

# Maximising our Mineral Potential: Stocktake of Schedule 4 of the Crown Minerals Act and beyond

Discussion Paper

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Ministry of Economic  
Development



*M a n a t ū Ō h a n g a*



Department of Conservation  
*Te Papa Atawhai*

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## Foreword

New Zealand is a mineral rich country. From Northland to Stewart Island our regions contain many areas of great mineral potential. The stocktake of Schedule 4 of the Crown Minerals Act shows that we are mineral rich. Although this mineral resource is widely spread across our regions, some of our minerals are often concentrated in certain parts of the country. A large proportion of our mineral potential (approximately 40 percent) appears to be in Schedule 4 lands, which make up 13 percent of New Zealand's land area. The location of some of our mineral wealth creates a dilemma for us, since the areas of the richest mineral deposits are often places where conservation, cultural and tourism values are high, too. The Government is determined to see living standards in New Zealand rise, but it doesn't want to see conservation values lost or our clean green image sacrificed.

Facilitating mining in non-Schedule 4 lands, where appropriate, is important for New Zealand's economic well-being. The Government is focused on improving the timeliness, cost effectiveness and certainty for potential investors while ensuring environmental standards are not unnecessarily compromised. There are three primary areas where we will address this: through Resource Management Act reforms; by improving the Department of Conservation's concessions and access arrangement processes; and by the Government investing in more information about mineral potential in a similar way to our investment in seismic data for petroleum.

In Schedule 4 areas there is considerable mineral potential and we do want to facilitate development of that potential where appropriate. The Government has, however, decided that the conservation values in the vast majority of Schedule 4 areas do outweigh the mineral potential, particularly in the case of Kahurangi and Mount Aspiring national parks. In a very few cases, we are confident that small targeted areas will be of interest for mineral investors, and could through environmentally responsible mining techniques contribute considerably to our prosperity without significant negative effects on the wider areas. We are proposing to remove these from Schedule 4 so that applications for mining can be considered on a case-by-case basis as they can be for the rest of the country.

The Government will not be removing large sections of our precious national parks from the protection afforded by Schedule 4 and in most cases further work is needed to narrow down the precise areas with the best mineral potential before considering any changes. The Government is, therefore, carrying out a research and investigation programme of areas with significant mineral potential over the next nine months.

This research programme will include a few Schedule 4 areas and a number of other parts of the country with good mineral potential. Once this work has been carried out, the Government will be able to identify with more precision further localised areas it may propose for removal from Schedule 4. If the Government proposes to remove any such areas in the future the public will be further consulted.

The stocktake has also identified some public conservation areas not currently listed in Schedule 4 that we consider are appropriate for addition to the schedule.

We are now seeking input from the community before making decisions about whether the areas we have identified should be added to or removed from Schedule 4, and about some related policy initiatives set out in this paper. These actions aim to make the most of New Zealand's mineral resources in an efficient and environmentally responsible way.



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Minister of Energy and Resources



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Minister of Conservation

# Contents

<b>1. The stocktake .....</b>	<b>1</b>
1.1 Objective of the stocktake .....	1
1.2 Stocktake conclusions.....	1
<b>2. New Zealand’s mineral potential .....</b>	<b>4</b>
2.1 Schedule 4 potential.....	4
2.2 Mineralisation beyond Schedule 4 .....	5
2.3 Conclusion on New Zealand’s mineral potential .....	8
<b>3. Removal from Schedule 4.....</b>	<b>11</b>
3.1 What is Schedule 4? .....	11
3.2 How can we ensure that development is responsible?.....	12
<b>4. Schedule 4 areas of interest.....</b>	<b>14</b>
4.1 Areas proposed for removal.....	14
4.2 Further investigation of prospective areas .....	15
<b>5. Further investigation programme .....</b>	<b>16</b>
5.1 Scope .....	16
5.2 Nature of investigation .....	16
5.3 Subsequent steps .....	17
<b>6. Facilitating mineral development.....</b>	<b>18</b>
6.1 Joint ministerial approval for access to Crown land.....	18
6.2 Putting in place a nationwide DOC standard operating procedure for access to land for prospecting, exploration and mining .....	19
6.3 DOC concessions review .....	19
<b>7. Areas proposed for removal from Schedule 4.....</b>	<b>20</b>
7.1 Great Barrier Island – Te Ahumata Plateau.....	21
7.2 Sections of public conservation land on the Coromandel Peninsula.....	23
7.3 Otahu Ecological Area and Parakawai Geological Area.....	27
7.4 Paparoa National Park - Inangahua Sector .....	29
<b>8. Areas proposed for addition to Schedule 4 .....</b>	<b>33</b>
<b>9. Establishment of a contestable conservation fund.....</b>	<b>34</b>
<b>Have your say .....</b>	<b>36</b>
Process and submissions .....	36
Posting and release of submissions .....	36
Privacy.....	37
Questions .....	37
<b>Glossary of terms .....</b>	<b>39</b>

## 1. The stocktake

### 1.1 Objective of the stocktake

This stocktake is primarily aimed at reviewing whether any land listed in Schedule 4 of the Crown Minerals Act (**CM Act**) should be removed from the schedule. Inclusion of an area in Schedule 4 means the minerals in the area are off limits for any meaningful economic development<sup>1</sup>. While the restrictions relating to Schedule 4 areas apply equally to hydrocarbons and minerals, the focus of the stocktake was on minerals on the basis that coal reserves are well established and the Government has recently released a study on oil and gas potential in New Zealand for public comment.

To provide a wider context to the exercise, the stocktake was broadened to include summarising known information on New Zealand's potential as a mineral producing country and to identify any inhibitors to mineral development in non-Schedule 4 lands.

In addition, the stocktake has highlighted that some public conservation areas, such as recently gazetted marine reserves, are as valuable as areas already in Schedule 4, and a number of these areas are proposed for addition to Schedule 4.

The stocktake has involved evaluating existing information on mineral potential and conservation value via a desk-top mapping exercise. Tourism, recreation and cultural values have also been considered. No new studies of mineral potential have been undertaken.

### 1.2 Stocktake conclusions

The four main conclusions of the stocktake are summarised below. These four conclusions will guide the Government's next steps and are the basis on which comments are being sought from interested parties.

#### **Conclusion 1: New Zealand is mineral rich and the environmentally responsible development of this potential is a very real possibility.**

A key conclusion from this stocktake is that New Zealand is a mineral rich country with considerable untapped potential. This potential extends beyond minerals that have a long history of development in New Zealand, such as gold, and includes many minerals of great importance to modern economies which few New Zealanders are likely aware exist in New Zealand. Our mineral potential includes so-called "rare earth elements", which are considered globally to be minerals of strategic importance, given very limited players in the global market. They include dysprosium, terbium, erbium and ytterbium, which are critical to technologies such as hybrid and electric cars, wind turbines, computer disk drives, fibre-optic telecommunication cables, low-energy light bulbs and military equipment.

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<sup>1</sup> Activities are restricted by the CM Act to "minimum impact activities" (described on page 11 below), underground mining from outside the area and demonstrations of historic mining practices. This has meant that generally there is limited knowledge of the mineral geology of areas considered to be highly prospective and any mining activity on Schedule 4 land has been limited to around (and under) the boundaries of these areas.

An estimate of the value of New Zealand's on-shore minerals, excluding hydro-carbons, is about \$194 billion<sup>2</sup>. Offshore potential includes iron sands, seafloor gold and basemetals, phosphate and other minerals. Their potential value may eventually be found to exceed that of on-shore resources.

Given the size of this potential the Government regards the environmentally responsible development of its mineral resources as a priority.

### **Conclusion 2: Much of the country's mineral potential is concentrated, often in public conservation areas with high conservation and cultural values.**

Like elsewhere in the world, New Zealand's mineral resources tend to be highly concentrated in certain areas. While many regions have mineral potential, the areas with highly valuable resources tend to be in relatively small pockets.

Much of New Zealand is Crown-owned land, with about 40 percent of the country being public conservation land administered by the Department of Conservation (**DOC**). Within that DOC-administered land, the Schedule 4 lands have been identified as having particular conservation values and include all national parks, the Coromandel Peninsula and other high conservation value areas such as marine reserves. About 40 percent of New Zealand's known mineral potential is estimated to be in Schedule 4 areas<sup>3</sup>, which make up less than 13 percent of the country.

This means that if New Zealand is to develop its mineral potential, then it will need to consider how to balance the conservation and other values of this land with its economic potential and whether the two uses of the land are compatible.

### **Conclusion 3: The mineral potential of Schedule 4 lands could be developed with only a very small proportion of the land being directly impacted.**

The concentration of minerals in certain areas means that development can be very targeted. Pinpointing the highest value mineral areas means that only small areas of land would need to be removed from Schedule 4 to enable New Zealand to realise significant economic potential.

With modern mining techniques the actual impacts on the land can also be kept to even smaller areas by, for example, ensuring that most mining is underground. In addition modern mining techniques mean that adverse effects, such as on water quality, can be strictly controlled and long-term effects on the land can be mitigated and minimised.

