface where they can be more easily extracted. The Map of New Zealand's Exclusive Economic Zone (opposite) shows the present day configuration of Zealandia and highlights specific locations where some of our mineral wealth is found.

Natural resources are extracted from the Earth in many ways.

Sometimes this is as easy as digging up coal or roading material from open cast pits or cutting rock out of a quarry. In other instances, high levels of technology are required that rival the techniques needed to put satellites in orbit or place a scientific rover on Mars.

A few examples are presented here to highlight some of the operations currently underway in New Zealand and some others that might be applied in the future.

Seismic Prospecting (Diagram 1)

Conventional forms of oil and gas that fuel our cars, power our planes, trains and boats, and provide a substantial fuel source for electricity generation, are found within the pore spaces of sedimentary rocks deep beneath the Earth's surface.

These petroleum reserves started out as living material that died millions of years ago, sank to the bottom of a water body, were buried by sediments, and have been converted to oil and gas by a cooking process that requires high pressures (burial), high temperatures and a lot of time.

To find the rock formations that host such reserves, geophysicists collect seismic surveys using sound sources like an airgun in the ocean or a vibrating truck on land and hundreds of small sound receivers.

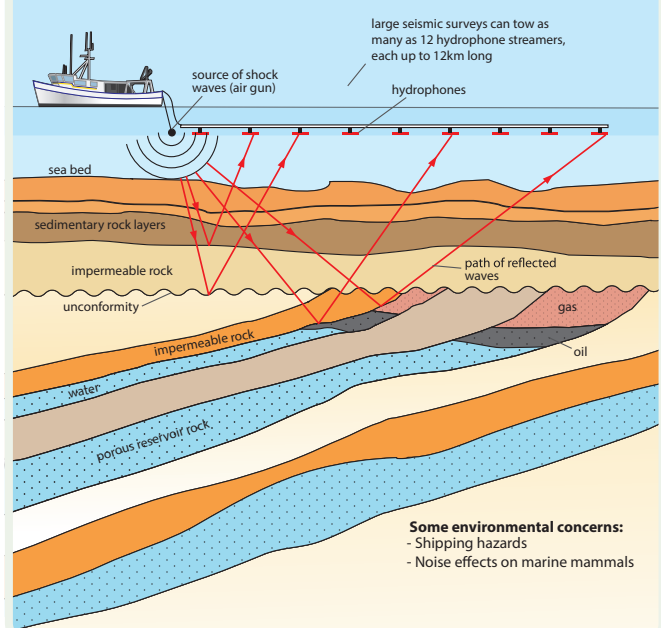
They produce images of the Earth beneath using a technique that is similar to how ultrasound is used in medical imaging. At sea, seismic prospecting is undertaken by large specialised vessels towing airguns, and receiver arrays that may extend over 8 km in length. Individual surveys can cover hundreds of square kilometres and take several weeks to complete.

Diagram 1: Seismic Prospecting

Why? To map underground geological formations to identify likely locations of resources prior to drilling.

Who is involved?

- Petroleum companies
- Government agencies involved with promoting petroleum exploration



Offshore Drilling for Oil and Gas (Diagram 2)

Once the decision is made to drill into the subsurface to look for oil or gas, a drill rig is brought to the site. This has been going on since the late 19th century on land and the process has more recently extended to shallow parts of the ocean using drill ships or platforms.

Even more recently, exploration and production have moved to deep water, deeper than 3000 m in some cases.

The types of rigs or drill ships involved and the style of drilling used can vary widely. In many cases, rotary bit drills are driven from the rig floor by rotating the drill stem (pipe). Cuttings are lifted back up out of the hole with circulating drilling mud.

Modern drilling systems can operate several wells from the same platform, with each well being steered

outward as it is drilled to reach the desired location in the subsurface. Such sophisticated systems involve remote sensing instruments that can guide the drilling and rock bits that can be powered by the circulating fluid in the well bore.

Seafloor Mining of Phosphates (Diagram 3)

Offshore resources are not limited to oil and gas. Rich phosphate deposits, ideal for use as agricultural fertilisers, are found on the seafloor itself. These resources can be recovered by dredging the seafloor, and processing the rock in a ship-based plant.

Although most fertiliser is currently produced from land-based sources, the rich reserves of phosphates found in places like New Zealand's extended continental shelves, are growing in attractiveness as an alternative to importing them from overseas.

Diagram 2: Offshore Drilling

Why? To reach oil and gas reserves beneath the sea as easier to find reserves on land are used up.

Who is involved?

- Consortia of domestic and international petroleum companies
- New Zealand Petroleum and Minerals (Ministry of Economic Development)

Some environmental concerns

- Oil spills
- Blowouts from over-pressurised gas reservoirs

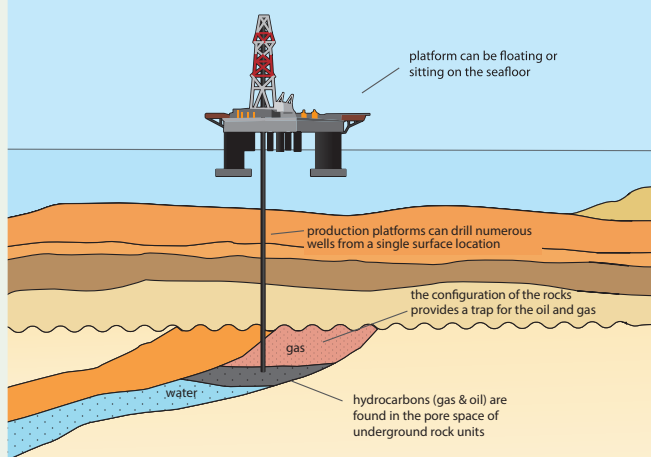


Diagram 3: Seafloor Mining

Why? Resources such as sand and phosphates can be mined from the seafloor. For example, iron sands are used for steel making and phosphates are used to make fertiliser.

Who is involved?

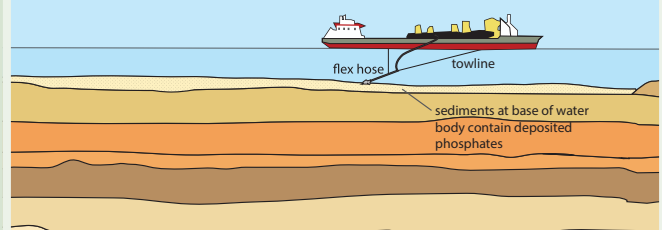
Fertiliser companies (particularly as seafloor mining becomes less expensive than importing from overseas)

Where is this happening?

Iron sands are mined off the West Coast of the North Island

Where could this happen?

The Catham Rise, east of the South Island, has extensive untapped reserves of phosphates



Some environmental concerns:

- Disturbance to fisheries and marine life
- Changes to the wave patterns and shoreline from altered currents

Fracking (Diagram 4)

Oil and gas are generally recovered from porous rock reservoirs at great depths.

The actual space for fluid in such rocks is typically on the order of 10 per cent, and is often considerably less than that. To be successful, a well must be able to extract a sufficient amount of the resource from the rock formations in the vicinity of the well bore.

When rocks are permeable (that is, their pores are connected) then oil or gas can be pushed out of the rock by the high pressures found naturally at depth.

If a reservoir rock has poor permeability, then techniques can be applied to improve the flow into the well.

One method for improving permeability is called hydrofracturing, or fracking, where the reservoir rock in the vicinity of the well bore is cracked or broken by raising the fluid pressure in the well.

Although this process has been used for several decades, it has received more attention recently because of the move to harder-to-get reserves in less permeable rock formations.

Some operators have conducted poor drilling operations that have resulted in oil, gas and drilling fluids contaminating shallow aquifers.

Coal Seam Methane Extraction (Diagram 5)

For many years, underground coal mining has had to contend with natural gas (mostly methane) that is released from coal formations as the material is mined. Engineering techniques have now advanced to a level that this gas can be harvested prior to or instead of mining a coal seam.

Wells are drilled down into a coal seam, which is often less than a few hundred metres beneath the surface, and groundwater is pumped out of the rock. This

Diagram 4: Fracking

Why? To enable and enhance oil and gas production from rock formations that do not have sufficient porosity.

Who is involved?

- Domestic and international companies
- Service companies who specialise in providing this service
- Regulatory agencies concerned with safe extraction of resources

Where is this happening?

- Fracking is used in almost all modern well operations
- Oil shales in particular require enhanced technology (including horizontal drilling and fracking)

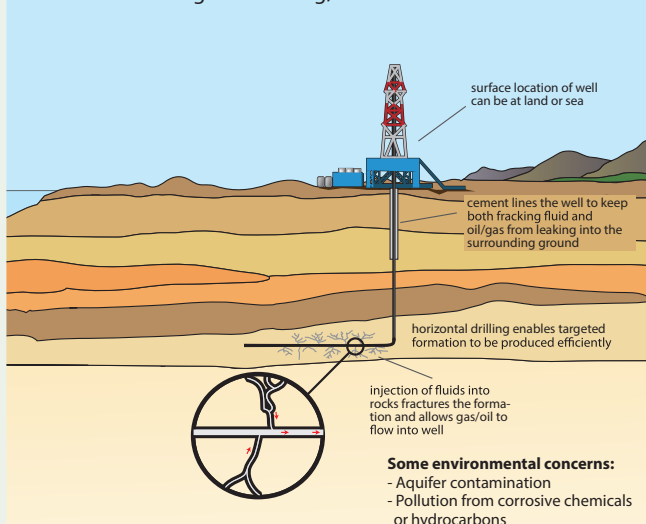


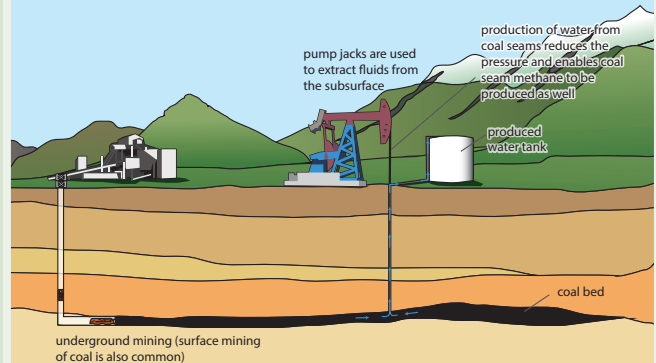
Diagram 5: Underground Mining and Coal Seam Methane

Why? Most underground mining in New Zealand is for coal, although other minerals can also be mined underground, e.g. gold

Why produce methane from coal seams? It is a cleaner fuel than coal and even low grade coal seams can contain significant methane resources.

Who is involved?

Energy industry, particularly electricity generation, large factories, domestic heating



Where is this happening?

- Small coal seam methane tests have occurred in Southland and the Waikato
- Coal mining has a long history across much of New Zealand

Some environmental concerns:

- Greenhouse gas emissions from burning hydrocarbons
- Leachate and methane release from tailings

process results in a lowering of the pressure within the coal formations, and the simultaneous production of methane along with the water.

Once the methane is produced, conventional mining techniques can be used to extract the coal if it is of sufficient grade. Alternatively, the degassed water can be re-injected into the coal formation. In comparison to coal, this technique has the advantage of producing methane which is a much cleaner burning fuel.

Underground Mining (Diagram 5)

Mining also occurs underground where higher-grade targets are extracted in more concentrated forms (for example rich coal seams, deeply buried potash deposits or gold-rich vein deposits).

In such cases, the amount of waste material that needs to be removed is less than for open cast mines, but the technical challenges and hazards are much higher. The deepest mines in the world extend as much as 4 km below the surface, although most are much shallower.

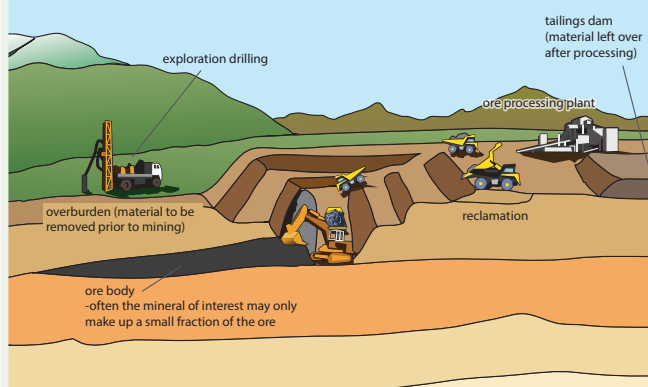
Diagram 6: Open Cast Mining

Why? Extraction of materials for use by society.

What is mined? Ore bodies containing metals such as iron, nickel, copper, gold, silver, rare earths.

Who is involved?

Extractive industries, mineral companies focused on particular metals



Some environmental concerns:

- Modification of landscape and local ecosystems
- Pollution from ore processing
- Storage dams for contaminated water
- Long-term remediation

Open Cast Mining (Diagram 6)

Open cast mining, or pit extraction, has long been a straightforward way of accessing resources in the shallow subsurface. This generally involves removing the overburden (the material above the resource), extracting and processing the layers below, and then filling in the hole.

Such methods are particularly useful when the geological resources are near the surface. This is the case with many coal and mineral deposits. The main advantage of this mining method is that a lot of material can be processed, so even low-grade accumulations can be economically accessed.

Methods used for separating the desired resource from the host rock, such as extracting gold from an ore, can involve large amounts of waste product that in some cases can be toxic, so the impact of large open cast mines can be considerable.

Conclusion

Natural resource extraction within New Zealand is varied and very much dependent on the local geology. In fact, much of New Zealand's mineral wealth is likely to be located within the submerged part of the Zealandia crust, which is about nine times more extensive than the part that is above water. New Zealand's Exclusive Economic Zone reflects the extent of this wealth by being extended in places where the continental crust is found beyond the 200-mile limit. Our understanding of the geology and resource potential of this submerged crust is still very limited. Furthermore, exploration and production in this domain are restricted by economic, climatic, cultural, and technical concerns. However, as land-based resources are used up, the extractive industries are likely to be turning more to the oceans to meet growing demands.

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1. Māori and the Goldrushes. Retrieved 19 May, 2013 from www.theprow.org.nz/maori/maori-and-gold/#.Uife13-UBnU.





Chapter Two

Ngā Uara – Values

I te whanautanga o te tangata, i paiheretia te Mauri, te Mana o tona Iho ki te whenua, ki a Papatūānuku, kia mau tonu ai tona Rangatiratanga.

When a person is born the essence, the authority and his connections are made with the land (with Papatūānuku) so that his own authority will be permanent.¹

Iwi and hapū policies and perspectives relating to non-renewable resources can be found in iwi planning documents, iwi submissions to the Crown, Waitangi Tribunal Reports, and Cultural Impact Assessments.

These policies and perspectives are underpinned and informed by values and environmental principles that prescribe iwi and hapū aspirations for resource management.

Iwi documents, whether plans, assessments or submissions, collectively present an array of standpoints, reflecting different iwi objectives for their respective environments.

Despite the differences, these varying stances illustrate an overarching approach to non-renewable resource exploitation. It appears that a high proportion of iwi consider exploitation to be permissible only if:

- it is 'sustainable';
- the adverse effects are not detrimental to the stability of the environment;
- the adverse effects are avoided or are mitigated;
- there are benefits for hapū/iwi.

The documents identify some of the policy paths different iwi are developing in order to participate in various decision-making processes, and highlight the way in which iwi values and environmental principles underpin and inform them.

These principles and policies outline iwi aspirations for the management of oil, petroleum, minerals, within their respective takiwā.

In recent decades, greater recognition has been granted to iwi in resource management decision-making processes.

Iwi Environmental Principles

The following principles have been highlighted to varying degrees by iwi as underpinning their approach to non-renewable resources.

| | |
|-----------------------|--|
| Whakapapa | genealogy or lineage linking animate and inanimate |
| Kaitiakitanga | guardianship and stewardship by tangata whenua |
| Manawhenua | territorial right from generational occupation of land |
| Rangatiratanga | leadership, identity and self-determination |
| Taonga | treasured or valued thing (whether tangible or intangible) |
| Mauri | essence or life-force |
| Wairuatanga | embedded emotion or spirit |
| Whanaungatanga | kinship/membership and participation |
| Manaakitanga | hospitality, respect and security |
| Kotahitanga | cohesion and collaboration |
| Ahi kā | long-lasting burning fires of occupation, title to land |
| Ki uta ki tai | 'From the mountains to the sea,' holistic understanding of natural environment |

In response, many iwi have developed policies accounting for their environmental aspirations as one way to negotiate with local and central government, environmental agencies and resource users.

These policies are typically derived from traditional environmental principles. The principles represent a management framework that has been developed through centuries of occupation in New Zealand, and inherently express the holistic worldview by which many iwi approach resource management.

The principles are introduced below in terms of their significance for understanding iwi responses to extractive activities. The holistic view through which they operate prescribes an interwoven relationship between the environment and people (and to each other). It is this worldview that intricately links all spiritual, physical and mental aspects of the environment. These links are conceptualised as whakapapa.

Whakapapa

Whakapapa establishes people as an inseparable part of nature².

According to Ngāi Tahu Whānui, whakapapa is “the foundation upon which all things are built, the web that connects all things together, the anchor which holds all things in place and the vehicle by which all things link back to the beginning of time”³.

The connections that people share with the environment (and each other) are established through linkages to ‘Ngā Atua’⁴.

This understanding is held by Ngāti Porou for instance, who state that these links provide integration across the environment. It is through their whakapapa – their inter-relationship with the environment – that iwi claim custodianship of the land and its treasures.

Some iwi, in their planning documents, recite whakapapa, genealogically linking them with the atua, the earth and the environment⁵.

All things that are considered to have qualities, such as mauri and wairua, have a genealogical relationship to each other. While relationships between people and the environment are maintained through karakia, tikanga and kawa, relationships between

people are maintained and enhanced through whakawhanaungatanga and manaakitanga (which has further implications for resource management).

This system has led to a sensitive and responsive environmental management system⁶. Accessing resources is thus a right, but one which is subject to responsibilities. One such responsibility is kaitiakitanga.

Kaitiakitanga

Kaitiakitanga is the most commonly cited principle that iwi adhere to and identify as underpinning their respective policies.

Kaitiakitanga, also referred to as kaitiakitaka and kaitiekitanga, is defined as an ancestral obligation to collectively sustain⁷, guard⁸, maintain, protect and enhance⁹ mauri.

Those that exercise this obligation are called kaitiaki; the prefix ‘kai’ denotes the agent by which ‘tiaki’, or care, is provided. The obligation of the kaitiaki is embodied in resource management practices that care for a resource and protect its sustainability.

Obtaining social, economic and political benefits from resources, with an obligation to care for resources, thus sees resource management as a reciprocal relationship¹⁰.

Those who are considered the kaitiaki of a resource are those who are genealogically linked to that resource. Kaitiaki are therefore iwi, hapū, whānau and individuals that derive their rights and responsibilities from the genealogy established between them and the resource.

The principle of kaitiakitanga empowers iwi to call for their more meaningful inclusion in the wider environmental decision-making processes in their rohe (territory).

The most appropriate way of exercising contemporary kaitiakitanga is through partnership, for example, partnership with central and local government and environmental agencies. An additional consideration is that tribal authorities are not regarded as kaitiaki, but rather represent kaitiaki and their interests¹¹. Kaitiakitanga is inextricably tied to manawhenua and rangatiratanga.

Manawhenua

Manawhenua is the political and occupational authority that iwi hold over a particular area of land.

It is an authority that traditionally gave iwi rights and responsibilities to exercise kaitiakitanga and assert rangatiratanga. As such, it is a right within itself, reserved for those who whakapapa to the area in which manawhenua is claimed¹².

Te Rūnanga o Te Rarawa, for example, has stated that manawhenua not only applies to 'dry land', but also to the foreshore and seabed¹³. Likewise, Te Taihū o te Waka iwi speak of manawhenua and manamoana as authority to manage the land and sea.

Rangatiratanga

Rangatiratanga refers to the ability of tangata whenua to create and control their destiny¹⁴.

In relation to resource management, it is interpreted as sovereignty which gives kaitiaki the right to exercise kaitiakitanga¹⁵ and determine the management of their natural resources and taonga¹⁶.

To recognise rangatiratanga is to empower tangata whenua in decision-making processes. For some iwi this means providing for iwi participation in resource management, while for other iwi this explicitly means restoring and recognising iwi ownership of resources. Both of these can be regarded as empowering tangata whenua in decision-making processes or rather, enabling iwi to exercise kaitiakitanga, yet the principle of rangatiratanga is ultimately determined by those who claim it.

Like kaitiakitanga, rangatiratanga is established and maintained through whakapapa, that is, between the environment and people (and each other). Without whakapapa, rangatiratanga cannot be assumed¹⁷.

Taonga

Taonga refers to all treasures or assets, both tangible and intangible¹⁸.

In regard to resource management, taonga often denote natural and physical resources that are of considerable value¹⁹.

Taonga is commonly highlighted by iwi as an underpinning principle and is interrelated to the

principles of mauri and kaitiakitanga, and therefore, rangatiratanga.

All natural and physical resources have a whakapapa, which relates them to each other and to their kaitiaki. Through this whakapapa, resources are imbued with mauri. Sustaining the mauri of a taonga is central to kaitiakitanga²⁰.

Empowering rangatiratanga enables kaitiaki to determine how best to sustain the mauri of a taonga. In sustaining the mauri of a taonga, the taonga itself can remain strong and healthy.

Few minerals other than pounamu appear to have been traditionally considered by some iwi as taonga through whakapapa or customary exploitation²¹. Minerals, including those which may not have been considered taonga in the past, are now being recognised as taonga as much as any other natural or physical resource.

Whether knowledge of minerals ever existed prior to European settlement is irrelevant as minerals are natural resources with a whakapapa and imbued mauri, thus, within a Māori worldview, enabling kaitiaki to assert their right and responsibility to sustain mauri of a taonga.

For example, Ngāti Awa has questioned the Bay of Plenty Regional Council stance on gravel management and extraction of minerals. Ngāti Awa argue that rivers should not be mined because the gravel is a taonga and constitutes a central part of the dynamic system that many life-forms rely upon for survival and sustenance.

Mauri

Mauri is defined as "the life energy force or unique life essence that gives being and form to all things in the universe"²². A similar, yet more in-depth, definition is given by Kāi Tahu ki Otago.

"Mauri is imbued in all things and is a special power derived from the Supreme Being. At birth the two parts of body and wairua are joined together as one by mauri. On death the mauri is no longer able to bind these elements together and the physical and spiritual parts are separated. The primary management principle for Māori is the protection of mauri or life-giving essence of an ecosystem from desecration"²³.

This definition would ultimately suggest that any act to extract a non-renewable resource, as it is finite in nature, would be contrary to Māori worldviews. Such an interpretation would be inconsistent, however, with Kai Tahu ki Otago's policies on pounamu management.

In light of this, it could be argued that iwi may allow non-renewable resources to be exploited to such an extent that the resource will not disappear completely or in a way that would damage the ability of mokopuna (descendants) to appreciate the resource's existence.

Understanding and incorporating mauri within a wider framework of resource management therefore, naturally complements sustainable management. Assuming that decision-making processes founded on mauri and sustainable management are the same, however, is misleading.

It is clear from the iwi planning documents and the iwi submissions analysed that sustainable management is a human-centred concept (managing resources to meet the needs of multiple generations) whereas the principle of mauri is more eco-centric (recognising that resources need to exist within their own right and without absolute regard for human needs). The implications of this distinction are important so as not to undermine the very policies that many iwi have developed in relation to exploitation.

To illustrate this point, one way of understanding mauri is as the life-supporting capacity of air, land and water. This definition not only replicates the *Resource Management Act's* definition of sustainable management, but also regards air, land and water as containing mauri so long as they can be managed as resources for human existence.

A similar definition is provided by Ngāti Waewae, who state that the mauri of land, water and sea should be protected to the extent that it sustains life. This suggests that some iwi consider mauri to be a human-focussed but enduring ideal, which could potentially justify mineral exploitation – that is, the use of minerals in a way that sustains human life.

Another way in which mauri is included in iwi policy is through its application in terms of the environment surrounding an extraction site rather than relating directly to the extractive resources themselves.

For example, some iwi state that in order to guard mauri, the environment surrounding an extraction site should be protected from any adverse effects of extraction. The prime concern is not the extracted resources themselves.

Other iwi prefer the restoration of past extraction sites as a means of enhancing mauri. This might be achieved through reforestation, for example. This policy again is not focussed on the minerals themselves, but rather on the enhancement of landscape amenity values.

Ngāti Waewae has expressed concern at the lack of consideration for the mauri of minerals saying that "once you extract something out of Papatuanuku, such as coal, you take the mauri away"²⁴. In this situation, focus is placed on the mauri of the surrounding environment, which in turn must be managed.

It is nonetheless also evident that particular iwi assert ownership of resources such as minerals.

The issue then becomes a concern of rangatiratanga over such resources, not just mauri and kaitiakitanga.

Most iwi that have policies founded on kaitiakitanga in relation to mauri, do not fix their values on the mauri of the resources themselves. Instead, they focus their concern on the effects, both positive and adverse, on the mauri of the surrounding environment and themselves.

The key exception to this is pounamu. Policies relating to the extraction of pounamu are based on guarding the mauri of the mineral itself and not the surrounding environment. Note, too, that ownership of pounamu has been returned to Ngāi Tahu Whānui, thus addressing any concern for rangatiratanga over the mineral.

Wairuatanga

Wairuatanga connotes spirituality and is an obligation to respect the wairua inherent in taonga. The definition of wairua is similar to that of mauri, and they are conceived as being inseparable²⁵.

Wairua is defined as the spirit, or source of existence and all life, from which mauri emerges. All living things have mauri and wairua²⁶. Thus wairuatanga is central to understanding resource management.

Wairuatanga reinforces Māori holistic worldviews. Wairua is the embodiment of whakapapa, “the basic cement or thread upon which all else is dependent. It denotes our place as part of the natural and physical world... There is but one spirit in all things”²⁷.

Incorporating wairuatanga into decision-making processes ensures that resource management not only thinks through the physical effects of an activity, but also the spiritual effects on the environment and people.

Whanaungatanga

Whanaungatanga refers to the relationships between people and also with the environment²⁸.

It expresses whakapapa, specifying the holistic connections imparted by Māori worldviews to people.

In the documents analysed, this principle is only identified by a few iwi in relation to extractive activities, but to those iwi, whanaungatanga is central to resource management²⁹.

Resource management that incorporates whanaungatanga reinforces the importance of whakapapa and collectively contributing to decision-making processes³⁰. This principle is interlinked to the principle of kotahitanga.

Manaakitanga

Manaakitanga is highlighted by a few iwi as an underpinning principle guiding thinking on extractive activities.

Interpreted as meaning hospitality, manaakitanga denotes mana and is an obligation by kaitiaki to manage their resources in a way that enables them to give gifts and other expressions of generosity³¹.

The objective of this obligation is to pay respect to those receiving the gifts, which in turn enhances the mana of the kaitiaki³².

Kotahitanga

Kotahitanga describes the notions of unity and cohesion in collaborative endeavour.

In relation to managing the environment, Kotahitanga implies the exercising of management practices in a way that ensures collective goals, while also recognising the autonomy and needs of each party in the process³³.

Key Policy Directions in Iwi Documents

- Iwi interests in non-renewable resources and extractive activity should be recognised by the Crown.
- Iwi ownership of and rangatiratanga in relation to non-renewable resources should be recognised by the Crown.
- Legislation relating to non-renewable resources should be made consistent with or give effect to the principles of the Treaty of Waitangi.
- Legislation relating to non-renewable resources should be developed, in genuine consultation with iwi, prioritising environmental protection over any proposal to encourage exploitation, including offshore exploration.
- Discussions between the Crown, permit holders and iwi should be undertaken to enable iwi to exercise kaitiakitanga. Lines of communication should remain open to address issues as they arise.
- In order to exercise kaitiakitanga effectively, partnerships between iwi and agencies should be fostered and appropriate forms of co-management utilised.
- Issues of iwi capacity in terms of affordability, access to expertise and infrastructural support should be addressed in all relevant decision making processes to ensure effective participation.
- Provision for iwi participation that is identifiably influential in decision making regarding the feasibility, extraction and rehabilitation phases of extractive activity should be confirmed.