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<sup>2</sup> This estimate is based on: (1) a \$140 billion estimate for a narrow range of New Zealand's onshore metallic mineral potential (Richard Baker, Consulting Geologist; *The Natural Resource Potential of New Zealand*; commissioned by Strattera and New Zealand Minerals Industry Association; March 2008); (2) a \$47 billion estimate for Northland's mineral resources (Christie and Barker; *Mineral resource assessment of Northland*; GNS Science Report 2007/6); and (3) a \$7 billion estimate for metallic mineral resources in Rakiura National Park, Stewart Island (Christie, Rattenbury, Brathwaite, Mortimer and Tulloch; *Mineral resource assessment of Rakiura National Park, Stewart Island, New Zealand*; GNS Science Report 2009/312).

<sup>3</sup> This is a Ministry of Economic Development (**MED**) estimate based on a number of studies that have been carried out over the last 10 years in relation to various prospective areas around the country, including those referred to in footnote 2 above.

**Conclusion 4: Information on New Zealand's mineral potential is limited and Government has a role to improve our knowledge of the mineral estate.**

New Zealand is lightly explored from a mineral perspective. The available information is certainly enough to establish that the country has considerable potential but it may well be that this potential is even greater than studies to date have shown, given how little exploration and research has been carried out.

There is a strong role for Government to improve the knowledge of our mineral resources in order to attract investment to develop this potential.

## 2. New Zealand's mineral potential

### 2.1 Schedule 4 potential

#### Coromandel region

The most detailed information New Zealand has about its mineral potential is on the Coromandel, which is the country's most established mineral area.

In a 2008 report, GNS Science (**GNS**) estimated the value of potential resources for 12 metallic and six non-metallic minerals for the wider Coromandel region<sup>4</sup> at a total of \$54 billion (mostly in gold, silver and peat)<sup>5</sup>. As shown in GNS's report<sup>6</sup>, this potential is dispersed across much of the Coromandel Peninsula. Specific areas with very significant mineral potential have been identified within the region. These areas amount to less than four percent of Schedule 4 land in the region, but contain an estimated one third of the region's mineral potential.

#### Paparoa National Park – Inangahua sector

There is good information about parts of Paparoa National Park, which have identified coal reserves. The areas of greatest known mineral potential are four areas to the west of the Inangahua River between Te Wharau (Stony) River and the Buller River. They became part of the national park as part of the "Timberlands accord"<sup>7</sup> in 2002, although they are not contiguous with the main park area. Mining has taken place in these areas in the past and there are several current mining and exploration permits over the area.

#### Other national park areas

The available information on the other Schedule 4 areas is sufficient to identify that there is very significant mineral potential in parts of Kahurangi, Mount Aspiring and Rakiura national parks. The main body of Paparoa National Park and the two non-contiguous areas to the east of that may also have good potential for gold and rare earth elements due to the rock formations in the area.

The information currently available on these areas is, however, insufficient to pinpoint the targeted areas that could be of high mineral potential to the same level of specificity that is possible in the Coromandel. More information is required to identify whether there are particular smaller areas within these parks that should be considered for removal from Schedule 4, so that mineral-related access applications can be considered on a case-by-case basis.

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<sup>4</sup> This region includes public conservation lands on the Hauraki Gulf islands, on the peninsula and to the south of the peninsula including the Otahu Ecological Area and the Parakawai Geological Area, and private lands.

<sup>5</sup> See GNS Science Report 2008/14, *Mineral resource assessment of the Thames-Coromandel and Hauraki districts, New Zealand*; June 2008; Christie, Brathwaite, Barker & Skinner; available at [www.med.govt.nz/schedule4](http://www.med.govt.nz/schedule4).

<sup>6</sup> *ibid.*

<sup>7</sup> See section 8(1)(c) of the *Forests (West Coast Accord) Act 2000*.

Regional geophysical and geochemical surveys could be carried out to delineate areas of mineral prospectivity using low impact techniques such as airborne geophysical exploration, mapping and sampling by mainly hand-held methods. This could pinpoint discrete areas in Schedule 4 land that would have the most significant mineral potential.

**The Government is not further investigating the potential of Kahurangi or Mount Aspiring national parks, which will remain protected in Schedule 4.**

## 2.2 Mineralisation beyond Schedule 4

A significant amount of New Zealand's untapped mineral potential also exists in non-Schedule 4 land and facilitating development of that potential is a priority for the Government.

### Northland

The Northland region contains a wide variety of minerals and currently produces rock and sand aggregates, limestone for cement and agriculture, and high quality ceramic clays for export. Large resources of quartz-rich silica sands are present at Parengarenga Harbour on the east coast and around Kaipara Harbour on the west coast. Sand has been dredged from Parangarenga in the past and processed into glass. There are also good prospects for bentonite, feldspar sands, nickel, copper, lead, zinc, zeolite, precious metals, coal and peat.

Several occurrences of epithermal gold-silver mineralisation and rock alteration associated with that style of mineralisation are already known in Northland. As an example, recent exploration for epithermal gold at Puhipuhi has outlined a zone 4.5km long by 1km wide with quartz veins that have significant gold and silver grades.

A 2007 mineral resource and economic study by GNS estimated the total potential value of Northland's resources (excluding aggregate, limestone and sand) at \$47 billion<sup>8</sup>. This estimate comprises \$28 billion for 14 non-metallic mineral deposit types, \$5.2 billion for metallic mineral types, \$1.8 billion for coal (including lignite), and \$12 billion for peat.

Northland is under-explored compared with other parts of New Zealand and overseas. Further exploration may lead to discovery of new resources that could expand the minerals industry and contribute strongly to Northland's economy.

### Waikato region

The Waikato region is a major mineral producing region of New Zealand. The region's total in situ coal resource is large and Solid Energy has recently stated its Waikato reserves (coal proven economic and feasible to mine) at 16 million tonnes<sup>9</sup>. Waikato sub-bituminous coal has strategic importance for energy generation (for example, the Genesis Energy-owned Huntly Power Station), steel production at the Glenbrook Steel Mill, and other important sectors including the dairy and meat processing industries.

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<sup>8</sup> See GNS Science Report 2007/06, *Mineral resource assessment of the Northland Region, New Zealand*; May 2007; Christie & Barker; available at [www.enterprisenorthland.co.nz/dev\\_groups/minerals/background.htm](http://www.enterprisenorthland.co.nz/dev_groups/minerals/background.htm).

<sup>9</sup> See Solid Energy New Zealand Limited, *Annual Report 09*, page 21.

Silica, a metalloid used in a range of products critical for manufacturing, occurs as commercial deposits of diatomite (the silica remains of algae, from which silica can be extracted) in South Auckland, Waikato and Rotorua. One deposit at Mercer is estimated to contain about 180,000 tonnes of extractable diatomite and pumicite.

### **Southern Coromandel Volcanic Zone and Central North Island**

The Coromandel Volcanic Zone, south of State highway 25A in non-Schedule 4 land, and across the Waihi Basin and Kaimai Mamaku Forest Park Range, includes part of the Hauraki goldfield with its numerous epithermal gold-silver deposits. In this zone, gold and silver are currently produced from the Martha Hill open pit mine (approximately 1,600 kg gold and 10,000 kg silver annually) and the Favona underground mine (3,400 kg gold and 8,800 kg silver annually). Production from these two mines has a total value of about \$267 million per year (based on current production rates and international gold and silver prices). There is high potential for discovery of extensions of previously worked deposits and for new epithermal gold-silver deposits, including undiscovered deposits buried under fresh cover rocks (for example, the former Golden Cross underground mine).

In the Taupo Volcanic Zone of the central North Island, gold-silver mineralisation is present in active geothermal fields systems, and exploration has defined several highly prospective systems for gold and silver, on both privately-owned and Crown leasehold land (for example, the Muirs Reefs deposit at Te Puke, and the Ohakuri prospect north of Taupo). They are the top parts of the epithermal deposits, and the younger counterparts of the Hauraki Goldfield on the Coromandel Peninsula.

In addition the region has potential for new industrial minerals from the volcanic rocks of the central North Island, and has large resources of high quality limestone, ironsand, pumice, amorphous silica and numerous other minerals. Zeolite has a growing market as an absorbent, decontaminant and as stock feed.

### **South Island**

#### ***Platinum group metals and gold***

The major igneous rock unit of the South Island, the Median Batholith, is prospective for a range of metals, including platinum group metals, gold and rare earth elements.

Permian-aged layered granitoids that dominate the eastern edge of the batholith, include the Longwood Complex in Southland, which extends over an area of 32km by 12km and is New Zealand's best-known platinum group metal prospect. Platinum group metals and associated sulphides are thought to crystallise from the granitoid magma and settle out into discrete layers. The high prospectivity of the Longwood Complex for layered platinum group metals is corroborated by platinoids that have been found in both nearby outwash sediments at Orepuke (so-called "placer deposits") and in situ during recent exploration. The granitoids are strongly comparable to highly productive layered igneous rock complexes overseas, and future exploration may see the discovery of a million ounce platinum group metal deposit with similarities to the world-class Stillwater deposit in Southern Montana, USA.