Ahi Kā

Ahi kā is a prominent principle used to inform several Ngāi Tahu Whānui plans and policies for resource management.

Related to the principles of kaitiakitanga and rangatiratanga, ahi kā refers to the maintenance of manawhenua through continued occupation and use. Without manifestation of ahi kā other tribes could lay claim to the territory.

It is indistinguishable from manawhenua if an iwi remains in occupation or an invader fails to establish their dominion³⁴. Through ahi kā, iwi have traditionally been able to continue managing resources according to their customary practices.

Ki Uta Ki Tai

Ki Uta Ki Tai “describes environmental policy and planning that takes a holistic ‘From the Mountains to the Sea’ approach and encapsulates rangatiratanga and kaitiakitanga”³⁵.

In the present context, this concept encapsulates Ngāi Tahu’s understanding of the environment, the relationship between people and the environment, and appropriate care and management of the environment.

Summary of Principles

Whakapapa refers to the connections between the environment and people (and each other), which determines resource access rights and responsibilities.

One such responsibility is kaitiakitanga. Kaitiakitanga is an ancestral obligation to collectively sustain, guard, maintain, protect and enhance mauri.

Kaitiakitanga is inextricably tied to manawhenua and rangatiratanga. Manawhenua is the political authority that traditionally enabled iwi to practice rangatiratanga.

For some, ahi kā is a prerequisite for exercising kaitiakitanga. Ahi kā refers to the maintenance of manawhenua through continued occupation.

The resources that iwi claim kaitiakitanga over are considered taonga, treasures that are imbued with mauri and wairua. Managing these aspects of a resource is key to ensuring the environment’s wellbeing.

Key Policy Directions in Iwi Documents (cont)

- Sufficient information and time should be allowed to ensure informed contribution to decisions by iwi.
- Traditional knowledge should be tangibly recognised as relevant in assessment and decision making processes.
- A mechanism should be developed in consultation with Māori to provide for claims of customary rights which may be affected by the grant of permits.
- A precautionary approach should be taken and extraction should be innovative, sustainable and not harm the surrounding environment, nor harm sites of significance.
- Mitigation measures addressing adverse effects, performance standards and rehabilitation, should be required as conditions of approval.
- Impacts of all phases in the resource extraction process should be assessed and monitored, with iwi involvement.
- Extractive activity should not compromise the ability of iwi to settle past grievances through the Waitangi Tribunal.
- Iwi and hapū should benefit from any approved extraction.

Whanaungatanga, manaakitanga and kotahitanga are central to promoting social wellbeing.

These principles embody the holistic worldview that Māori traditionally held in relation to resource management. This worldview can be encompassed within the integrating principle of ‘ki uta ki tai’.



Case Studies

The following are studies summarising six different iwi, hapū and rūnanga approaches in relation to non-renewable resources.

Case Study One: Te Aupouri

Te Aupouri values in relation to non-renewable resource exploitation have been asserted in their submission to the Ministry of Economic Development's review of the Crown Minerals Act, 1991.

The aim of this submission was to highlight Te Aupouri's concerns with the Act's decision-making regime.

It was argued that no recognition of the iwi's interests in petroleum was granted by the Crown (this recognition was recommended by the Waitangi Tribunal in its report on the Muriwhenua Fishing Claim), nor was there sufficient regard for Te Aupouri's participation in substantive decision-making. Indeed, the iwi disputed the Crown's interpretation of 'regard' (as is required under Section 4 of the Act) as "only a duty to consult" (p.3).

Te Aupouri stressed that Māori cannot appeal decisions made under the Act and, as a result, have been prevented from ensuring their interests are recognised beyond what the Crown deems sufficient.

The iwi recommended amendments to the Act and also the Resource Management Act 1991 "in order to ... prevent prospecting, exploration or mining taking place if Māori (land) owners do not wish such to occur" (p.5). Furthermore, it was recommended that Section 4 of the Crown Minerals Act 'give effect to the principles of the Treaty of Waitangi', and provide for Māori involvement in considering permit applications.

Other recommendations included that:

- if the Resource Management Act is maintained as the primary mechanism for addressing environmental issues that it be made consistent with the Treaty;
- a comprehensive environmental protection statute be developed in consultation with Māori, urgently, to ensure environmental protection from exploration and mining activities;
- a mechanism be developed, also in consultation with Māori, to provide for claims of customary rights which may be affected by the granting of mining related permits;
- the review of the Crown Minerals Act also include a review of the Resource Management Act as they are equally important.

In addition to these recommendations, the iwi also had several objections to the proposed changes to the Crown Minerals Act.

Ultimately, Te Aupouri submitted that the Act should be made consistent with the Treaty of Waitangi. This could be achieved by integrating recommendations of the Report on Petroleum Management into the Act. The position taken appears to have been based on the articles of the Treaty of Waitangi.

Case Study Two: Te Rarawa

A number of submissions have been made to the Ministry of Economic Development by Te Rūnanga o Te Rarawa on mineral and petroleum issues.

These submissions contained Te Rarawa's perspectives on the Ministry's plans to grant permits for the offshore exploration of the Northland Basin and the iwi's aspirations for exploration activities.

The submissions stated that Te Rarawa's environmental aspirations were in line with the principles envisioned by the Treaty of Waitangi. The rūnanga identified the following as principles of the Treaty:

- partnership;
- mutual benefit;
- active protection;
- making informed decisions; and
- self-management.

These principles have been intertwined by the iwi with the concepts of manawhenua and kaitiakitanga.

Te Rarawa claims manawhenua status over an extensive area adjacent to the Northland Basin and the foreshore and seabed that constitute parts of the offshore basin, and all the natural resources within this Takiwā. Accordingly, the iwi rejected the Crown's

assumption of ownership of any minerals within their Takiwā and requested that discussions between the Crown, permit holders and the rūnanga be undertaken to enable the Te Rarawa hapū to exercise kaitiakitanga;

- consent be sought prior to any exploration of the Basin; and
- the iwi benefit from any approved extraction.

The rūnanga stated that they could place a bid themselves, but questioned the logic of applying to manage a resource they argue is already theirs. However, the rūnanga also stated that they were willing to negotiate royalties for the iwi and to establish relationships with permit holders.

Through engagement with the Crown and permit holders, it is intended that kaitiakitanga is upheld and realised. Ultimately, the rūnanga requested that no permits for areas of the Basin that were of particular interest to the iwi be granted until a settlement between the Crown and Te Rarawa was reached on the iwi's historical grievances.

Case Study Three: Ngāti Wai

The Ngāti Wai Iwi Environmental Policy Document was developed by the Ngāti Wai Trust Board in 2007. This document contains an extensive account of Ngāti Wai's issues, objectives and policies for minerals.

Ngāti Wai appraised the mineral wealth of its rohe and argued that exploitation of minerals was being permitted without assessment of the environmental, cultural or social impacts. Furthermore, the lack of iwi involvement as kaitiaki in the sustainable management of their taonga was highlighted.

Accordingly, the iwi wished to be acknowledged as kaitiaki and to ensure the sustainable management, protection and enhancement of the mauri of the minerals.

Ngāti Wai also requested that their relationship with the minerals be provided for by councils. This relationship could be provided for by increasing the iwi's involvement in the management and monitoring of mineral resources.

To this end, Ngāti Wai submitted that their traditional knowledge in relation to minerals should be appropriately acknowledged and utilised. Their relevant policies are as follows:

- exploration and mining activities should not be permitted in areas significant to Tangata Whenua;
- Tangata Whenua should promote innovative, sustainable management practices concerning mining, including restoration and rehabilitation;
- Tangata Whenua are the kaitiaki of minerals in their rohe;
- Tangata Whenua are an affected party to resource consent applications for exploration and mining;
- traditional knowledge will be made relevant in assessment and decision-making around mineral and geothermal resources; and
- whenever Tangata Whenua are involved in setting conditions for consent, they will then be resourced appropriately by the applicants or council to monitor compliance with those conditions.

The iwi identified several methods for realising these policies. The key principles that underpin their policies were kaitiakitanga, mauri and taonga.

Case Study Four: Ngāti Porou

The Ngāti Porou Environmental Policy Statement is intended to express the mana motuhake of Ngāti Porou over their tribal territory by assisting landowners, whānau and hapū in the sustainable management of their resources.

The policy statement was developed by Te Rūnanga o Ngāti Porou. The views of Ngāti Porou, as documented by Te Rūnanga, are informed by mauri and kaitiakitanga.

Section 5.1.4 relates to petroleum and Ngāti Porou's position on the issue. Te Rūnanga holds that petroleum exploration and drilling should not occur "unless ownership [of the resource] is recognised and the effects of drilling can be shown not to detrimentally affect the environment".

Te Rūnanga also states that there should be a direct benefit to hapū/iwi. Ngāti Porou will not support such activity otherwise.

Views on other non-renewable resources are not documented with such specificity, although Policy 6.1.9. states that Te Rūnanga will provide assistance and support “to Ngāti Porou whānau and hapū in direct negotiation with Crown agencies and the Gisborne District Council regarding the return of their lands including the management of minerals”.

In addition to the iwi’s policy statement, Ngāti Porou’s views on petroleum are also contained in their submission to the Ministry of Economic Development on its review of the Crown Minerals Act. The submission was made by Te Rūnanga on behalf of Ngāti Porou.

The issue of ownership, as asserted in the Policy Statement, was not the focus of concern in the submission, given that the review of the Act does not encompass ownership interests.

Concern was raised that the review of the Act’s operation would encourage exploration and mining by streamlining and simplifying the system. In so doing, the review provided limited consideration in terms of addressing potential environmental impacts and potential impacts on iwi.

Te Rūnanga questioned the intentions of the Crown and the purpose statement³⁶, which should contain references to matters such as good practice, environmental standards and iwi involvement.

In addition to this, the rūnanga opposed “any changes that would remove or in any way limit engagement with iwi in relation to activities in river and lake beds and coastal marine areas” (p.3). Te Rūnanga believed that such a proposal would remove the “limited opportunities that exist for iwi engagement” (p.3).

The rūnanga further objected to the “removal or softening of section 15(3), which provided that on the request of an iwi, a minerals programme may provide that defined areas of land of particular importance to its mana are excluded from the operation of the minerals programme or shall not be included in any permit”³⁷ (p.2).

Ultimately, Ngāti Porou opposed any proposed amendment that removed or softened environmental protections and the limited protections available to iwi. The rūnanga, on behalf of the iwi, believed that consideration of methods to encourage mining development should not occur without a corresponding focus on reviewing and developing appropriate protection for environmental and iwi interests.

Case Study Five: Ngāti Kuri (Te Rūnanga o Kaikōura)

The Iwi Environmental Management Plan provides a comprehensive account of Te Rūnanga o Kaikōura’s views on non-renewable resource exploitation, particularly mineral (salt) extraction, gravel extraction, limestone mining, sand and rock mining in coastal areas.

These views have been largely founded on the principle of mauri. Mauri is defined here as the life supporting capacity of air, land and water.

The protection of mauri is stated as a responsibility of the current generation as kaitiaki to provide for future generations. The plan envisages that the exercise of this responsibility through the participation of Te Rūnanga o Kaikōura in resource management will increase over time as legislation changes.

Section 3.2.8 covers mineral (salt) extraction and manufacturing on the shores of Kaupara Te Hau. The issues surrounding this activity include wind dispersal of salt, impact on mahinga kai, any long-term impacts, and monitoring of these activities.

Te Rūnanga o Kaikōura’s policies for exercising their kaitiakitanga over this activity include ensuring that robust monitoring is a regular component of this activity and ensuring that Te Rūnanga o Kaikōura is consulted with regard to any changes to existing activities.

Section 3.4.12 addresses gravel extraction from local riverbeds. The issues in relation to this activity include increased flood risk, any impacts on cultural heritage, birdlife, and bank stability, and consequent disturbance of riverbeds.

Te Rūnanga o Kaikōura's policies promote the careful extraction of this non-renewable resource in a way that does not adversely affect birdlife or their habitats, cultural sites, and also results in the restoration of the riverbed to its original character upon completion of extractive activity.

Section 3.5.5. relates to limestone mining. The issues that concern Te Rūnanga o Kaikōura include general environmental impacts of mining, stormwater management, dust management, water quality protection, culturally important landscape protection, potential impacts on wāhi tapu and wāhi taonga, and rock art protection.

Te Rūnanga o Kaikōura's policies for exercising their kaitiakitanga in relation to non-renewable resources have been extensive and precise, but permissive. Policies included the requirement for a management plan detailing how mining applicants should mitigate any adverse effects on the environment with particular regard to those landscapes of cultural significance. The rehabilitation of the site should also ensure restoration to its original character once mining is completed.

Section 3.6.8 deals with mineral extraction in coastal areas, specifically sand, gravels, stones and rocks. Te Rūnanga o Kaikōura highlighted a number of issues regarding coastal mining, including the mining of minerals for commercial purposes or for road works, wāhi tapu protection, ecosystem change, and increased erosion, among others.

Corresponding policies, like those of section 3.5.5, are extensive. These policies are also similar in nature, though emphasis is placed on pursuing the avoidance and mitigation of any water contamination.

Case Study Six: Te Taumutu Rūnanga

Te Taumutu Rūnanga Natural Resource Management Plan contains policies relating to non-renewable resource exploitation within the Takiwā of Ngāi Te Ruahikihiki ki Taumutu hapū. The plan details the rūnanga's issues and policies regarding mining and quarrying.

Section 2.3.1 contains issues and policies around mining and quarries in the mountainous and hilly areas of the hapū's takiwā. The rūnanga identifies numerous issues, ultimately focussing on the effects of such activities on the environment, wāhi tapu, wāhi taonga, culturally important landscape features, waterways, aquifers, water quality, mahinga kai and downstream effects.

The rūnanga then affirms the following policies:

- all proposals for mining and quarrying must be considered in terms of environmental and cultural effects;
- mining activity is not permitted in areas of known wāhi tapu and wāhi taonga sites;
- mining must cease if any kōiwi tangata or artefacts are accidentally uncovered;
- mining should not discharge contaminated water to surface or ground water;
- best practice must be used for all mining development activity, and will be reviewed, and if necessary, updated every five years;
- mining proposals must contain recommendations about measures to address slip stability;
- development plans should include provisions for restoration and re-vegetation of the operation area and boundary;
- the duration of mining should be negotiated on a case-by-case basis;
- in some circumstances, the removal of a material from one area to be taken to another area will be considered culturally inappropriate and disrespectful to Papatūānuku.

These policies are underpinned by the importance of the mauri of the maunga, which 'represents the essence that binds the physical and spiritual elements of all things together, generating and upholding life'.

Further values that underpin these policies are wairua, mauri, whakapapa, ahi kā roa, kaitiakitanga, rangatiratanga, whanaungatanga, utu (reciprocity) and manaakitanga.

Conclusion

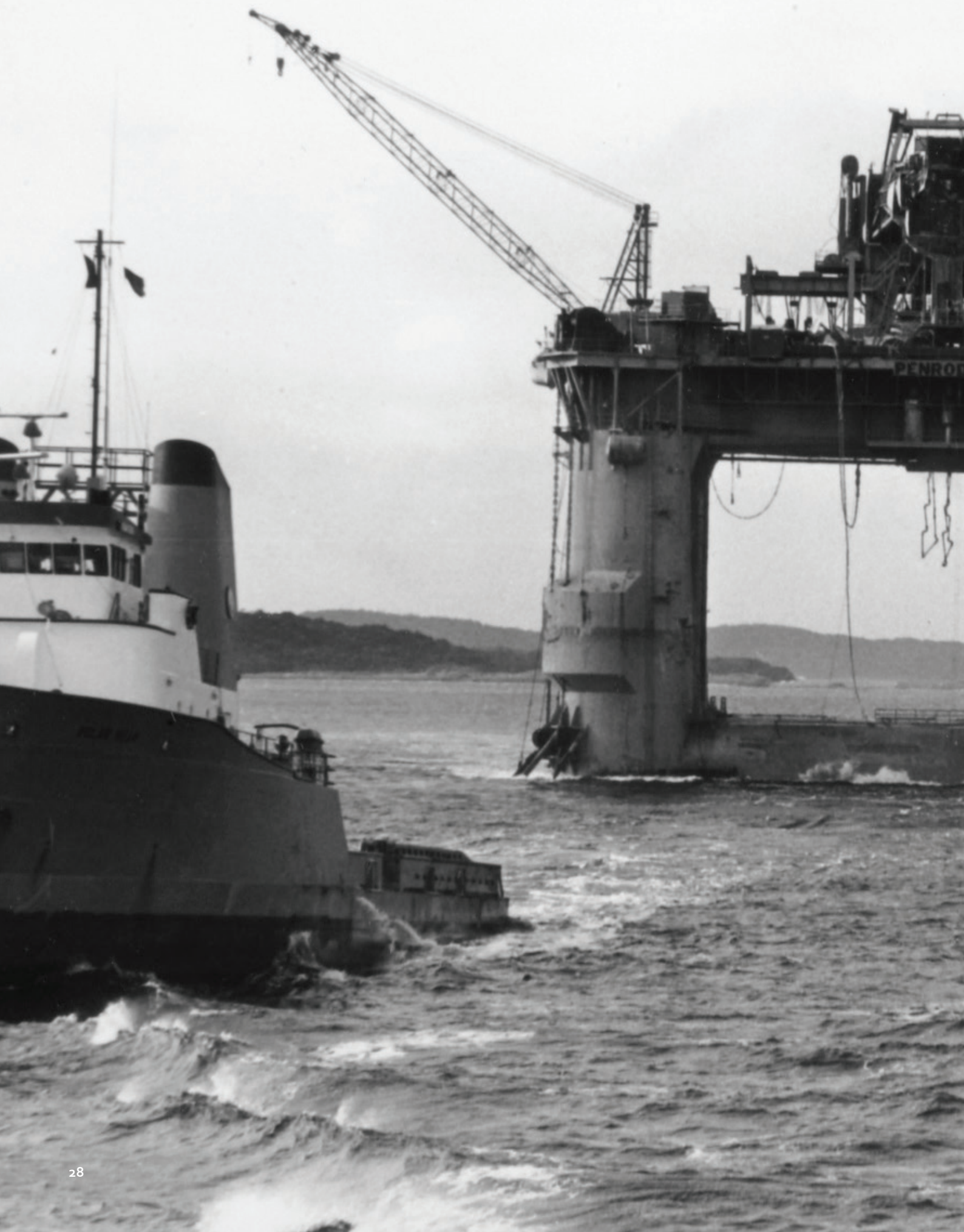
Analysis of iwi documents has shown that the main policy directions being taken by iwi and hapū are inspired by traditional values that have been reworked and articulated for the current context in a variety of ways. The approaches taken provide an insight into the various possibilities that other iwi and hapū might like to consider and weigh-up when developing their own new perspectives and goals.

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37. TRONP also oppose "any proposed amendment that would result in the removal or softening of section 16(1)(b), which provides for iwi to receive notice of a draft minerals programme." Te Rūnanga o Ngāti Porou Submission on Review of the Crown Minerals Act. Retrieved from www.med.govt.nz/sectors-industries/natural-resources/pdf-docs-library/oil-and-gas/crown-minerals-act-review/2012-review/crown-minerals-act-submissions/cma-review-2010-submission-te-runanga-o-ngati-porou-34-kb.pdf/pdf



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Chapter Three

Te Ture – Mineral Law and Māori

Nā te Kawana Kaimahi pea?

E rona rā i ngā ture,

E apo rā i ngā moni,

E mutu rā i te whenua,

Ka tangi au, au, au e ha!

Kāore hoki te rongo o te ture paohinu e,

Tukituki ana i te Rāwhiti!¹

This was followed by further hakas, one of which was led by Sir Apirana Ngata... the 'petroleum haka', and demonstrated in no uncertain manner the attitude of the Maoris of the East Coast toward the Government's petroleum policy as it affects the payment of royalties to the Maoris².

Legislation provides the rules for possible mineral exploration and exploitation. This chapter considers these rules and, in particular, what rights and responsibilities Māori have to own and govern minerals, and to participate in Crown processes for permitting others to explore and exploit minerals. This chapter discusses the law as it is in June 2013.

Relevant Legislation

Three key statutes are relevant for understanding mineral law in Aotearoa New Zealand.

The Crown Minerals Act 1991 (CMA) defines Crown-owned minerals. The CMA supports the minerals programmes that establish the policies, procedures, and provisions for mining Crown-owned minerals including information on how to seek mining permits.

The Resource Management Act 1991 (RMA) is also relevant because it provides the basis for local authorities to design rules for the sustainable management of natural and physical resources including minerals. In particular, no persons or companies can do anything with land, including mining it, unless the activity is permitted in a local authority plan. If persons and companies wish to extract minerals from land including seabed land out to the 12 nautical mile boundary that is not already

permitted by a local authority, then resource consents must be sought from the appropriate local authority.

The Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 is relevant in the context of mineral exploration and exploitation in the seabed. The purpose of this Act is to promote the sustainable management of natural and physical resources in the exclusive economic zone and the continental shelf. The general rule is that no person can do any activity in the exclusive economic zone or in or on the continental shelf unless the activity is a permitted activity authorised by a marine consent. The Environmental Protection Authority issues marine consents. Many other statutes are also relevant.

Legal Definition of Minerals

The Crown Minerals Act (CMA) provides extensive legal definitions for minerals. Section 2 defines mineral broadly as:

“a naturally occurring inorganic substance beneath or at the surface of the earth, whether or not under water; and includes all metallic minerals, non-metallic minerals, fuel minerals, precious stones, industrial rocks and building stones, and a prescribed substance within the meaning of the Atomic Energy Act 1945.”

The CMA defines metallic minerals as including “compounds of aluminium, chromium, copper, gold, iron, lead, manganese, mercury, molybdenum, nickel, platinum, silver, tin, titanium, tungsten, uranium, vanadium, and zinc”.

The CMA defines non-metallic minerals as including 'asbestos, barite, bentonite, calcite, clays, dolomite, feldspar, fluorite, magnesite, mica, phosphate, potash, quartz, salt, silica lump, silica sand, sulphur, talc, and wax'.

Ownership of Minerals

The general rule at English common law is that owners of land have ownership of minerals below the surface of their land. But in Aotearoa New Zealand, several important statutory exceptions exist that vest ownership of certain minerals in the Crown.

Section 10 of the CMA gives special recognition to four minerals – petroleum, gold, silver and uranium – and endorses these as nationalised minerals.³ Where these minerals exist in “natural condition in land (whether or not the land has been alienated from the Crown)” they “shall be the property of the Crown”.

Moreover, Section 11 of the CMA clarifies that any minerals found in its natural condition on Crown land that has been alienated (whether by way of sale, lease, or otherwise) since 1st October, 1991 remain Crown property.

Pounamu is the one significant South Island mineral that since 1997 has been recognised in legislation as Māori-owned. Section 3 of the Ngāi Tahu Pounamu Vesting Act 1997 vested all pounamu found in its natural condition in the Takiwā of Ngāi Tahu Whānui, including in the territorial seas adjacent to the Ngāi Tahu Takiwā, as at 1997 to be the property of Te Rūnanga o Ngāi Tahu.

Some non-nationalised minerals found in land under saltwater might become Māori-owned in the future. The Marine and Coastal Area (Takutai Moana) Act 2011 contemplates that if Māori can meet substantial tests, including proving exclusive use and occupation since 1840 of a specific part of the common marine and coastal area, then they will be granted customary marine title which will include the right to own all minerals in this defined area (but not Crown-owned minerals or pounamu)⁴.

The issue of whether Māori have retained ownership of minerals pursuant to the guarantee of the Treaty of Waitangi and/or under the common law doctrine of native title remains possibly a contestable issue.

Article 2 of both the Māori and English versions of the Treaty of Waitangi recognises Māori property interests in lands and other taonga, although not specifically minerals.

Today, the principles of the Treaty of Waitangi, including acting in good faith, reasonableness, partnership, active protection and redress, become relevant for decision-makers only if legislation explicitly states that they must have some level of regard to the Treaty principles.

Māori have not yet brought a case to the courts arguing that they continue to own minerals pursuant to the Treaty of Waitangi.

However, Māori have brought such claims to the Waitangi Tribunal (a commission of inquiry rather than a court). The Waitangi Tribunal has jurisdiction to hear claims from Māori that the Crown has breached the principles of the Treaty of Waitangi and if the Tribunal agrees, the Tribunal will make recommendations to the Crown for redress⁵.

In 1999, Ngā Hapū o Ngā Ruahine and Ngāti Kahungunu, along with other interested Māori claimant groups, made a claim to the Waitangi Tribunal that asserted ownership of much of the petroleum in the North Island. Here the claimants argued that:⁶

“... in terms of customary law, Maori, as part of the natural world, have proprietary rights in the resources of their universe, including the petroleum within their lands. Those rights, they say, would have endured for as long as Maori retained ownership of their lands and would have entitled Maori to profit from any commercial exploitation of the resource beneath their lands. In fact, however, by 1937 – and indeed long before then for many hapū and iwi – Maori lost ownership of much of their traditional lands, often as a result of Crown acts and policies that have since been found to have been inconsistent with the principles of the Treaty of Waitangi. The result, the claimants say, is that, where Maori lost land by means that were in breach of Treaty principles, the accompanying loss of any petroleum within that land occurred by the same Treaty-breaching means. That situation, it is claimed, creates for the former Maori landowners a continuing Treaty- based interest in the petroleum resource.”

The Tribunal agreed with the Māori claimants. The Tribunal summarised its recommendations in its 2003 report this way.⁷

- “Prior to 1937, Māori had legal title to the petroleum in their land.
- A Treaty interest was created in favour of Māori for the loss of legal title to petroleum by:
 - the alienation of land prior to 1937 by means that breached Treaty principles; and

- expropriation under the Petroleum Act 1937, without payment of compensation to landowners and without provision being made for the ongoing payment of royalties to them.
- Whenever that Treaty interest arises, there will be a right to a remedy and a corresponding obligation on the Crown to negotiate redress for the wrongful loss of the petroleum. The redress to be provided is in addition to any other entitlement to redress.
- It is in breach of Treaty principle for the Crown to exclude petroleum-based remedies from settlements. Therefore, the Crown's royalty entitlements, and its remaining interest in the Kupe petroleum mining licence, ought to be available for inclusion in settlements with affected claimants."

However, the Government of the day ignored these Tribunal recommendations. The only instance where Māori have been successful to date in arguing ownership of a mineral pursuant to the Treaty of Waitangi is pounamu.

To date, Māori have not brought a case to the courts for ownership of minerals under the common law doctrine of native title. This doctrine recognises that when the British Crown acquired sovereignty of Aotearoa New Zealand, Māori retained ownership of their property.

Māori property rights can be extinguished if legitimately alienated (for example sold or gifted) or by the Crown enacting clear and plain legislation that extinguishes the native title interest in the resource.

If such a case were to come to the courts, one central issue would concern whether the vesting of nationalised minerals in the Crown as done in the CMA is sufficient to extinguish native title in minerals.

Management of Minerals

Mineral Permits

The CMA provides the rules for when mineral permits are required. Section 4 of the CMA acknowledges the principles of the Treaty of Waitangi as relevant for all decision-making. It states: "All persons exercising functions and powers under this Act shall have regard

to the principles of the Treaty of Waitangi (Te Tiriti o Waitangi)".