The Rotorua Complex near Murchison, another layered intrusion which is part of the Median Batholith, is underexplored and considered to have excellent potential for economic PGM mineralisation. Similarly the Riwaka Complex, which occupies non-

Schedule 4 land in North West Nelson, and is the oldest granitoid of the Median Batholith, has high grade layers of nickel-copper-platinum group mineralisation located along its southern margin in the Graham Valley area. With further investigation and exploration of the complex, there is significant probability that an economic nickel-copper-platinum group resource will be discovered.

The granitoids of Median Batholith, including those within the Lyell District, Westland, are also highly prospective for hosting intrusion-related gold deposits – a recently recognised class of mineral deposit that has examples of very large low grade deposits in North America and Australia. The discovery of intrusion-related gold at Sam’s Creek, North West Nelson, with similarities to the productive Woods Point dyke swarm in Victoria, Australia, illustrates the potential for the discovery of new types of gold deposits.

### ***Rare Earth Elements***

The Tapuaenuku Complex in the inland Kaikoura Range, which is unrelated to the older Median Batholith, is also a highly prospective setting for layered platinum group metal deposits, as well as containing significant copper and nickel mineralisation. Also of importance in this complex is the “carbonatite-syenite” association – special rocks that are closely associated with rare earth element<sup>10</sup> mineralisation overseas, and which require careful investigation.

New Zealand’s better known occurrence of carbonatite occurs in South Westland and extends north of Haast River and in non-Schedule 4 land. Limited sampling of these rocks to date has shown highly encouraging levels of rare earth elements. Indications are that there are a variety of potential rare earth element deposition zones within the area and at depths that may be suitable for underground mining.

### ***Nickel, copper and chromite***

Nickel, chromium, copper, and cobalt and potential platinum group mineralisation occur in both the Nelson and South Westland districts, including in non-Schedule 4 areas. They are contained within the ancient ocean floor crustal rocks of the Dun Mountain Ophiolite Belt. Around Dun Mountain, east Nelson, chromite is hosted in deep-seated oceanic rocks classified as “dunite”. The fault-bound lenses of the Dun Mountain Ophiolite Belt both in east Nelson and South Westland (outside of Mount Aspiring National Park) are therefore considered to have moderate prospectivity for polymetallic seafloor massive sulphides (gold and base metals), nickel-copper-platinum group metals, and chromite mineralisation.

### ***Orogenic (mesothermal) gold***

Palaeozoic era gold deposits are found in greywacke rocks on the West Coast. The most important gold deposits are those at the Reefton Goldfield, where over 67 tonnes of gold were produced between 1870 and 1951. The gold quartz lodes are contained within a belt of greywacke rocks, some 34 kilometres in length by 10 kilometres in width. The largest known gold deposit currently being worked is the Globe-Progress mine, which is located and managed in the Victoria Forest (Conservation) Park. The mine consists of 4 open pits and is expected to produce about 65,000 ounces of gold per annum over the next 7 years.

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<sup>10</sup> See page 1 above for a description of rare earth elements.

The same host greywacke rocks crop out on the north-western side of the Alpine fault as far as South Westland and have received minimal economic investigations to date.

Younger (Mesozoic era) quartz lode gold deposits are also found in the Haast Schists of Otago, Marlborough and Southern Alps. The Macraes Flat deposit is now New Zealand's largest operating gold mine and its success points strongly to the potential for other significant deposits in the region. The deposits occur within the 26km long Hyde-Macraes Shear Zone, with gold produced from a series of pits along the zone. Both private and Crown leasehold land in Otago is considered highly prospective for gold and tungsten.

### Lignite

South Island lignite is a major indigenous energy resource which is amongst the most competitively priced lignite anywhere in the world. The resource is suitable for extraction and use as a feedstock to the petrochemical industry, using gasification technology to convert lignite to petrochemicals, fertiliser and transport fuels. Lignite can also be converted to briquettes for conventional combustion.

The in-ground lignite resource is estimated at 11 billion tonnes, of which 6.2 billion tonnes (equivalent to 75,000 PJ of energy) is estimated to be recoverable. If extracted at a rate of 20 million tonnes per year, the lignite resource could provide feedstock for most of New Zealand's transport fuel and petrochemical requirements for 200 years or more. Given the carbon emissions associated with large-scale lignite processing, development of New Zealand's lignite resources is likely to require new technologies such as carbon capture. As well as lignite, the South island has as much as 50Mt in-ground resource of Crown-owned black bituminous coal (coking coal) in three West Coast coal fields – Greymouth (Spring creek); Pike River and Buller fields.

### Silica

Silica in the South Island occurs in Southland's widespread quartz gravels. The quartz gravels around Pebbly Hills-Mabel Bush, are inferred to contain more than 350 Mt of almost pure silica dioxide. These deposits have the potential for a ferrosilicon industry in Southland. There are smaller deposits of similar material elsewhere in Otago and northern Southland.

## 2.3 Conclusion on New Zealand's mineral potential

New Zealand clearly has a number of very mineral rich areas and considerable untapped potential. For this reason there is a strong case for continued Government research into mineral resources and prospectivity across many parts of the country.

Given the large amount of New Zealand's known potential estimated to be in Schedule 4 areas, the Government considers it important to make decisions on whether some of the land could be removed from the schedule. This would enable proposals for targeted mineral-related activity to be considered on a case-by-case basis, as is currently the case with other land (including wider public conservation land) around the country.

Current Schedule 4 areas that were evaluated in the stocktake, their values, and any proposed actions are set out in the table below.

## Stocktake of Schedule 4 of the Crown Minerals Act and beyond

Table 1 Schedule 4 areas				
Schedule 4 area	Land area (ha)	Mineral value	Conservation and other values	Action Proposed
<b>National parks</b>				
Abel Tasman	21,616	Low to medium mineral prospectivity.	High tourism and conservation value.	No change.
Aoraki Mount Cook	70,700	Low potential for mineralisation.	Iconic conservation and tourism value.	No change.
Arthur's Pass	100,000	Low potential for mineralisation.	High conservation value.	No change.
Egmont	33,500	High oil and gas prospectivity but low mineral prospectivity.	High conservation, recreation and cultural value.	No change.
Fiordland	1,250,000	Medium to high mineral prospectivity.	Iconic tourism, conservation and cultural value. UNESCO World Heritage Site.	No change.
Kahurangi	450,700	Excellent mineral prospectivity for gold, copper, lead, molybdenum, zinc and rare earth elements. Highest in the eastern sector.	High conservation, cultural and tourism values. Includes Tasman Wilderness Area, Honeycomb Hill Caves Specially Protected Area and Heaphy Track Great Walk.	No change.
Mount Aspiring	357,000	High mineral prospectivity, particularly in respect of tungsten and rare earth elements in the north-east sector.	UNESCO World Heritage Site. High conservation value. Mount Aspiring itself is a tōpuni area for Ngāi Tahu.	No change.
Nelson Lakes	102,000	Low to moderate mineral prospectivity.	Relatively high recreation and conservation value.	No change.
Paparoa	38,980	Medium to high mineral prospectivity, particularly in respect to coal and particularly in the areas making up the separate Inangahua sector.	High conservation value in some areas, including parts of the Inangahua sector, which are the only areas proposed for removal and which were added to Schedule 4 in 2008.	Removal proposed of 3,315 hectares (about 8.5 percent of the park). Further investigation of parts of the park.
Rakiura	157,000	Significant potential for gold, nickel, platinum and rare earth elements, although less so in the Hananui/Mount Anglem area, which is not in the area to be considered for further investigation.	High conservation and tourism value. High cultural value for Ngāi Tahu, particularly in the Hananui/Mount Anglem area, which is not in the area to be considered for further investigation.	Further investigation of parts of the park.
Te Urewera	213,000	Low to medium mineral prospectivity.	High conservation, tourism and cultural value.	No change.
Tongariro	79,600	Low to medium mineral prospectivity.	High conservation and cultural value and iconic tourism value. UNESCO World Heritage Site.	No change.