If a person wishes to mine Crown-owned minerals, then a permit is required. Section 8(1) of the CMA establishes this general rule:

"no person may prospect or explore for, or mine, Crown owned minerals in land unless the person is a holder of a permit granted under this Act."

But this rule does not apply in certain situations. A person does not need to seek a mineral permit to:

- mine a Crown-owned mineral that exists in a natural state in his or her privately-owned land if the person seeks to reasonably use the mineral for agricultural, pastoral, domestic, roadmaking, or building purposes on his or her land;
- take any sand, shingle or other natural material in the bed of a river or a lake or in the coastal marine area unless otherwise specified in a mineral programme;
- mine for coal or a mineral for which a Tier 2 permit would normally be required if the mineral is in a legal road within an area that contains other privately-owned minerals;
- prospect or explore or mine for gold in gold-fossicking areas by means of hand-held non-motorised machinery; or
- extract loose relevant hangi stones from the Moutohora (Whale Island) Wildlife Management Reserve if that person is a member of Ngāti Awa who has been given a permit under the Reserves Act 1977 to enter the Reserve.

There are three different types of mineral permits: a prospecting permit, exploration permit, and a mining permit (see section 23).

Depending on the mineral, activity, location, estimated annual royalty and production, permits are further classified into Tier 1 or Tier 2 permits. Section 2B and Schedule 5 of the CMA provide the definitions for Tier 1 and Tier 2 permits.

As a general summary, a Tier 1 permit includes:

- all permits relating to petroleum;
- all prospecting permits that relate to gold (but not alluvial gold), silver, coal, ironsand, metallic minerals and platinum minerals (see Schedule

5 a definition of these minerals) that will be for less than 5 years and the estimated total work programme expenditure will be less than \$1,250,000;

- all mining permits that relate to these stated minerals above if the annual royalty or annual production in any one year in the next five years of the permits life is equal or more to set figure in schedule 5 (\$50,000 royalty for gold, silver or platinum group metals; 200,000 tonnes for coal, and 500,000 tonnes for ironsand and metallic minerals;
- any permit that relates to an underground activity that is 50 metres or more beyond the seaward side of the mean high-water mark and not for special purpose mining activity.

Tier 2 permit means a permit that is not a Tier 1 permit.

Section 23A states that any person may apply to the Chief Executive for a permit in respect of a mineral in land, whether or not there is a minerals programme for the mineral. Section 25 applies when the Minister may grant one of these permits. Section 29A outlines what an applicant for a permit must provide to the Minister.

Section 33C provides an important protection for Māori. It states that every holder of a Tier 1 or Tier 2 permit must provide to the Minister an annual report of the holder's engagement with iwi or hapū whose rohe includes some or all of the permit area, or who otherwise may be directly affected by the permit.

In May 2013, two new mineral programmes were introduced replacing all previous programmes:

- the Minerals Programme for Petroleum 2013 (See www.nzpam.govt.nz/cms/pdf-library/petroleum-legislation-1/petroleum-programme-2013.pdf); and
- the Minerals Programme for Minerals (Excluding Petroleum) 2013 (See www.nzpam.govt.nz/cms/pdf-library/minerals-legislation/Minerals%20Programme%202013%20web.pdf).

These Minerals programmes contain extensive information including how the Minister and Chief Executive will meet the Crown's responsibility to have regard to the principles of the Treaty of Waitangi.

These Minerals programmes:

- provide that certain land that has been identified as being of particular importance to the mana of iwi or hapū must not be included in a permit;
- specify the matters on which iwi and hapū must be consulted;
- set out principles and procedures for consulting with iwi and hapū;
- specify the matters of which iwi and hapū must be notified; and
- require Tier 1 permit holders to report annually to the New Zealand Petroleum & Minerals group within the Ministry of Business, Innovation and Employment on their engagement with iwi and hapū whose rohe includes some or all of the permit area or who otherwise may be directly affected by the permit.

In regard to specific information and forms for applying for mineral permits, see the Crown Minerals (Minerals and Coal) Regulations 2007 for permits relating to coal and minerals excluding petroleum. For permits relating to petroleum see the Crown Minerals (Petroleum) Regulations 2007.

Access Agreements

It is important to note that a prospecting, exploration or mining permit does not give right of access to the land where the mineral is or might be found (s 47 of the CMA).

Also remember, a permit is only required when a person wishes to prospect, explore or mine Crown-owned minerals. The minerals (Crown-owned or not) might lie in Crown land or private land including Māori freehold land.

As a general rule, the CMA states that a permit holder still must seek permission to access land from the owner of the land. An exception to this rule is that a permit holder who has been authorised by the Crown to access land for minimum impact activity may do so without permission (but procedures still exist including additional rules if the land is Māori freehold land. See the CMA, including s 51).



Selected Relevant Legislation and Regulations

(www.legislation.govt.nz)

| | |
|------|---|
| 1964 | Continental Shelf Act 1964 |
| 1978 | Marine Mammals Protection Act 1978 |
| 1987 | Conservation Act 1987 |
| 1991 | Resource Management Act 1991 |
| 1991 | Crown Minerals Act 1991 |
| 1992 | Health and Safety in Employment Act 1992 |
| 1993 | Biosecurity Act 1993 |
| 1994 | Maritime Transport Act 1994 |
| 1996 | Hazardous Substances and New Organisms Act 1996 |
| 1997 | Ngāi Tahu (Pounamu Vesting) Act 1997 |
| 1999 | Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999 |
| 1999 | Health and Safety in Employment (Pipelines) Regulations 1999 |
| 2002 | Climate Change Response Act 2002 |
| 2006 | Crown Minerals (Minerals Fees) Regulations 2006 |
| 2006 | Crown Minerals (Petroleum Fees) Regulations 2006 |
| 2007 | Crown Minerals (Minerals and Coal) Regulations 2007 |
| 2007 | Crown Minerals (Minerals Other than Petroleum) Regulations 2007 |
| 2007 | Crown Minerals (Petroleum) Regulations 2007 |
| 2011 | Marine and Coastal Area (Takutai Moana) Act 2011 |
| 2012 | Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 |
| 2013 | Crown Minerals (Royalties for Minerals Other than Petroleum) Regulations 2013 |
| 2013 | Crown Minerals (Royalties for Petroleum) Regulations 2013 |
| 2013 | The Minerals Programme for Petroleum 2013 |
| 2013 | The Minerals Programme for Minerals (Excluding Petroleum) 2013 |

Resource Consents

No persons have an unlimited right to do whatever they like on land, air or water (even their own privately-owned land and thus privately-owned minerals), unless the local authority has permitted the planned activity.

This is true even if the person has been given a minerals permit to mine a specific mineral. It is highly likely that persons will need to seek resource consent from the relevant local authority before proceeding with mineral exploration or exploitation.

The RMA provides the rules for applying for resource consents. All persons making decisions under the RMA must promote the sustainable management of natural and physical resources, including minerals (see s 5).

Importantly, the RMA directs decision makers to consider Māori interests in achieving the purpose of sustainable management.

Specifically, decision makers must recognise and provide for several matters that are considered of national importance. Section 6(e) lists one of these matters as “the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga”.

Decision makers must also have particular regard to several other matters including “kaitiakitanga” as directed by s 7(a). Moreover, s8 states that decision makers must take into account the principles of the Treaty of Waitangi.

If a person does not agree with the local authority decision-making in regard to issuing (or not) a resource consent, the decision can be appealed to the Environment Court.

Marine Consents

The Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 provides tight rules for managing Aotearoa New Zealand’s exclusive economic zone and continental shelf.

All persons now need marine consents to do any activity in, on, or under the seabed (s 20).

The Environmental Protection Authority has the responsibility to decide on whether to issue a marine consent.

The Act provides opportunities for Māori to be involved in this decision-making process stemming from the principles of the Treaty of Waitangi (see s 12). A Māori Advisory Committee can advise the Environmental Protection Authority when making decisions (s 18).

The Minister of Energy can recommend to the Governor-General the creation of regulations but in doing so the Minister must establish a process that gives iwi authorities adequate time and opportunity to comment on the subject matter of proposed regulations (s 32(2)(b)).

The Environmental Protection Authority must notify iwi authorities, customary marine title groups, and protected customary rights groups directly of consent applications that may affect them (s 45).

Continental Shelf Licences

The Continental Shelf Act 1964 vests all natural resources in the continental shelf in the Crown (s 3). A person can only prospect or mine minerals in the seabed or subsoil of the continental shelf if they have a Minister of Energy issued licence (see s 5).

Conclusion

As Aotearoa New Zealand seeks to increase its wealth from mining minerals, the legislative framework for enabling this to occur has come under intense attention. The Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012, the amended Crown Minerals Act in May 2013, and the two new minerals programmes in 2013, are all evidence of this new focus.

The mining law, regulations and rules provide some recognition of Māori interests in minerals.

All persons interested in supporting or opposing mining must be aware of this legislation, including Māori.

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(www.waitangi-tribunal.govt.nz/)

- | | |
|------|---|
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| 1988 | Report of the Waitangi Tribunal on the Muriwhenua Fishing Claim (Wai 22) |
| 1991 | The Ngāi Tahu Report 1991 (Wai 27) |
| 2003 | The Petroleum Report (Wai 796) |
| 2006 | The Hauraki Report (Wai 686) |
| 2008 | Te Tau Ihu o te Waka a Maui: Report on Northern South Island Claims (Wai 785) |
| 2010 | The Report on the Management of the Petroleum Resource (WAI 796) |

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- | | |
|------|--|
| 1989 | <i>Mahuta and Tainui Maori Trust Board v Attorney-General</i> (1989) 2 NZLR 513 |
| 1999 | <i>Te Ohu O Nga Taonga Ngati Manu v Stratford District Council & Marabella Enterprises Ltd</i> ENC Wellington W74/99, 24 July 1999 |
| 2003 | <i>Glenharrow Holdings Limited v Attorney-General</i> (2003) 1 NZLR 236 |
| 2005 | <i>Solid Energy New Zealand Ltd v West Coast Regional Council</i> ENC Christchurch C74/2005, 24 May 2005 |
| 2009 | <i>R v Saxton</i> (2009) NZCA 498; (2012) 1 NZLR 331 |
| 2009 | <i>Waiareka Valley Preservation Society Inc v Waitaki Regional Council</i> ENC Christchurch C058/09, 13 August 2009 |
| 2011 | <i>Tui Trust Mining Ltd v Minister of Energy</i> (2011) 16 ELRNZ 505; (2012) NZRMA 25 |
| 2012 | <i>Paki v Attorney-General of New Zealand</i> (2012) NZSC 50 |
| 2012 | <i>Greenpeace New Zealand v The Minister of Energy and Resources</i> (2012) NZHC 1422 |

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8. The use of minerals is, however, excluded from the RMA's primary purpose that relates to 'sustaining the potential' of these resources 'to meet the reasonably foreseeable needs of future generations' as minerals are finite in character: RMA, s 52(a). The significance of this is that it is legislative recognition that this resource is non-sustainable.



Chapter Four

Te Umanga – The Economics of Mining for Māori

Ka whakarauoranga ko te peka tangata, ko te peka whenua ka whakamatea iho

If there is a choice, survival of the people must come before retention of the land¹.

Mining is first, and foremost, an economic activity, and as in any other economic sector, mining companies are in business to earn profits.²

However, for iwi the decision point is fraught with political and legal considerations, as well as the economic, social, cultural and ecological pressures facing Māori communities.

The purpose of this section is to provide an overview of the current and future economic contributions of mining in the mineral resource sector to New Zealand, but with specific focus on points of interest for Māori landowners.

The issue is not whether the mining sector in general should be encouraged or discouraged. Rather, the issue is how to adjudicate among competing values, including non-market and often non-quantifiable ones.³

Māori may be involved in mining either as investors in a project or in responding to an external party that wishes to develop a mineral resource in which they have an interest. From an economic perspective, there are quite different issues at stake.

The decision-making process regarding mineral extraction has to be balanced with the broader sets of responsibility that are embodied within a culturally constituted worldview that focuses attention onto the wellbeing of future generations and their environment.

This represents a core philosophy in terms of:

- (a) how to manage natural resources or 'assets', embedded as such resources are in traditions and practice; and
- (b) how to conserve and protect these assets for future generations.

This requires a long-term view about returns on capital investments and embodies a different set of values about the natural environment. In turn this has significant implications for the way decisions are made

about how the environment is nurtured or exploited and its ultimate value from an economic perspective.

The Value of Mining

The mineral resource sector provides a significant source of supply for domestic industries as well as being a major contributor to New Zealand's export figures.

In 2011, the petroleum and minerals sector accounted for 2.5 per cent of GDP (\$4.1 billion) and 6.2 per cent of exports (\$2.7 billion). Since 2008, these sectors accounted for approximately NZ\$ 2.7 billion in royalties for the New Zealand government⁴. In addition, nearly \$7 billion has been invested in the oil and gas sector during the past five years, and since 2008/09 the Government has received more cash as royalty payments from upstream oil and gas producers than it received from its state-owned enterprise portfolio⁵.

The Institute of Geological and Nuclear Sciences projected an \$85 billion valuation of New Zealand's potential metallic mineral resources. This figure is dwarfed by an estimated \$140 billion in unexploited resources of just seven core minerals (including gold, copper, iron and molybdenum⁶).

In 2010 Māori commercial assets were estimated to be worth NZ\$36.9 billion, reflecting significant stakes in the agriculture, fishing, forestry and tourism sectors of the New Zealand economy⁷.

However, mining of mineral resources is worth only \$5 million of value to the Māori economy, the lowest earning industry for Māori besides the government sector⁸.

From 1992-2011, Treaty settlements to iwi and hapū groups have been estimated as somewhere between \$1.22 billion⁹.

These settlements have included financial, as well as land and other assets, being returned to the management and control of the respective iwi.

This is significant in relation to potential economic opportunities, because as Māori gain more control over these natural resource assets, there is an expectation that they will become more involved in the minerals sector¹⁰.

Stages of Mining¹¹

| | | | Direct Elements | Indirect Elements |
|----|--|--|--|---|
| 1. | Exploration (3-10 years) | Search for deposits | Consultation & access fees; employment opportunities | Infrastructure, investment opportunities, organisational learning |
| 2. | Feasibility & planning (2-7 years) | Determining the financial viability as a business; environmental assessments | | |
| 3. | Construction (2-4 years) | Building the facility, mill roads, rails, sewer & water lines | | |
| 4. | Mine operations (Several years or decades) | Extraction & processing of minerals | | |
| 5. | Mine closure & reclamation (2-5 years or decades for environmental monitoring) | Notification to stakeholders, decommission mines, remove buildings, reclamation – contour & seed ground, monitor the site. | | |

Māori Participation in Mining

Māori are already involved in the exploration and use of natural resources and participate as landlords, as partners in joint ventures and as mining operators themselves. For example:

- as outlined in Chapter Three, the Ngāi Tahu (Pounamu Vesting) Act 1997 has enabled Ngāi Tahu ownership and control over an asset by granting access, mining rights, and redress in relation to pounamu. In turn, this has presented an economic opportunity for Ngāi Tahu to 'brand' and manage the value chain of this mineral. (See www.authenticgreenstone.com/);
- the Pakirarahi No. 2 Trust has multinational mining companies as joint venture partners and is currently negotiating with a potential joint venture partner in the area of gold development. (See www.tpk.govt.nz/en/services/effective/share/casestudies/paikirarahi/); and
- Whangara B5, located near Gisborne, is a Māori Trust involved directly in sand mining. (See www.tpk.govt.nz/en/services/effective/share/casestudies/whangara/).

The Economics of the Mining Cycle

The ownership and access to minerals in New Zealand is a turbulent issue for Māori, particularly where lands under Treaty claims include sites that are known to be rich in mineral deposits.

Much of the tension resides in the provision of access to Māori-owned land or land that is part of a tribal area (including offshore resources).

Whether Māori are involved in mining themselves or are considering a proposal from an outside company, there are economic issues to be aware of in relation to each phase of the mining process (see Stages of Mining above). Each stage has direct and indirect economic factors that Māori groups should take into account when they are considering a mining proposition.

Direct Elements

Consultation and Access Fees

Throughout each of the stages, Māori should be involved in consultation and provision of access negotiations. This may include appropriate remuneration for doing so.

In the early stages, Māori might provide cultural and local knowledge assistance in the finding of suitable places for exploration.

As mentioned in Chapter Three, the Crown Mineral's Act 2013 requires "engagement with iwi or hapū".

However, what this means in practice is uncertain as currently there is no national-level protocol which companies must follow to meet these requirements. As a result, foreign mining companies attempting to set up mining operations in New Zealand take an ad-hoc approach to Māori consultation resulting in different outcomes, expectations and agreements.

Direct Employment

The mining industry employs thousands of New Zealanders in high-paying, highly productive jobs, including those in construction, logistics, telecommunications and other professional services. Highly skilled jobs like these can be particularly important for small rural communities. In 2009 the minerals resource mining industry employed 6,800 people directly and another 8,000 indirectly, as suppliers of goods and services¹². The average employee income for the mining sector was \$57,320 per annum, which is significantly higher than the average New Zealand income of \$33,530 per annum¹³ and is likely to be associated with highly skilled jobs in the industry.

The mining sector as a whole is not a strong employment generator, with mining accounting for only 0.3 per cent of the economy's employment¹⁴. However, given the significant opportunities for future investment, it is estimated that direct and indirect employment would increase at least two-fold, with job creation concentrated in regions such as the West Coast of the South Island, Otago and the Waikato¹⁵.

Māori/iwi could benefit from the employment opportunities, including qualification skilling and specific trade-training. This might also encourage whānau to stay or return home.

It is important to consider the implications for communities, given the profitability of the mining sector is tied so closely to global markets. When a mining industry is facing economic difficulties then the impacts on employees and communities can be sudden and severe, such as Solid Energy's mine

closures and staff layoffs in Huntly and the West Coast in late 2012. These closures were driven primarily by the decreasing global prices for coal.

Royalties

Once a mining activity begins extracting mineral resources, Māori might receive royalties if they are the owners of non-nationalised minerals. There is also the possibility of 'mitigation' or compensation payouts in situations where land is severely impacted on.

In 2011-2012, the minerals resource sector paid \$383 million in royalties and energy resource levies to the government. The prescription for calculating the ad valorem royalty (AVR) and the accounting profits royalty (APR) is set out in the recently reviewed minerals programmes issued by the Ministry of Economic Development and outlined in the Crown Minerals (Royalties for Minerals Other than petroleum) Regulations 2013 (see Chapter Three).

Separate documents cover coal and other minerals, although the royalty provisions in both are very similar. (See www.legislation.co.nz/regulation/public/2013/0206/latest/DLM5211652.html?src=qs and www.nzpam.govt.nz/cms/minerals/facts-and-figures).

Indirect Elements

Mining Infrastructure

Mining operations bring with them a range of secondary activities through direct mining support companies and providers of consumable goods and services.

While there will be many New Zealand-based businesses that can supply general support goods, there are very few companies that can provide the specialist types of products and services specific to the mining activity. Two such companies are Halliburton, an American company that provides technical products and services for petroleum and natural gas, and Orica, an Australian company that provides mining services and explosives.

Mining activities bring many benefits to local communities, including hiring local residents, developing and maintaining local infrastructures (roads, utilities, complementary business activities, etc) and creating financial opportunities¹⁶.

Mining can contribute to sustainable economic development by maintaining or enhancing the wellbeing of the community in which it operates.

In order to be sustainable, some percentage of profits or rent from mining activities must be reinvested into the communities within which mines are located. Reinvestment can include establishing businesses independent of the mine for future economic benefit as well as providing financial assistance in the form of scholarships or training programmes so that once a mine closes, employees are equipped to find new jobs.

Investment Opportunities

Mining requires significant investment of technology, equipment, labour force, and supporting infrastructure around the operation.

The Ministry for Economic Development stresses the importance of retaining the benefits from the mining industry in New Zealand and states that “attracting new investment is essential for a renewed, productive industry”¹⁷. Increased private sector investment in exploration and research is essential if this potential is to be realised¹⁸.

As noted earlier, of the \$36.9 billion value of the Māori economy, mining only contributes \$5 million. Therefore, there may be some scope for Māori-driven investment and development of mining operations.

Organisational Learning through Collaboration

Māori enterprises can also gain considerable industry specific learning through joint ventures and collaboration with those mining companies seeking partnership. This can be relatively simple through industry job training education, or can extend to more sophisticated management and or technological practices.

Social Cost-Benefit Analysis

There are many potentially negative environmental impacts from mining activities including water discharge, dewatering, smelting, transportation, and mineral extraction. These are expanded on in Chapter Five and need to be taken into account when calculating economic impacts to communities.

The most obvious are the largely unquantifiable detrimental impact to the existence values of landscapes and ecosystems which negatively affect non-consumptive uses such as recreation, tourism, photography and film, and the enjoyment of the New Zealand outdoor environment by people who may never visit the relevant places in person.

International Indigenous Joint-Ventures

Kitsaki Management Limited performs the for-profit economic development activities of the Lac La Ronge Indian Band (North-central Saskatchewan, Canada). One of their activities is Kitsaki Procon Joint Venture, a partnership with Golden Band Resources Inc., a contract mining, milling and construction business that is involved in the development of gold properties in the La Ronge gold belt.

■ See www.kitsaki.com/kitsakiprocon.html

The **Ermineskin Cree Nation** agreement with One Earth Oil is a 50/50 joint venture partnership between Ermineskin Cree Nation and One Earth Oil and Gas Inc., signed in 2010. It is the first agreement that One Earth Oil and Gas has signed directly with a Canadian First Nations Band who will be actively involved in all stages of the development and economic and social benefits.

■ See www.ammsa.com

Aboriginal Enterprises in Mining, Exploration and Energy Ltd (AEMEE) is a joint Indigenous and Industry Advisory Group set up to commercially advance aboriginal owned enterprises in Australia and internationally.

■ See www.aemee.org.au/about.asp

International Governance and Consultation Models

The IBA Community Toolkit provides guidance for Canadian First Nations communities considering negotiating a commercial agreement with a mining company. The goal is to help communities, negotiators, and consultants to achieve positive agreements for Indigenous communities.

■ See www.ibacommunitytoolkit.ca/

Good Practice Guide: Indigenous Peoples and Mining. A guide released by the London-based International Council of Mining & Metals in 2012 to help mining companies properly understand the communities they work with including the communities' particular contexts, concerns and aspirations.

■ See www.icmm.com/publications

Australian Aboriginal Indigenous Land Use Agreements – An ILUA is an agreement between a Native Title group and others about the use and management of land and waters. ILUA were introduced through amendments to the Native Title Act, 1998, and are administered through the National Native Title Tribunal.

■ See www.nntt.govt.au/indigenous-land-use-agreements

Sami – Norway, Finland and Sweden

Oil and gas exploration in the Arctic regions comes under the provenance of the Sami who are acknowledged as the indigenous peoples of Finland, Norway and Sweden with combined territories across the Arctic region. The Nordic Sami Convention has been put in place to protect and advance Sami self-determination and contains specific requirements concerning gas and oil exploration.

■ See www.arcticgovernance.org/

There are, however, quantifiable factors such as damage to the nation's brand image as 'clean and green' or '100% pure'. Because of tourism's large weighting in New Zealand's GDP, a loss of brand image could easily be a 1–2 per cent negative impact to GDP, a significant spill-over effect¹⁹.

This highlights the importance of social cost-benefit analysis (SCBA), a way of systematically thinking through the full implications of a project, taking account all relevant costs and benefits, both quantifiable and unquantifiable.

For Māori, cultural interpretations, myths, stories, and even whakapapa, would have to be included in such an analysis.

Conclusion

Mining is a significant business and has the potential to greatly boost the country's opportunities for economic development.

New Zealand's mining industry is important due to the value of mineral exports, mining productivity, ownership, multiplier effects, end-use, and the usefulness of New Zealand minerals.

Given the potential, the environmentally responsible development of New Zealand's mineral resources is seen as a priority. If New Zealand is to maximise the productivity of minerals, then it will need to take into account land conservation and other values as well as economic potential.

Māori have the opportunity to not only take advantage of that potential, but also bring a perspective to the decision-making process that incorporates investment in and gains from good asset management with a primary purpose of supporting social and cultural capital building for the community.

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Chapter Five

Te Taiao – Environmental Impacts of Mining

*Te Iwi tiaki tana rawa, tana tina maaro
whakamura ka tu tonu*

The tribe that preserves and treasures its heritage and prepares for the future, prevails against all odds¹.

This chapter outlines some of the main impacts on the environment that can be associated with mining. It covers the general impacts that might come from any sort of mining, and then some of the specific impacts that might occur. It outlines a selection of innovative tools Māori have developed that could be helpful to assess the impacts of developments.

The last part of the chapter discusses the potential impacts of mining on future generations, including the relationship between fossil fuels and climate change.

Environmental Impacts

'Environment' includes people, communities and cultural issues. As explained in Chapter Two, this is consistent with the Māori perspective that there is no division between people and environment. It is also consistent with the Resource Management Act definition of environment².

Mining is different from any other resource development because it involves using non-renewable resources. Water, forests or fisheries are renewable – they can be polluted or depleted, but if well managed they will keep on replenishing themselves. Mineral resources cannot be renewed, at least not in human timescales.

Apart from being non-renewable, every mineral resource and the mining operation needed to extract it is so different that it is not possible to say exactly what the environmental impacts might be. The actual impacts of a mining development will depend on the location, sensitivity, resource type, mining operation, and many other factors.

In outlining potential environmental impacts we are not suggesting that these will occur, but that they might occur if sufficient care is not taken in the design and operation of a mining operation.

New Zealand's mining industry prides itself on its mining practices and the care it takes in attempting to minimise environmental impacts. Straterra, the industry group of the mining sector, is committed to environmental and social responsibility, and on its website it promotes 'green mining' and has New Zealand case studies of good practice³.

General Impacts⁴

Minerals are located in just about every sort of environment imaginable – in farmland, under forests, on beaches, under the sea. Mining will always involve some sort of disturbance of the earth's surface and subsurface, sometimes a major disturbance.

The environmental impact of mining will be influenced by:

- **mineral type.** For example, gold deposits can be accompanied by arsenic, lead and mercury. These can leach into surrounding land and waterways when the gold is mined;
- **method of extraction.** For example, open cast mining is far more environmentally damaging than underground mining;
- **vulnerability of surrounding area.** For example, whether there are mahinga kai or wāhi tapu nearby;
- **timescale.** Some mining operations last just for a year or two, and some operate for decades or longer. Some impacts may be short lived, while others may last for years, or be permanent.

Impacts may be minor for some activities such as prospecting, but bigger projects can have significant effects on the physical environment. This may include:

- clearing vegetation and removing soil, subsoil and rock;
- diverting or modifying streams;
- dumping soil and rock taken from other places;
- noise and dust from vehicles and machinery;
- damage or destruction of wāhi tapu, kōiwi or other taonga;
- pollution of water from runoff from the earthworks;
- impacts on mahinga kai;
- visual impacts; and

- direct effects on the plants and animals that occur in the area, either by killing them outright, affecting their health or breeding, or displacing them.

Other impacts come from the processes and activities associated with mining operations. Examples are:

- loss of water quality in streams, lakes and aquifers from sediments, drainage of acids or the leaching of toxic chemicals used in minerals extraction – often for many years after the mine has closed;
- if ore has been chemically extracted, mine tailings can be a source of contamination; and
- impacts of the processing of the mineral (for example, turning lignite into more concentrated fuels, turning natural gas into synthetic fuels). Due to wide variations in processing, the impacts would have to be assessed on a case-by-case basis.

Te Atiawa and the Motonui-Waitara Claim⁵

In 1981, Te Atiawa helped bring about a change in thinking about mineral developments when they took the Motonui-Waitara claim to the Waitangi Tribunal. Their concern was that a proposed plant to make synthetic fuels out of natural gas could not guarantee that their fishing reefs would not be further polluted. The result was that the proposed discharge was not allowed, but in the wider scheme of things it brought the need for better control of pollutants to the fore, which helped to establish the basis of the new Resource Management regime in 1991.