## Stocktake of Schedule 4 of the Crown Minerals Act and beyond

Schedule 4 area	Land area (ha)	Mineral value	Conservation and other values	
Westland/ Tai Poutini	127,540	Medium to high mineral prospectivity but little past or present mineral-related activity.	UNESCO World Heritage Site. Iconic tourism value	No change.
Whanganui	74,230	Low to medium mineral prospectivity.	High conservation value.	No change.
<b>Reserves</b>				
Marine reserves (27)	1,248,953	Low mineral potential.	High conservation and ecological value.	No change.
Nature Reserves (55)	32,778	Low mineral potential.	Very high conservation and ecological value.	No change.
Scientific Reserves (89)	14,446	Low mineral potential.	Very high conservation and ecological value.	No change.
Wilderness Areas (11)	204,836	Generally low mineral potential.	Very high conservation and ecological value.	No change.
<b>Other Schedule 4 areas</b>				
Coromandel Peninsula – main peninsula area	69,290	Excellent potential for medium grade, medium tonnage gold-silver vein deposits, and large potential resources of aggregate and other minerals.	High conservation and tourism value in some areas. The vast majority of the area is in the Coromandel Forest Park (77 percent). Other areas include stewardship areas (12 percent), recreation reserves (six percent), scenic reserves (three percent) and marginal strips (one percent).	Removal proposed of seven areas totalling 2,574 hectares (about 1.5 percent of total land, or 3.7 percent of public conservation land, on the peninsula).  Further investigation of parts of the Coromandel.
Great Barrier Island	15,250	Excellent potential for medium grade, medium tonnage gold-silver vein deposits in the Te Ahumata Plateau area.	Regenerating vegetation; medium conservation value.	Removal proposed of 705-hectare Te Ahumata Plateau area (about 2.6 percent of the island, or 4.6 percent of public conservation land on the island).
Hauraki Gulf Islands excl. Great Barrier Island (70 areas)	4,545	Generally low mineral potential.	A range of conservation values (areas range in status from marginal strips to scenic reserve).	No change.
Otago Ecological Area	396	Excellent potential for medium grade, medium tonnage gold-silver vein deposits.	Conservation values include valuable habitat for native species.	Removal proposed.
Parakawai Geological Area	68	Excellent potential for medium grade, medium tonnage gold-silver vein deposits.	Conservation values include distinctive geological features and valuable habitat for threatened species.	Removal proposed

### 3. Removal from Schedule 4

It is recognised that removing any land from Schedule 4 will be highly contentious. Simply removing large tracts of land will not be acceptable to many New Zealanders. Any development needs to be targeted – restricted to relatively small areas – and environmentally responsible.

#### 3.1 What is Schedule 4?

Schedule 4 was added to the CM Act in 1997 and restricts mineral related activity in specified public conservation areas. It resulted from two legislative initiatives: one that sought to ban mining in national parks and other high conservation value areas; and another that sought to ban mining on public conservation land on the Coromandel Peninsula and on Hauraki Gulf islands.

Further areas that had either been created or classified after October 1991 were added in 2008. Schedule 4 now effectively covers all national parks and other specified classes of public conservation land, such as marine reserves and nature reserves. It also includes all public conservation land on the Coromandel Peninsula and surrounding internal waters and most public conservation land on islands in the Hauraki Gulf and islands to the north and east of the Coromandel Peninsula. Schedule 4 land areas total about 40 percent of public conservation land or 13 percent of New Zealand's total land area.

**Table 2 What can you do in Schedule 4 areas?**

Only the following mineral-related activities are possible in Schedule 4 areas, and only with permission from the Minister of Conservation:

- a. activities with a very low impact on the area including:
  - i. "minimum impact activities", which:
    - **include** geological, geochemical and geophysical surveying; taking samples by hand-held methods; aerial and land surveying
    - **do not include** more than minimal impact on vegetation; the use of explosives; damage to anything on the land; or breach of other rules
  - ii. mining of petroleum or gas underneath the areas by drilling from outside the area
  - iii. mining of other resources by an underground mine, provided any significant surface activities or impacts are outside the Schedule 4 areas and the impact on the surface of the Schedule 4 area is minor (an example of this is the Pike River Coal Mine)
- b. gold fossicking or demonstrating historic mining methods.

## 3.2 How can we ensure that development is responsible?

The Government considers that the level of information about a particular Schedule 4 area must be sufficient to pinpoint very targeted areas of mineral prospectivity before being considered for removal from the schedule. In addition current protections (discussed below) for land outside Schedule 4 mean that any land affected by these proposals will be subject to highly responsible development.

### Current protections

Land that is not in Schedule 4 has a number of protections that together mean that the environment, cultural issues and public views are taken into account before mining activity can take place. In order to be allowed to carry out mineral activity, operators need:

- a. consent to access the land from the landowner and/or occupier (the Minister of Conservation in the case of public conservation land).
- b. a mineral permit (for “prospecting”, which will usually involve only minimum impact activities over a relatively large area, for “exploration” of a more targeted area, and if commercial discoveries are found, for “mining”).
- c. one or more “concessions”<sup>11</sup> (official authorities to operate in an area, for which fees are charged) to undertake associated activities in an area administered by DOC.
- d. approval under the Resource Management Act 1991 (**RMA**) (usually one or more resource consents, with public consultation first required where the potential effects are more than minor, and environmental conditions monitored and enforced by local councils).

With each of these requirements there are a number of considerations taken into account to ensure that development on public conservation land is responsible, including considerations relating to:

- a. the purpose for which the land is held by the Crown (access arrangements and concessions)
- b. safeguards against adverse effects (access arrangements, concessions, resource consents)
- c. Māori and Treaty of Waitangi issues (access arrangements, concessions, mineral permits and resource consents)
- d. the efficient allocation of rights to mineral resources (minerals permits).

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<sup>11</sup> A concession may be in the form of a lease, licence, permit or easement. Concessions are required for a range of activities including land transport, grazing, tourism operators and some extractive industries.

<b>Table 3 What environmental considerations are taken into account when mining?</b>	
<b>Rules</b>	Compliance with laws such as the RMA is a fundamental part of project planning and operation.
<b>Environment</b>	Technical knowledge of the environment and environmental effects is applied, with standards and guidelines based on scientific research. Environmental considerations are a primary focus of the rules and conditions on consents and permits. Project plans have environmental considerations as a strong area of focus.
<b>Waste and water</b>	Tailings are deposited within an engineered embankment. There are stringent limits on water discharge quality and quantity. There is an emphasis on reducing, reusing and recycling water to minimise waste water volumes.
<b>Cleaning up</b>	Rehabilitation and long-term ownership and management of the land are important issues and are factored into resource consent conditions. There is an emphasis on leaving landforms that are safe, stable and self-sustaining.
<b>Industry Monitoring and Operation</b>	Environmental management is an integral part of the operation. Specialist environmental staff are employed, and the emphasis is on making all staff aware of their environmental obligations through inductions and ongoing training. Environmental monitoring commences before mining activity to collect baseline information on the environment. Opportunities to make improvements are identified by the monitoring.
<b>Regulatory Monitoring and Compliance</b>	Regulatory agencies, regional councils and district councils carry out independent monitoring and ensure that conditions are adhered to. Consent holders pay for this monitoring on a cost-recovery basis. Non-compliance with conditions is followed up and consent holders are potentially subject to enforcement action and financial penalties under the RMA.
<b>Community</b>	Community liaison and response to complaints and concerns is an important part of mining operations. Consultation is often carried out by applicants for resource consents as a matter of good practice and if a consent application is notified, then parties can lodge submissions on it. However, the CM Act does not explicitly provide for a public process for the Minister of Conservation's consideration of applications for mining access to public conservation land.

## 4. Schedule 4 areas of interest

The stocktake reveals that the areas of mineral interest in Schedule 4 can be broken into two groups:

- a. areas where we have enough information to pinpoint specific targeted areas of highest mineral potential
- b. areas where we know there is excellent potential for mineralisation but more information is needed to pinpoint targeted areas.

### 4.1 Areas proposed for removal

With respect to the first group, the Government is in a position to propose specific targeted removal areas, subject to comment from interested parties. With the removal of the access restrictions provided by Schedule 4, and through environmentally responsible mining techniques, these areas could contribute considerably to our prosperity.

In reaching these conclusions the Government has considered primarily the areas' mineral potential and conservation values, but other values such as cultural, recreation and tourism were also considered.

Removing an area from Schedule 4 does not mean that mineral-related access would be approved. It simply means that applications for prospecting, exploration and mining access could be considered on a case-by-case basis as already occurs for other areas of public conservation land. The underlying conservation status of the area (for example, whether it is a national park or ecological area) would remain unchanged and existing planning documents (such as, regional and district plans) would continue to apply. Resource consents would also be required.

Following assessment of their mineral potential and conservation values, it is proposed that the areas outlined in the following table be removed from Schedule 4. The areas comprise a range of classes of conservation land from stewardship land to national park, and total 7,058 hectares.

The assessment of the various values of these areas and maps showing their location are included in section 6 below.

<b>Table 4 Areas proposed for removal from Schedule 4</b>	
<b>Area</b>	<b>Size (ha)</b>
Te Ahumata Plateau on Great Barrier Island	705
Sections of conservation land on the Coromandel Peninsula amounting to 3.7 percent of public conservation land (or 1.5 percent of total land) on the peninsula	2,574
Otahu Ecological Area, Coromandel region	396
Parakawai Geological Area, Coromandel region	68
The Inangahua sector of Paparoa National Park	3,315
<b>Total</b>	<b>7,058</b>

## 4.2 Further investigation of prospective areas

For the second group of areas, the Government is not prepared to simply remove large areas with high mineral potential from Schedule 4. Rather, it prefers to invest in gathering more information on the specific mineral potential of those areas and other prospective areas outside Schedule 4 where we know there is good potential for mineralisation. This is similar to the Government's investment in seismic data for petroleum.

The government will carry out a research programme to identify what small targeted areas within the identified areas could be considered in the future for removal from Schedule 4. The public will be consulted on any subsequent proposals to remove areas from Schedule 4.

Specific areas covered by Schedule 4 that would be subject of further investigation are outlined in section 5 below. In addition, given the potential of other areas around the country (see section 2.2 above), the Government also proposes that the research programme extend beyond the Schedule 4 areas identified.

## 5. Further investigation programme

The Ministry of Economic Development (**MED**) has been directed to co-ordinate a research and investigation programme of on-shore mineral resources and prospectivity.

More detailed information will enable the government to promote the rational utilisation of mineral resources and help it make decisions that maximise the value of New Zealand's mineral estate.

### 5.1 Scope

Areas with significant mineral potential that have been identified (outlined in section 2) and which will be subject to further investigation work include:

- the Northland region
- public conservation lands on the Coromandel Peninsula (in Schedule 4)
- the Southern Coromandel volcanic zone
- parts of the Central North Island
- parts of Dun Mountain Ophiolite belt, east of Nelson
- the granitoids of the Median Batholith outside of national park areas, including those within the Lyell District, Westland, the Rotoroa Complex near Murchison, and the Riwaka Complex in northwest Nelson
- parts of Paparoa National Park (in Schedule 4) excluding the Inangahua Sector
- the Tapuaenuku Complex near Kaikoura
- areas potentially containing carbonatite rocks north of Haast River
- South Island areas with potential for mesothermal gold (in Central Otago and the West Coast)
- the Longwood complex in Southland
- parts of Stewart Island including Rakiura National Park (in Schedule 4) excluding the Hananui/Mount Anglem area.

### 5.2 Nature of investigation

This programme will involve low impact techniques such as airborne geophysical exploration, mapping and sampling by mainly hand-held methods. The further investigation programme is expected to take nine months and cost approximately \$4 million. A study by Geoscience Australia<sup>12</sup> has found that each government dollar spent on

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<sup>12</sup> See I.B. Lambert, *Sustaining economic benefits from mineral resources: Government investment in geoscience*, in The AusIMM Bulletin No 3, April/May 1999, pages 82-87.

new geophysical data generates on average \$5 in new private sector investment and subsequent discovery of in-ground resources worth \$100–150.

The precise nature of the work to be undertaken will vary from areas to area. Key factors in determining the type of work to be undertaken will include:

- the type of mineralisation known or considered to exist in the area
- the nature and extent of previous work in the area
- environmental considerations.

In areas that have been investigated previously it is considered that the use of modern technologies will provide better information than that currently available:

- The resolution and inversion of aeromagnetic/radiometric survey data is significantly advanced now compared with what was previously possible. Geophysical maps and data with far better definition of sub-surface geological features are now possible.
- Advances in soil sampling and geochemical analytical techniques have made these methods significantly more powerful. These include so-called “MMI geochemistry”, which is a cost-effective passive surface exploration tool that measures mobile metal ions (MMIs) in soils and is regarded in the minerals sector as crucial in the modern search for the next generation of bigger, often concealed, ore deposits.
- Cost-effective multi-element analytical techniques with extremely low element detection levels are now readily available for soil sampling programmes.

### 5.3 Subsequent steps

Following the further investigation programme the Government will consider:

- a. whether to propose the removal of any further areas from Schedule 4
- b. how best to make available the information collected
- c. the best approach for allocating any particularly prospective areas that are identified.

## 6. Facilitating mineral development

Existing processes for accessing Crown land could be improved in order to better facilitate responsible mineral development. In particular improved Ministerial consideration of the potential for economic growth from mineral development could be achieved by introducing new joint ministerial approval processes for access to Crown land.

This new proposal, an outline of existing processes, and a number of other government reviews underway that should assist in facilitating mineral development are discussed below.

### 6.1 Joint Ministerial approval for access to Crown land

The Government considers it important that the consideration of any mineral-related access arrangement application for Crown-owned land takes full account of the potential national significance and economic benefits of a proposal to explore or mine Crown-owned minerals. Accordingly, it is proposed that the joint approval of the land-holding Minister and the Minister of Energy and Resources be required for an access arrangement in future.

Alternative options would be to extend the matters considered by the appropriate Minister to include the national significance of the mining proposal and the economic benefit that might accrue, and/or requiring the land-holding Minister to have regard to the views of the Minister of Energy and Resources in making his or her decision. However, the Government does not think these options would in themselves adequately address the need for a balanced consideration of nationally significant mineral and economic potential alongside the landholder's own interests and other considerations in decisions on access arrangements.

Before commencing prospecting, exploration or mining activities (other than minimum impact activities on some land) a permit holder must have appropriate land-access arrangements with the landowner and/or occupier.<sup>13</sup> There are different requirements depending on the type of land involved and whether or not the proposed activities are minimum impact activities.

For Crown land, consent to access has to be given by the Minister responsible for administering the land. For public conservation land, this means the Minister of Conservation's consent is required before any mineral-related activities can be carried out. On public conservation land, an access arrangement is required even for minimum impact activities. An access arrangement will include a range of conditions<sup>14</sup> to protect the environment and the particular conservation values of the area. Compensation is usually required to be paid and financial bonds would also be required in relation to substantial activities.

There is a range of considerations the land-holding Minister must take into account under section 61(2) of the CM Act before agreeing to an access arrangement, including:

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<sup>13</sup> See sections 49 to 80 of the CM Act.

<sup>14</sup> Section 60 of the CM Act lists the types of matters that may be provided for.

- a. the objectives of any Act under which the land is administered
- b. any purpose for which the land is held by the Crown
- c. any policy statement or management plan of the Crown in relation to the land
- d. the safeguards against any potential or adverse effects of carrying out the proposed programme of work
- e. such other matters as the Minister considers relevant.

In addition, as with permits, in considering and granting access arrangements, the Crown is required by section 4 of the CM Act to have regard to the principles of the Treaty of Waitangi (Te Tiriti o Waitangi). DOC normally advises applicants for access arrangements to consult with iwi before submitting their application. DOC itself also generally consults with iwi when considering applications.

### **6.2 Putting in place a nationwide DOC standard operating procedure**

The lack of a standard nationwide procedure and timelines for processing minerals access arrangements, and incomplete applications and information from applicants, are leading to delay and frustration for both DOC and the minerals industry. Improved clarity regarding the information that needs to be included in an application, improved guidance on the factors that DOC needs to consider under its legislation (for example, to explain to applicants why certain information is needed) and clearer timeframes should reduce the delays and frustrations currently experienced.

DOC is currently reviewing its processes for considering exploration and mining access applications on conservation land. A nationwide standard operating procedure for access arrangement applications under the CM Act is being developed. It is expected to be finalised within the next two months. While the content of the standard operating procedure has yet to be finalised it is envisaged that it will include standardised application forms, specified fees charged for processing applications, and indicative timelines for different types of applications.

### **6.3 DOC concessions review**

Concessions are required for all commercial activities other than mining on conservation land and for activities not directly related to a mining activity (for example, access roads).

DOC commenced a review of the concessions process in early 2009. Its purpose was to establish if the current concession process could be improved to better meet the needs of applicants whilst protecting conservation values. There was a specific focus on simplifying and streamlining processes and decision-making timeframes, in order to provide better transparency and certainty and reduce compliance costs. The project is also developing, as part of the RMA Phase 2 review work, a model for a single process option for nationally significant proposals where both resource consents and concessions are required.

## **7. Areas proposed for removal from Schedule 4**

This section outlines in more detail the areas proposed for removal from Schedule 4. Community views are sought before final decisions are made.

For these areas, the question is whether mineral-related activity should be considered on a case-by-case basis (in which case removal from Schedule 4 is appropriate) or whether the conservation and other values of the area outweigh the potential mineral values (in which case the status quo is appropriate).

It is important to note that, even if these areas were to be removed from Schedule 4 (and thereby “opened” to the possibility of mining) there would still be a number of steps an organisation would need to take before it could mine the land (see section 3.2 above). Conditions on both resource consents and access arrangements would provide significant environmental protections for the land even if it were removed from Schedule 4.

## 7.1 Great Barrier Island – Te Ahumata Plateau

Te Ahumata Plateau lies between Whangaparapara and Claris in central Great Barrier Island. It forms a prominent landmark with the peak Te Ahumata rising to 398 metres, and steep cliffs and scarps forming its eastern edge.

### Mineral value

Te Ahumata Plateau is a continuation of the Hauraki Goldfield and, therefore, has excellent potential for gold-silver occurrences. Highly mineralised veins were worked in three geographically separate areas (Barrier Reefs, Iona and Sunbeam), with a total production of 1,300 kilograms of gold-silver bullion, mostly between 1892 and 1908. Excellent potential exists there for discovery of a number of medium-scale, high-grade gold and silver deposits at depth in both the known vein systems and as new occurrences, with a potential value of \$4.3 billion at today's prices.<sup>15</sup>

### Conservation value

Like much of the island, Te Ahumata Plateau is largely under regenerating shrublands, with some patches of remnant broadleaf forest. The plateau forms part of the contiguous sequence of regenerating forested areas along the spine of the island, which is one of the largest possum-free areas in New Zealand. Biodiversity values are not well known, but the native shrub daisy *Brachyglottis kirkii* var *angustior*, which is in serious decline, is found in the area. Great Barrier endemic species such as Chevron skink and the shrub daisy *Olearia allomii* may be present.