Specific Impacts

Seismic Prospecting

(see Chapter 1 Diagram 1)

Offshore seismic surveys consist of a boat or boats towing hydrophones that record sound waves bouncing off the sea floor and below. These echoes image the rock formations underneath the sea floor and are used to assess whether oil or gas is likely to be present.

Environmental issues may include:

- the sound waves may affect marine mammals (such as whales, dolphins) especially those that use sound waves to communicate; and
- the long lines of hydrophones can be a shipping hazard.

Geophysical surveys also occur on land, these days often using helicopters with sensors flying in a set pattern over the land. Environmental issues may include noise disturbance from the helicopters.

Drilling for oil and gas

(see Chapter 1 Diagram 2)

New Zealand has a long history of exploration for oil and gas, and the Taranaki region in particular has been home to onshore and offshore oil and gas wells for many years.

Oil and gas exploration initially involves geophysical surveying, but if prospects look good then an exploration well will usually be drilled.

In the past few years there has been an increase in exploration both on land and offshore New Zealand. Offshore locations include off the Taranaki coast and off the east coast from East Cape to Stewart Island (see Map, Chapter 1).

There was just one multinational company exploring for offshore oil in 2006. In 2012 there were several multinational consortia at work, including ExxonMobil, Petrobras, OMV, Shell and Anadarko. The 2009-10 Crown Minerals annual report described New Zealand's offshore area as having 'huge petroleum potential'. In 2014, over 400,000 square kilometres will be available for on and offshore mineral exploration permits.

There is also exploration on land, with the international company Tag Oil calling the East Cape land area the 'Texas of the South', referring to what it believes are rich oilfields in the region⁶.

If exploration shows there are commercial quantities of oil or gas, and the economics stack up, construction of a production well and associated infrastructure may follow.

An offshore platform will either float or be attached to the sea floor. For both onshore and offshore operations, a well is drilled down to the oil or gas reservoir, a wellhead is constructed at the top, and a pipe takes the gas or oil to holding tanks.

Environmental issues may include:

- the potential for leakage of oil or gas if the wellhead or pipe is broken, particularly if there was an earthquake or tsunami;
- if the oil or gas is carried by ships, the potential for a spill following a shipping disaster;
- the impact an offshore oil spill on ocean ecologies, fisheries and coastal areas;
- the impact of an onshore oil spill on land and waterways;
- the flaring of gases;
- blowouts from over-pressurised gas reservoirs; and
- once the well life is finished, any issues with the permanent capping of the well.

Leaks from offshore oil wells may be particularly problematic, first because of the impact of oil spills on fish and marine mammal and other sea life (coastal areas too if the oil slicks come inshore). Second, fixing major leaks may require specialised rigs that are mostly at distant locations, and could take weeks or months to get here.

Seafloor Mining

(see Chapter 1 Diagram 3)

There are many different types of minerals available on or under the seafloor.

For many years ironsand has been mined from coastal dunes at Maoro and Taharoa to recover iron ore which is used at Glenbrook Steel Mill. Seafloor sand mining involves 'sucking' the sand up on to barges which then transport the sand onshore, either for use as sand, or for its iron content. It occurs in a number of locations around New Zealand's shores including the Kaipara Harbour, off the coast at Pakiri and offshore from Little Barrier Island.

Impacts can include:

- disturbing marine mammals;
- disturbing fisheries and marine life generally; and
- changes to the shoreline from altered currents.

Further out to sea, New Zealand's continental shelf also has many potentially exploitable mineral resources including phosphates (used to make farm fertilisers) and methane hydrates (frozen methane, a potential energy source).

Mining these could involve disturbance of the seafloor and result in disturbance of marine life. Little is known about marine ecosystems in these areas – or the actual methods of mining that could be followed – so it is difficult to anticipate the impacts.

Fracking

(see Chapter 1 Diagram 4)

Fracking (hydraulic fracturing) is used to extract oil or gas from deep underground. A mix of water or diesel, sand and chemicals is injected at high pressure into a well, fracturing the rock to release oil or gas trapped inside. The purpose is to extract previously inaccessible oil and gas from the earth's crust. The process has been used in Taranaki for at least two decades but proposals to use it more widely have met with strong opposition in some areas, and some councils have declared themselves 'Fracking-free zones'.

An interim report on fracking by the Parliamentary Commissioner for the Environment⁷ identified potential impacts of fracking as:

- contaminants entering the groundwater, including the chemicals used in fracking fluids, the oil and gas released, and salt water from deep underground;
- triggering small earthquakes (probably a very minor risk).

The crucial aspects that need to be managed are choosing where to drill, designing and constructing the well, avoiding spills and leaks on the surface, and disposing of waste.

The Commissioner concluded that the environmental risks associated with fracking can be managed effectively provided that operational best practices are implemented and enforced by regulation. However, these regulations are not yet in place.

Underground Mining and Coal Seam Methane

(see Chapter 1 Diagram 5)

In New Zealand, underground mining is most commonly used for coal extraction, but it is also used for other minerals, such as following gold seams at Macraes mine in North Otago. Underground coalmines are located in various regions of the North and South islands, Huntly and the West Coast being the most well-known areas. Some coal is exported, some used in industry and for households, and some used to generate electricity, for example at the Huntly power station.



Martha mine, Waihi

Extracting methane from coal seams is another way of accessing fossil fuel energy from underground but involves less physical disturbance, but this is little used in New Zealand to date.

Environmental issues specific to underground mining include:

- heaps of overburden (soil and rock removed to get down to the level of the ore or coal);
- heaps of tailings (material left over after separating out the ore);
- possible leachate from tailings;
- dangerous levels of methane gas accumulating underground, which is extremely toxic to humans.

Open Cast Mining

(see Chapter 1 Diagram 6)

Open cast mining is when the entire land surface is opened up to extract minerals.

One example is the Macraes mine in East Otago, with huge open cast mines to extract deeply-buried gold-bearing rock. Another example is the very large Stockton open cast coal mine near Westport.

Open cast mining is also used for lignite mining. Lignite is a low quality form of coal, with large deposits

in Southland and Otago. Until recently there has been little commercial use of lignite, but this is now changing, with proposals to use the lignite including converting it to diesel, making urea (a nitrogen fertiliser), and briquettes (made by drying out and compressing lignite).

A lignite mine and briquette plant primarily for export has been established near Maitua in Southland, although it is currently in doubt due to Solid Energy's financial woes.

Impacts of open cast mining are not just the hole in the ground but also the associated features such as

- heaps of overburden (soil and rock removed to get down to the ore or coal);
- heaps of tailings (material left over after separating out the ore);
- storage dams (for holding back contaminated water);
- leaching from storage dams for coal and lignite mining, streams and groundwater and becoming more acidic because of exposure to sulphide minerals⁸.

Resource consent conditions should ensure that the cost of monitoring and any necessary remediation will be funded following a mine closure, even if the company moves on.

Culturally-Based Environmental Impact Assessments Tools

In most cases, applicants for a mining proposal will have to prepare an assessment of environmental effects.

However, these may need to be challenged if, for example, local knowledge is at odds with that put up by the 'experts'. Cultural and spiritual implications may be overlooked by developers unless these are brought to their attention.

A number of tools have been developed to support culturally-based impact assessment. These can be useful alongside iwi management plans (see Chapter 2) in helping to decide whether to support or oppose a mining proposal, and what actions might help improve it.

A Cultural Impact Assessment (CIA) can:

- identify the effects of a proposed activity on Māori (tangata whenua) cultural associations with the environment;
- identify or assist identification and formulation of methods to avoid, remedy or mitigate adverse effects on cultural values and associations;
- suggest what conditions of consent could be applied if consent is granted;
- provide iwi/hapū with comprehensive information about and improved understanding of the proposed activity;
- assist both the applicant and the decision-making body in decision-making under the RMA.

■ See: Tumahai, F. (2010) Cultural Assessment of Escarpment Mine Project.
Website: www.wcrc.govt.nz/

Cultural Health Indices (CHIs) are tools to assess the cultural and biological wellbeing of a resource, integrating these findings with resource management practices. Most CHIs have focused on fresh water natural resources – often important whānau and hapū mahinga kai sites.

■ See: Tipa, G. & Tierney, L. (2006). Using the Cultural Health Index: How to assess the health of streams and waterways.
Website: www.mfe.govt.nz/publications/

State of the Takiwā is a culturally-based environmental monitoring and reporting system that takes into account Ngāi Tahu cultural values.

The approach uses a series of assessment forms to quantify cultural health scores based on factors such as suitability for harvesting mahinga kai, physical and legal access, site pressures, degree of modification and the identification of valued as well as pest species present.

Other tools included are the Cultural Health Index (CHI), Stream Health Monitoring and Assessment Kit (SHMAK), E.coli testing and electric fishing surveys.

■ See: Te Rūnanga o Ngāi Tahu
Website: www.ngaitahu.iwi.nz/

The Mauri Model analyses a situation or proposal in terms of whether it enhances or detracts from the mauri of the:

- environment (integrity of the ecosystem);
- hapū (integrity of cultural identity);
- community (well-being of society);
- whānau (economic wellbeing).

■ See: Morgan, Kepa (2007). Translating Values and Concepts into a Decision-Making Framework: Application of the Mauri Model for Integrated Performance Indicator Assessment
Website: www.sustainableforests.net/

Can the environmental risks be managed?

For most types of mining, the Resource Management Act (see Chapter 3) requires that the person or company proposing to carry out mining undertakes an assessment of environmental effects.

This means that the applicant has to come up with a detailed description of all of the environmental impacts (positive and negative) of the proposal, and describe how any negative impacts will be dealt with. This will often involve experts doing assessments in their area of expertise (for example, marine ecology, noise, water quality) which then helps the company determine how to prevent or reduce the effects.

If the effects can't be addressed (for example, loss of habitat because forest is being cleared) they may offer to 'offset' the impact (for example by planting native forest elsewhere) or may pay monetary compensation for people affected.

In many cases companies will consult with iwi regarding their plans, and may be willing to change their plans when they hear of particular concerns. Iwi and hapū have developed a number of culturally-based tools for environmental impact assessment (see box).

If applications are publicly notified under the Resource Management Act, iwi, hapū and whānau can make submissions to explain their concerns, speak at hearings, and if necessary appeal a decision to the Environment Court (see Chapter 3). For applications offshore (beyond the 12-mile limit) there is a different set of laws (see Chapter 3).

Impacts on Future Generations

Mining is different from other types of resource extraction because it is using non-renewable resources. While they will not 'run out' suddenly, the fields that are most easily accessible are used first.

Over time, the remaining resource fields will increasingly be smaller or deeper or more difficult to access. Although technologies for extraction continue to develop, predictions are that prices for fossil fuels⁹ and many minerals will continue to be volatile and generally trend upwards. So for all types of mining, it is important to think about future generations.

Site Closure and Rehabilitation

Unless the mines are very shallow, restoration once the mining is over can be very difficult and costly. Where the open cast mining involves very large and deep holes in the ground, such as at Macraes or Stockton, the land will never be restored to its original state.

Some effects of mine operations can continue for decades after the mine has closed, which can be problematic, especially if the mining company no longer exists and no one takes responsibility for remediation. An example of this is the Tui mine near Te Aroha. This was abandoned in 1975 by Norpac Mining Ltd. Until recently, the toxic tailings dam was at risk of collapse, and was polluting the nearby Tui and Tunakohoa streams. In 2012 a joint initiative between the government, Environment Waikato and Matamata-Piako District Council, costing around \$22.5 million, stabilised what is considered to be one of New Zealand's most hazardous sites.

- See <http://beehive.govt.nz/release/225-million-tui-mine-clean-complete>

More shallow mining sites such as for alluvial gold (laid down by rivers) can be re-earthed and grassed over and returned to pasture. The Golden Cross mine is one example of a rehabilitated mine site.

- See www.straterra.co.nz/Case%20studies

Another is the rehabilitation of the Southern region of the Taharoa C block site.

- See www.nzpam.govt.nz/cms/pdf-library/minerals/conferences-1/pres27_brown.pdf

Future generations are also in the picture when it comes to the impacts of mining. Some impacts might be short-lived, such as machinery noise while a road is built, while others will last for the life of the mining operation if the site is rehabilitated, as in present-day alluvial gold mining. Other impacts, such as open-cast mining, will cause a permanent change to the environment.



▲ Top photo: Golden Cross mine, Waihi.
Bottom photo: Regeneration at Golden Cross.

Even with the best of intentions, problems can occur either because they were not foreseen, or because of lax management, or human error, or because of natural hazards like storms or earthquakes.

When such issues occur it can sometimes be beyond the power of the company to deal with the problem, as with the Deepwater Horizon oil spill in the Gulf of Mexico. In such situations, as with the Rena spill off the coast of New Zealand, the government and communities bear the brunt of the burden. Sometimes

problems might not be evident until years into the future, as with 'orphan' sites, where mines cease operation and are abandoned, leaving remediation costs to be borne by taxpayers and ratepayers.

Mining and Climate Change

A critical issue for future generations relates particularly to fossil fuels - coal, oil (which is mostly refined and used as petrol and diesel), and gas.

Since the start of the industrial revolution around 200 years ago, when humans started using fossil fuels in large quantities, people have been the main drivers behind global climate change. All fossil fuels release greenhouse gases (mainly carbon dioxide) to the atmosphere when they are burnt. Amongst these, lignite and coal are the worst offenders, followed by oil-based fuels, followed by gas.

Methane hydrates, widely found in the deep sea, are a solid form of icy methane, a greenhouse gas that is a far more powerful than carbon dioxide when released to the atmosphere. Although we are not yet mining this gas, it is important to be aware that methane hydrates are a gaseous mineral being targeted by companies.

Concentrations of greenhouse gases in the atmosphere are reaching dangerously high levels and show no sign of slowing down.