### Cultural Value

Great Barrier Island is the rohe of Ngāti Rehua-Ngāti Wai ki Aotea and of interest to other Hauraki iwi. Te Ahumata means “move towards the obsidian”. This site has cultural significance to Ngāti Rehua as a place of abundance of obsidian, which was used for tool making and was a significant resource for trading.

### Tourism value

Walking trails that follow old mining roads to the summit and across the plateau form part of the walking network on the island, including a proposed round island trail. The trails are used by islanders for running events, recreation and for access to hunting areas. Historic sites remain as evidence of the early mining period, including old mine shafts, and the Oreville stamper battery is located at the base of the plateau.

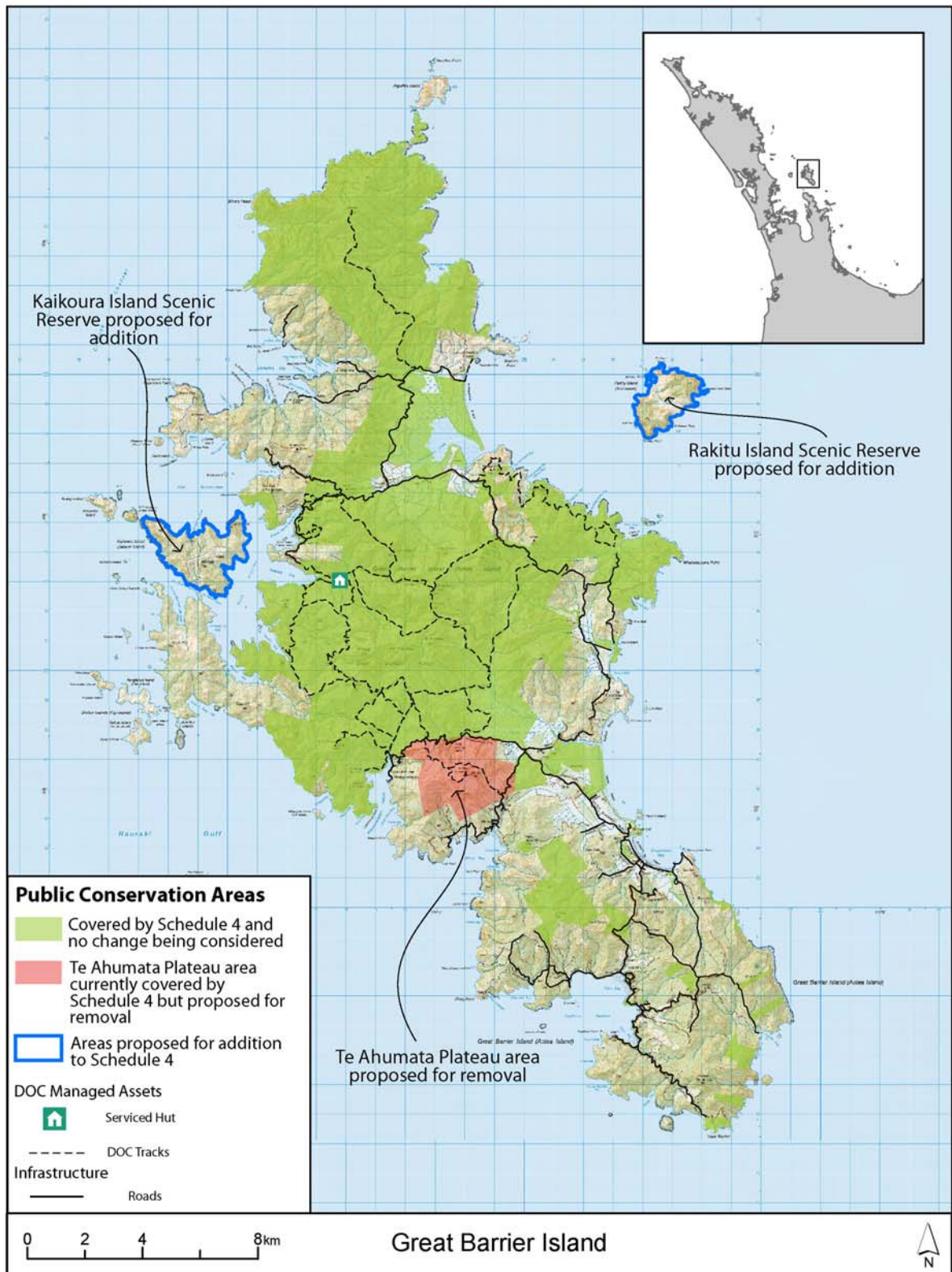
### Conclusion

Given the excellent potential for gold and silver in the area, it is proposed that Te Ahumata Plateau be removed from Schedule 4 so that applications for mineral activity can be considered on a case-by-case basis. Note that mining (other than any quarrying, prospecting, or exploration) of any mineral is a prohibited activity on Great Barrier Island under the Auckland City Council District Plan: the Hauraki Gulf Islands Section, and therefore a plan change under the RMA would be required before any future mining operation could proceed.

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<sup>15</sup> This figure is as estimated by MED, based on GNS estimated volumes and current prices.

### Map 1 Great Barrier Island



## 7.2 Sections of public conservation land on the Coromandel Peninsula

The Coromandel Peninsula is one of the most mineral-rich regions of New Zealand. It includes most of the Hauraki Goldfield, which comprises a large number of mineral deposits. About 30 percent of the Coromandel region is managed by DOC, and sections of that land have high conservation values (including populations of threatened endemic frogs, skinks and geckos) and high recreational and tourism values.

Currently, all public conservation land north and north-west of State Highway 25A (Kōpū-Hikuai road) and the road from Hikuai to Pauanui Beach known as the Hikuai Settlement Road, and the internal waters of the Coromandel Peninsula<sup>16</sup> (such as harbours and enclosed bays) is listed in Schedule 4.

In some areas of the Coromandel Peninsula, mining is a prohibited activity under the Thames Coromandel District Plan, and therefore a plan change under the RMA would be required before any mining operation could commence.

### Mineral prospects

The Coromandel Peninsula is one of the foremost epithermal gold provinces in the world, yet beyond the known gold deposits, it is extremely under-explored. There has been little exploratory drilling and the potential for finding orebodies similar to those at Martha Hill, Golden Cross and Favona is very high.

GNS has estimated the value of potential resources for 12 metallic and six non-metallic minerals for the wider Coromandel area (including the Otahu Ecological Area and the Parakawai Geological Area discussed below) at a total of \$54 billion (mostly in gold, silver and peat)<sup>17</sup>. As shown in GNS's report, this potential is dispersed across much of the Coromandel Peninsula.

A number of discrete areas have been identified that have history of gold and silver production, some recent exploration, and where there is excellent potential for discovery of higher grade gold silver deposits of regional economic importance. These areas include: the landward extensions of the Thames Goldfield north-east of Thames; the Golden Hills area near State Highway 25A; two small areas near Tapu and Waiomu; and three areas in the north of the peninsula at Hauraki Hill, Tokatea-Kapanga and Matawai.

The Thames Goldfield officially produced 2,327,619 ounces of gold bullion (worth about \$3.6 billion at today's prices) between 1867 and 1933. The goldfield includes many old mining centres where rich ore shoots were mined in the past, as well as high grade deposits, such as the Sylvia deposit, which have not yet been developed. The potential for discovery of further gold deposits, each a million ounces or more, within the Thames Goldfield, is considered high.

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<sup>16</sup> An access arrangement is required from the Minister of Conservation for areas of inshore waters, except where a permit holder has secured the right, under the RMA, to exclusive occupation of Crown land in the coastal marine area (see section 61(3) of the CM Act).

<sup>17</sup> See GNS Science Report 2008/14, *Mineral resource assessment of the Thames-Coromandel and Hauraki districts, New Zealand*; June 2008; Christie, Braithwaite, Barker & Skinner; available to view at [www.med.govt.nz/schedule4](http://www.med.govt.nz/schedule4).

Northwards of Thames, the Monowai deposit in Waiomu Valley contains a mineable resource of about 60,000 ounces of gold and 250,000 ounces of silver, and with good potential to discover additional resources upwards of one million ounces of bullion. Within the adjoining Te Kaka catchment, quartz veins with high average gold grades (0.6 ounces/tonne) were historically worked in places, while recent exploration results have delineated a contiguous mineralised zone up to 1,100 metres in length. The presence of undiscovered rich ore shoots over much of the length and depth of the Te Kaka zone is highly likely.

Veins at Hauraki Hill, Tokatea and Kapanga in the Coromandel Goldfield are high grade gold deposits that historically produced at least 216,000 ounces of gold bullion. In particular the Hauraki Hill area has excellent potential for the discovery of a near-surface gold deposit. South of Coromandel township, at Matawai, recent exploration has shown there are several zones, each up to 750 metres in length and 50 metres wide, of quartz veins with strong gold mineralisation. Although past mining activity is minimal there is good potential for the discovery of a substantial gold deposit.

The Golden Hills deposit (in the Broken Hills area marked on the map) is an old mining camp in the Tairua Valley, and previous exploration has shown it to be a 1.8 kilometres long by one kilometre wide gold mineralised system. The mineralisation occurs in a number of structures, of which the 600 metre long Bain Reef zone has immediate potential for development of a moderate grade, economic vein deposit.

These areas comprise about 1.5 percent of the total land area north of State Highway 25A (or about 3.7 percent of the public conservation land north of the highway), while the development of any mineral discovery would affect only a fraction of that land area. The areas delineated near Thames, Tapu, Waiomu and Golden Hills are currently subject to prospecting permit 39307 held by the Waihi Gold Company Limited, which authorises low-impact reconnaissance activity subject to the Minister of Conservation's consent for access.

### Conservation value

The Coromandel Peninsula has a variety of ecosystem and habitat types, including significant remnant kauri, tawa and podocarp forest. While many parts of the Coromandel forests have been modified as a result of fire, logging and mining, intact remnants of native vegetation exist across all forest types. Some of the vegetation associations found are of particular significance due to their limited occurrence elsewhere (both locally and nationally). An unbroken altitudinal sequence from coastal to montane vegetation on parts of Moehau provides outstanding habitat for native fauna. A number of threatened species are present on the peninsula.

Coromandel Forest Park (conservation park) makes up 77 percent of public conservation land on the Coromandel Peninsula. The park contains the headwaters and middle reaches of numerous waterways identified as nationally important for biodiversity, as described above. Most of the remaining public conservation land is stewardship land (12 percent), which is managed for conservation purposes but has a lower protection status than conservation park or national park, recreational reserve (six percent), or scenic reserve (three percent). Except for public conservation land on Hauraki Gulf islands and islands adjacent to the Coromandel Peninsula, no areas of conservation park, stewardship land, recreation reserve or scenic reserve in other parts of the country are listed in Schedule 4.

The Tokotea-Kapenga area is stewardship land that provides catchment protection and a highly regarded scenic backdrop for Coromandel township. The area links to a high value priority site to the north that is intensively managed by DOC. It is possible that kiwi, and Hochstetter's and Archey's frogs are present.

The Hauraki Hill area is also known as the Kauri Block. Over recent years a community group (Kauri 2000) has planted a large number of kauri trees in this area of significantly modified coastal forest. The block has a walking track through it and is seriously infested with a wide variety of weed species. The area is classified as stewardship land and includes the now-closed Coromandel landfill.

The Matawai area is heavily modified indigenous forest and forms part of an area maintained by DOC as a priority site for biodiversity management. Kiwi, and Hochstetter's and Archey's frogs may be present. The area has limited public access and is classified as stewardship land.

The Tapu/Te Kaka area is included in the Thames Coast Peninsula Project and is a high priority site for DOC in terms of species and habitat protection. It is classified as stewardship land.

The Waiomu area is included in the Thames Coromandel Peninsula Project and is a high priority site for DOC in terms of species and habitat protection. It is adjacent to the Waiomu Ecological Area.

The area proposed for removal near Thames is included in the Thames Coast Peninsula Project and provides important access to Crosbies Clearing where DOC is building a new hut. The north-eastern part of this area is part of the Coromandel Forest Park and has high conservation values including kiwi and areas of swamp maire. The south-western part of the area is stewardship land and is heavily infested with exotic weed species.

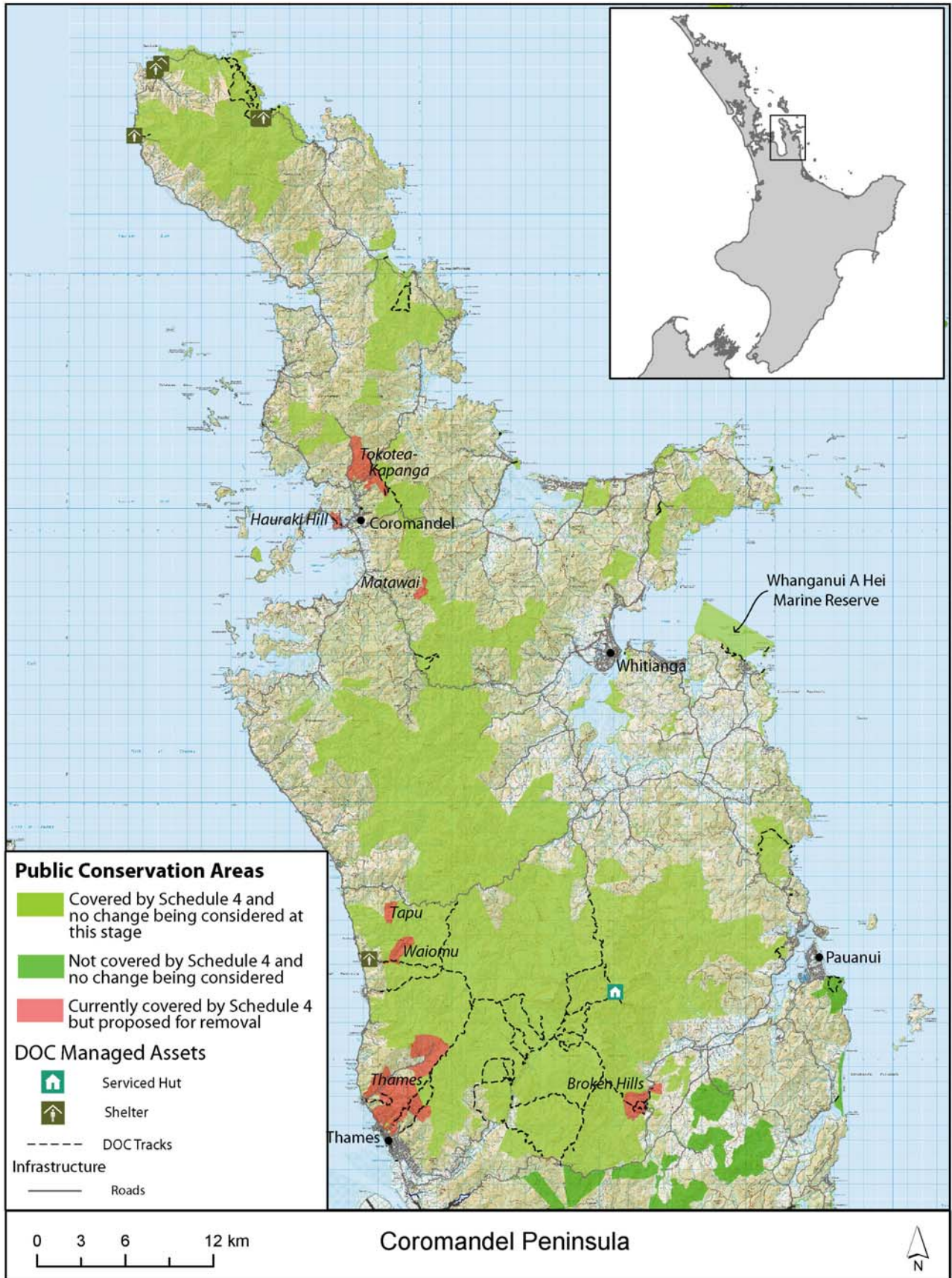
The Broken Hills area is part of the Coromandel Forest Park and is a regionally significant high-use recreational area for walks (it has a range of walking tracks), camping (includes a DOC-administered camp site), and kayaking. The area may contain kiwi and Hochstetter's frogs. An active historic underground gold mine operates in the north-eastern part of the area and is open to the public for viewing on the basis of organised visits.

## Conclusion

Given the outstanding mineral potential of certain restricted areas of the Coromandel Peninsula, the particular land as shown on Map 2 below is proposed for removal from Schedule 4 so that applications for mineral activity in those areas can be considered on a case-by-case basis.

In addition, consideration is being given to the merits of undertaking an airborne geophysical survey and other low-impact investigations over the balance of conservation land north of State Highway 25A as part of the Government's minerals investigation programme. This could greatly assist in the identification of any further discrete areas of high mineral prospectivity that could, if appropriate, be considered in the future for removal from Schedule 4.