Even though we are already seeing some of the impacts of climate change predictions such as more severe weather events, record high temperatures, melting polar icecaps, and ocean acidification, the most serious impacts will be felt by future generations, because it takes decades and even centuries for the impacts to work through the world's climate system.

The International Energy Agency has warned that without stringent new laws and policies supporting such efforts, the world is on track for a global temperature increase of a devastating six degrees or more¹⁰.

Because of the severe impacts of climate change on people, natural systems, and the global economy, many influential organisations including the World Bank, UNESCO and the International Energy Agency are calling for a rapid reduction in the use of fossil fuels, and their replacement with renewable energy and greater energy efficiency.

Ironically, at the very time when it would seem that the world should agree on reducing the use of fossil fuels, the fossil fuel industry is putting huge effort into developing new oil and gas fields, like offshore New Zealand, and in the ocean waters now available because the Arctic icecap is melting away, and using relatively new methods like fracking to get at underground oil or gas.

Within New Zealand, it is not currently possible to argue against new coal, oil and gas fields on the basis of greenhouse gas emissions, because the RMA and the 2012 EEZ Act do not allow it¹¹. New Zealand's Emissions Trading Scheme (ETS) was set up to use pricing mechanisms to reduce emissions, but many people argue that it is too weak and watered down to have much effect. Any fossil fuels that New Zealand exports are not subject to the ETS.

In time, it may be that some of the carbon emissions from fossil fuels can be mitigated by carbon capture and storage, that is, trapping the carbon dioxide emitted from burning fossil fuels, and storing it.

Options being explored include turning it into coke-like compounds and ploughing it into paddocks, or storing it underground in depleted oil and gas wells. But carbon capture and storage methods are still under development and unproven on a commercial scale¹².

So, to what extent should Māori be concerned about greenhouse emissions from fossil fuels?

One position is that demand for fossil fuels will continue in the foreseeable future. If they are needed, and if companies can produce them efficiently and without direct environmental damage, why shouldn't they continue to do so?

Another position is that New Zealand, and the world at large, need to forge a new path to use renewable energy rather than be reliant on fossil fuels.

This change will not happen automatically; it requires effort and encouragement to move to much greater use of renewable energies (biofuels, wind, geothermal, solar, marine) and energy efficiency rather than continuing with 'business-as-usual'. Also, there are huge opportunities in investing in 'green' energy development, and front-runners are likely to be able to reap significant benefits. A number of Indigenous peoples, including in Aotearoa, are exploring this latter option.

Conclusion

Each mining operation will have very different environmental impacts depending on the type of resource, the location, the scale, the technologies being used, the quality of management, the sensitivity of the location, and long-term impacts.

Applicants for consent usually have to prepare an assessment of environmental effects, which helps in understanding these impacts. However, these are not always up to scratch, and also cultural and spiritual aspects may be overlooked unless they are brought to the developer's attention. There are several Māori-developed tools that can help iwi and hapū to assess and communicate impacts that they are concerned about.

References

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2. Environment includes:
 - (a) ecosystems and their constituent parts, including people and communities;
 - (b) all natural and physical resources;
 - (c) amenity values; and
 - (d) the social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) or which are affected by those matters (Section 2 Resource Management Act 1991).
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8. Parliamentary Commission for the Environment. (2010). Lignite and climate change: The high cost of lowgrade coal. Retrieved from www.pce.parliament.nz/assets/Uploads/PCE-Lignite.pdf
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Conclusion

He Kupu Whakatepe

Mineral extraction in Aotearoa is complex. As can be seen from the Overview, trying to untangle the inter-related technical, social, cultural, legal, economic and environmental factors is no easy task.

Although mining is essentially an economic activity, the context in which it is carried out – its ‘social licence’ – remains contested in many cases. Peak body Māori organisations, such as the Iwi Leaders’ Group, have stated that natural resource exploitation will be an area for further examination, and recent government documentation reflects an expectation that Māori wish to see progress in this area¹.

If Māori are to benefit from mining, as owners, partners, licensees, employers or workers, then there needs to be far more certainty about how such a social licence might be gained.

In some cases, such as Ngāi Tahu’s branding and ownership of the pounamu value chain, there does appear to be widespread consent for such activity.

In other cases, such as foreshore and seabed mining and fracking, there is strongly articulated concern. Many remain unconvinced that New Zealand is able to manage the risks properly, particularly in more challenging offshore marine environments such as those found on the Chatham Rise. Among some, there is a strong belief that such activity should not be pursued under any circumstances.

What constitutes a social licence for Māori is not entirely certain. This publication lays out some of the elements that might begin to build this understanding, but it is by no means the last word. Further research is needed to examine the issues in more detail.

For example, international Indigenous experience might be used to guide the debate in Aotearoa, both as cautionary tales and as example of good practice. There is also a paucity of Māori specific case studies to understand how mining has affected particular iwi, hapū or whānau groups. And, as noted in the introduction, a more specific focus on the issues surrounding other energy sources such as geothermal energy is overdue.

Finally, perhaps the issue that has been least well understood in the research literature is where Māori stand on the issue of global climate change in relation to mineral resource extraction and the extent to which this is a driver of individual and collective action. The authors expect that increasingly such research will be in demand.

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Who's Who in Mining

Selected companies operating in New Zealand

(Information is for the 2011 year unless stated otherwise)

Oil and Gas

(For a full list of Oil Companies: www.energystream.co.nz/node/271)

Shell New Zealand (founded 1911)

A subsidiary of Royal Dutch Shell

Parent Headquarters: The Hague, Netherlands

Parent Locations: Operates in 80 countries globally

World-wide Annual Production: All hydrocarbons:
8,192 billion barrels per annum

Employees worldwide: 93,000 (300 NZ)

2011 Revenue: \$470.2 billion (NZ \$1.33 billion)

NZ: Operates in Taranaki. Has joint exploration permits for Great South Basin with OMV (Austria) and Todd Energy (NZ)

Website: www.shell.co.nz/

Sources: The Shell Global Homepage, Shell New Zealand Website, Shell Annual Report 2011, Weir, James (2011, 6 Aug.) 'Shell's Wells yield \$162 million profit.' Stuff.co.nz

Anadarko (founded 1959)

Headquarters: Houston, Texas

Locations: China, USA, Mozambique, Ghana, Algeria, Brazil, Indonesia, New Zealand

World-wide Annual Production

All hydrocarbons: 248 billion barrels per annum

Employees worldwide: 4,800

2011 Revenue: \$13.8 billion

NZ: Exploration licences in Taranaki and Canterbury basins

Website: www.anadarko.com

Sources: Statista.com, Anadarko website

Todd Energy (founded 1929)

a subsidiary of Todd Corporation

Headquarters: Wellington

Locations: Taranaki, Waikato, Bay of Plenty,

Manawatu. Exploration permit in Great South Basin

World-wide Annual Production: 12.03 billion barrels per annum (2007)

Employees worldwide: 300

2009 Revenue: \$334 million. Company valued at \$2.7 billion in 2011

Website: www.toddfoundation.org.nz/

Sources: Todd Energy website, Submissions to the Special Select Committee Examining the Emissions Trading Scheme 27 Feb 2009, National Business Review, 29 July 2011, Patrick Smellie (2010, 29 Dec). "Richard Tweedie Walking Far from the Energy Crowd". Stuff.co.nz

Gold

Newmont Mining Corporation (founded 1916)

Headquarters: Colorado, USA

Locations: Nevada, Indonesia, Australia, New Zealand, Ghana and Peru

World-wide Annual Production: 5.4 million ounces of gold (2010). Also produces silver and copper

Employees worldwide: 34,000 (c. 350 NZ)

2011 Revenue: \$10.3 billion

NZ: 100% owner of the Favona and Trio underground deposits and the Martha open pit mine. The Waihi operation produced 97,000 ounces of gold in 2011.

Website: www.newmont.com

Sources: Reuters, www.newmont.com

Oceana Gold (founded 2004)

Headquarters: Melbourne, Australia

Locations: New Zealand, Philippines

World-wide annual production: 252,499 ounces

Employees worldwide: 1016 (755 NZ)

2011 Revenue: \$395.6 million

NZ: Macraes Mine in East Otago consists of a large scale opencast mine (opened in 1990), and a newer underground mine opened in 2008 and an open cast mine at Reefton opened in 2007. It produced on average 193,000 ounces per year for 2008 -2010. From 1990-2010, gold production has totaled about 3 million ounces

Website: www.oceanagold.com/

Sources: Yahoo Business and Finance, Oceana Gold Fact Book 2012, Oceana Gold Annual Information Form for the year ended Dec 2011

Coal

Solid Energy (founded 1987)

Headquarters: New Zealand

Locations: Waikato, Taranaki, the West Coast and Southland

World-wide Annual Production: Coal- 4 million tonnes; Wood-pellets – 46,000 tonnes; Biodiesel – 1.8 million litres

Employees worldwide: 1426

2011 Revenue: \$828.7 million (In 2012 there was a loss of \$40million with \$389 million in debt)

NZ: Solid Energy is New Zealand's largest coal mining company whose core mining business includes hard coking coal, primarily for export to steel mills throughout Asia, and thermal coal for the Huntly power station and other domestic customers in the steel, dairy and cement industries. It also produces biodiesel and has wood pellet plants. Its lignite plant in Maitua is leased to Australian company, GTL Energy that plans to use the technology for expansion into Indonesia

Website: www.coalnz.com

Sources: Solid Energy New Zealand Annual Report 2012

Ironsands

New Zealand Steel a Subsidiary of Bluescope Steel (founded 2002)

Parent Headquarters: Melbourne, Australia

Locations: USA, Oceania, Asia, Australia, New Zealand

World-Wide Annual Production: Unavailable

Employees Worldwide: 17,000 (NZ C. 1500-1800)

2011 Revenue: \$4.5 Billion (NZ \$755 Million)

NZ: NZ Steel excavates about 2.4 million tonnes of Ironsand per annum from its Waikato North Head and Taharoa Mining Operations, Exporting about 1 million tonnes to North Asia

Website: www.nzsteel.co.nz/

Sources: Bloomberg, Bluescope Steel Limited Annual Report 2012, NZ Steel Website, Nyk Group Press

Release 17 May 2012, Kasm

Website (Kasm.org.nz), Sharecat.co.nz

Mining Services Companies

Halliburton (founded 1919)

Parent headquarters: Houston, USA

Locations: Operates in 80 countries

World-wide annual production: Provides cement services, wireline logging and perforating, oilwell control and production services and specialised oilfield pumping

Employees worldwide: 70,000 (NZ c. 50-100)

2011 Revenue: \$25 billion (NZ \$20-50 million)

NZ: Operates out of New Plymouth

Website: www.halliburton.com

Sources: Halliburton website nz.kompass.com

Orica (founded 1874)

Parent headquarters: Melbourne, Australia

Locations: Operates in 50 countries

World-wide annual production: Supplies blasting and chemicals to the mining business

Employees worldwide: 15,000

2011 Revenue: \$6.2 billion (NZ \$20-50 million)

NZ: Operates out of Auckland

Website: www.orica.com

Sources: Orica website nz.kompass.com

Resources

NZ Government

- New Zealand Petroleum and Minerals (www.nzpam.govt.nz/cms). Government website managed by Ministry of Business, Innovation and Employment.
- GNS Science (www.gns.cri.nz). A Crown Research Institute providing research on energy and resources.
- Parliamentary Commissioner for the Environment (www.pce.parliament.nz/). Reports on a number of environmental issues, including fracking.
- Ministry of Business, Innovation and Employment. Has recently (2013) published a comprehensive report on the Petroleum and Mineral sector (www.mbie.govt.nz)

NZ Advocacy Groups

- Energy Stream (www.energystream.co.nz). Venture Taranaki Trust portal for information about New Zealand's oil and gas industry. Includes good information on permitting.
- Straterra (www.straterra.co.nz/). New Zealand lobby group for the mining sector.
- New Zealand Minerals Industry Association (www.minerals.co.nz/html/index.html). An incorporated society that supports mineral explorers and producers.
- KASM (<http://kasm.org.nz/kasm/about/>). A NZ lobby group against seabed mining.
- Greenpeace (www.greenpeace.org/new-zealand/en/). International environmental lobby group which opposes off-shore oil drilling.

NZ Research

- Institute for Governance and Policy Studies (<http://igps.victoria.ac.nz/>). Policy Quarterly Volume 7 Issue 1. Useful 2011 overview of mining in NZ from several perspectives.
- Ocean Governance: The New Zealand Dimension-Summary Report (<http://igps.victoria.ac.nz/publications/publications/show/330>). Useful general overview with good sections on off-shore mining and Māori values.

International

- IBA Community Toolkit (www.ibacommunitytoolkit.ca/). A Canadian resource for communities considering impact and benefit agreements with mining companies.
- International Council on Minerals and Mining (www.icmm.com). An international association of mining and metals industry representatives. Has an Indigenous section.
- Indigenous Environmental Network (www.ienearth.org/). A North American environmental lobby group with a strong focus on mining.

Recent International Books

Langton, Marcia, Longbottom, Judy (eds).

Foundations for Indigenous Peoples in the Global Mining Boom. Routledge: Oxford. 2012.

Sawyer, Suzana and Edmund Terrance Gomez, (eds).

The Politics of Resource Extraction: Indigenous Peoples, Multinational Corporations and the State. UNRISD, 2012.

Whitmore, James (ed.). Pitfalls and Pipelines.

Indigenous Peoples and Extractive Industries.

Tebtebba Foundation and IWGIA. Philippines. 2012.

About the Authors

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Hauauru Rae (Waikato, Ngā Puhī) (Chapter 2) is an Analyst at the Ministry for the Environment. He recently graduated with a Master of Planning degree from the Department of Geography, University of Otago. His research interests include Indigenous participation in planning and Māori urban design. Hauauru's Master's thesis research explored indigenous participation in earthquake recovery planning.

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▼ Left to right: Luke Easterbrook, Janet Stephenson, Lyn Carter, Katharina Ruckstuhl, Andrew Gorman, Michelle Thompson-Fawcett, Jacinta Ruru, Diane Ruwhiu.



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