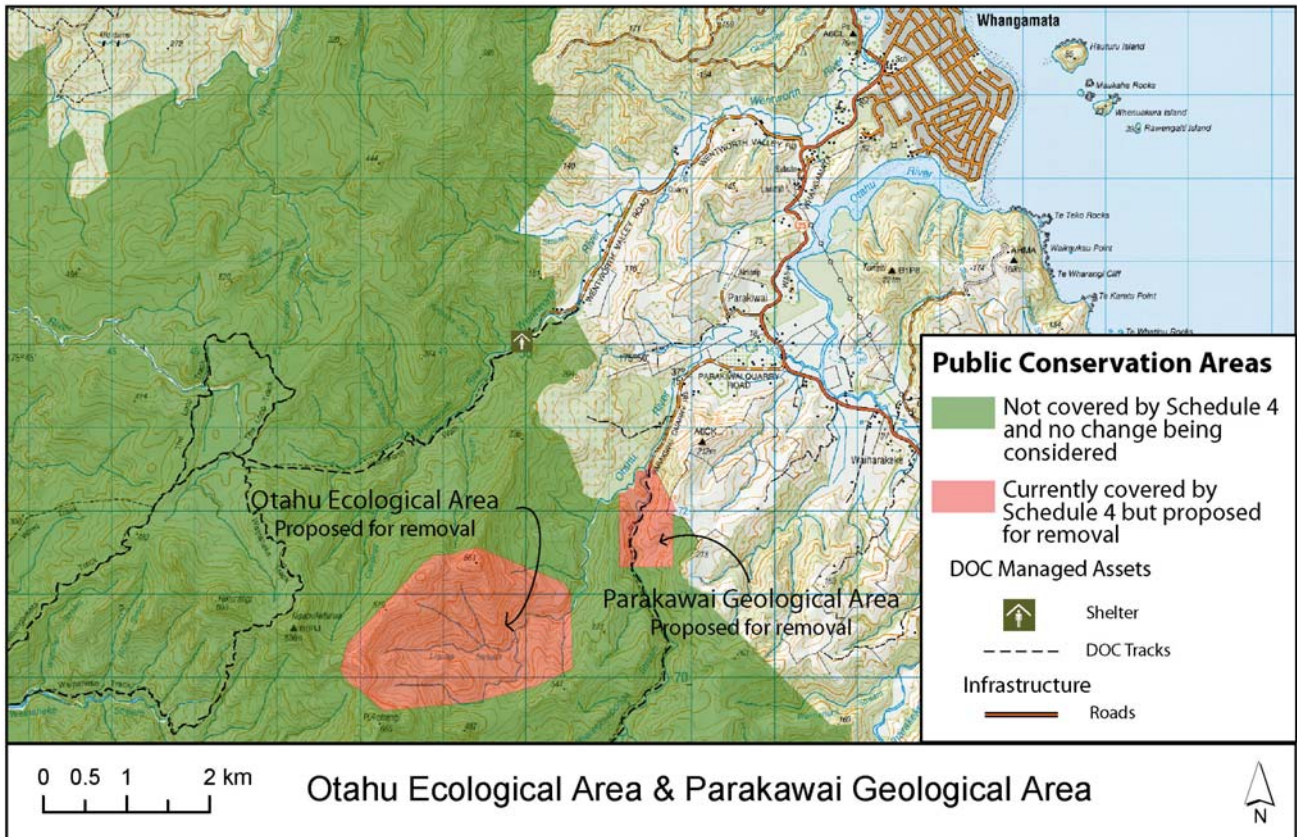
Map 2 Coromandel Peninsula



### 7.3 Otahu Ecological Area and Parakawai Geological Area

The 396-hectare Otahu Ecological Area and the 68-hectare Parakawai Geological Area (incorrectly described in Schedule 4 as the Parakowhai Quarry Ecological Area) are both part of the Coromandel Forest Park and located south-west of Whangamata.

**Map 3 Otahu Ecological Area and Parakawai Geological Area**



#### Mineral value

The Otahu Ecological Area and the Parakawai Geological Area are located within the formations that confine several significant gold deposits, including Te Aroha, Karangahake, Golden Cross, Wharekiraponga and Ohui. The two areas are likely to have excellent potential for development of medium-grade, medium-tonnage, gold-silver vein deposits, which would become apparent with exploration and increased knowledge of the areas. It is estimated that there is potential within the two areas for a million-ounce ore body, which would be worth approximately \$1.5 billion at today’s prices.

The areas are currently subject to exploration permit 40813 held by Glass Earth (New Zealand) Limited.

#### Conservation value

The Otahu Ecological Area comprises lowland to montane forest, including kauri, and is part of the largely forested Otahu River catchment. This catchment drains to the Otahu Estuary. The Otahu Estuary and catchment is one of few areas remaining in the

Coromandel that provides a reasonably intact natural sequence of habitat from the upper reaches of stream tributaries in the mountains to the marine habitats of the ocean. The Otahu Ecological Area provides valuable habitat for North Island brown kiwi, Hochstetter's and Archey's frogs, as well as native fisheries.

The conservation values of the Parakawai Geological Area are similar to those of the surrounding conservation park land, which is not covered by Schedule 4. Distinctive geological features exposed by past quarrying are considered worthy of protection. The streams of this part of the park have high habitat values for threatened native freshwater species.

### **Conclusion**

Given the excellent potential for gold and silver in the area, the Otahu Ecological Area and the Parakawai Geological Area are proposed for removal from Schedule 4 so that applications for mineral activity can be considered on a case-by-case basis.

## 7.4 Paparoa National Park - Inangahua Sector

Paparoa National Park, established in 1987, comprises a number of non-contiguous areas covering 38,980 hectares of land in northern Westland. Several parcels of land have been added over time to the park, and in 2008 most of these were also added to Schedule 4.

As Map 4 below shows, there are three distinct geographic areas that make up the park:

- a. the main body of the park bounded by the coast, extending inland to the summits of the Paparoa Range, plus an outlying area to the north – the Ananui Creek catchment (the Coastal Sector)
- b. two areas on the eastern side of the Paparoa Range lying between the Rough River and the Mawheraiti (or Little Grey) River, and between Ototuru River and Giles Creek (the Little Grey River Sector)
- c. four areas to the west of the Inangahua River between Te Wharau (Stony) River and the Buller River (the Inangahua Sector).

The Inangahua Sector of Paparoa National Park has the greatest known mineral potential. The four areas within the Inangahua Sector (from north to south these are the Rosemount, Pell Creek, Whitecliffs and Perseverance blocks) are situated several kilometres away from the main part of the park. They were added to the national park in 2002 under section 8(1)(c) of the Forests (West Coast Accord) Act 2000 and to Schedule 4 in 2008. Mining has taken place in a number of areas within the Inangahua Sector in the past.

### Mineral prospects

The four areas of the Inangahua Sector cover parts of the Inangahua Coalfield, over which there are several mining and exploration permits. The coalfield currently produces 120,000 tonnes of sub-bituminous coal a year, mainly for supply to industry in the top half of the South Island. The potential of the coalfield has not yet been fully explored and evaluation of the importance of individual areas will require drilling and more detailed assessment. This is currently taking place in permits as access arrangements allow. In addition, there may also be coal seam gas potential.

There are four current permits that cover the various parts of the Inangahua sector: a prospecting permit for all minerals that overlaps the Whitecliffs and Perseverance areas; one for coal exploration that overlaps Rosemont and Pell Creek); one for coal mining (Whitecliffs); and one for mining gold, garnet and gemstones (Whitecliffs).<sup>18</sup>

Small-scale opencast gold and gemstone mining currently occurs in part of the Whitecliffs block in an area where the vegetation has been impacted by previous logging, coal mining, and gold and gem exploration. The current mining is considered not to adversely affect the conservation values of the park. There is an access arrangement for opencast coal mining over another part of the Whitecliffs block but this is not currently being worked. The conservation values at this site are low due to disturbance by previous mining operations.

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<sup>18</sup> These permits and some associated access arrangements were all granted prior to the areas being added to Schedule 4 in 2008.

### Conservation value

The four areas of the Inangahua Sector contain substantial areas of unlogged forest (almost 80 percent), with a significant proportion on limestone substrates. They include areas of previously logged lowland terrace beech forest in good condition and are important for wildlife, including threatened bird species (great spotted kiwi, kākā, kererū). All four areas adjoin, and complement, more extensive areas of protected forest.

The Rosemount and Pell Creek blocks both contain intact beech-podocarp forest ecosystems, virtually unmodified by logging. Limestone substrates are found throughout, with highly diverse flora including the threatened fern *Asplenium cimmeriorum*. Remnant mistletoe may be present. Relatively high numbers of great spotted kiwi and notably high numbers of most species of endemic forest birds have been recorded. Extensive areas of karst topography including potential cave networks are present. In a 1997 report,<sup>19</sup> Rosemount block was assessed as “medium value” and Pell Creek block “high value” indigenous forest prior to their becoming national park.

The Pell Creek block adjoins Berlins Bluff Ecological Area and lies close to Coal Creek Ecological Area, and is part of an important low altitude link across the lower Inangahua valley. Pell Creek block and surrounding areas protect the most extensive inland area of forest on limestone substrates in the ecological region.

The Whitecliffs and Perseverance blocks adjoin, and complement, the North Westland Wildlife Corridor. Both blocks contain modified beech forest ecosystems (all of the terrace forest has been previously logged), common forest birds and some limited karst topography. Parts of both blocks were assessed as “medium value” or “high value” indigenous forest in the 1997 report.

The main recreational use of the Inangahua Sector forests is for the hunting of fallow deer, especially in Perseverance block. The road through Perseverance block provides hunting and tramping access to the Paparoa Ranges beyond. There is potential for caving in the relatively unexplored limestone areas of the Rosemount and Pell Creek blocks. The unlogged forests of Rosemount and Pell Creek blocks are visible from the Reefton-Inangahua Highway and have high scenic values. Part of the old pack-track between Inangahua Landing and Blackwater passes through the Pell Creek block and there are remnants of old bush tramways associated with timber milling in the area.

### Cultural values

Areas within Paparoa National Park are of significant cultural importance to Ngāi Tahu as well as containing pounamu resource which is owned by Ngāi Tahu. The karst areas of the Inangahua Sector contain places of cultural value to iwi, including archaeological sites.

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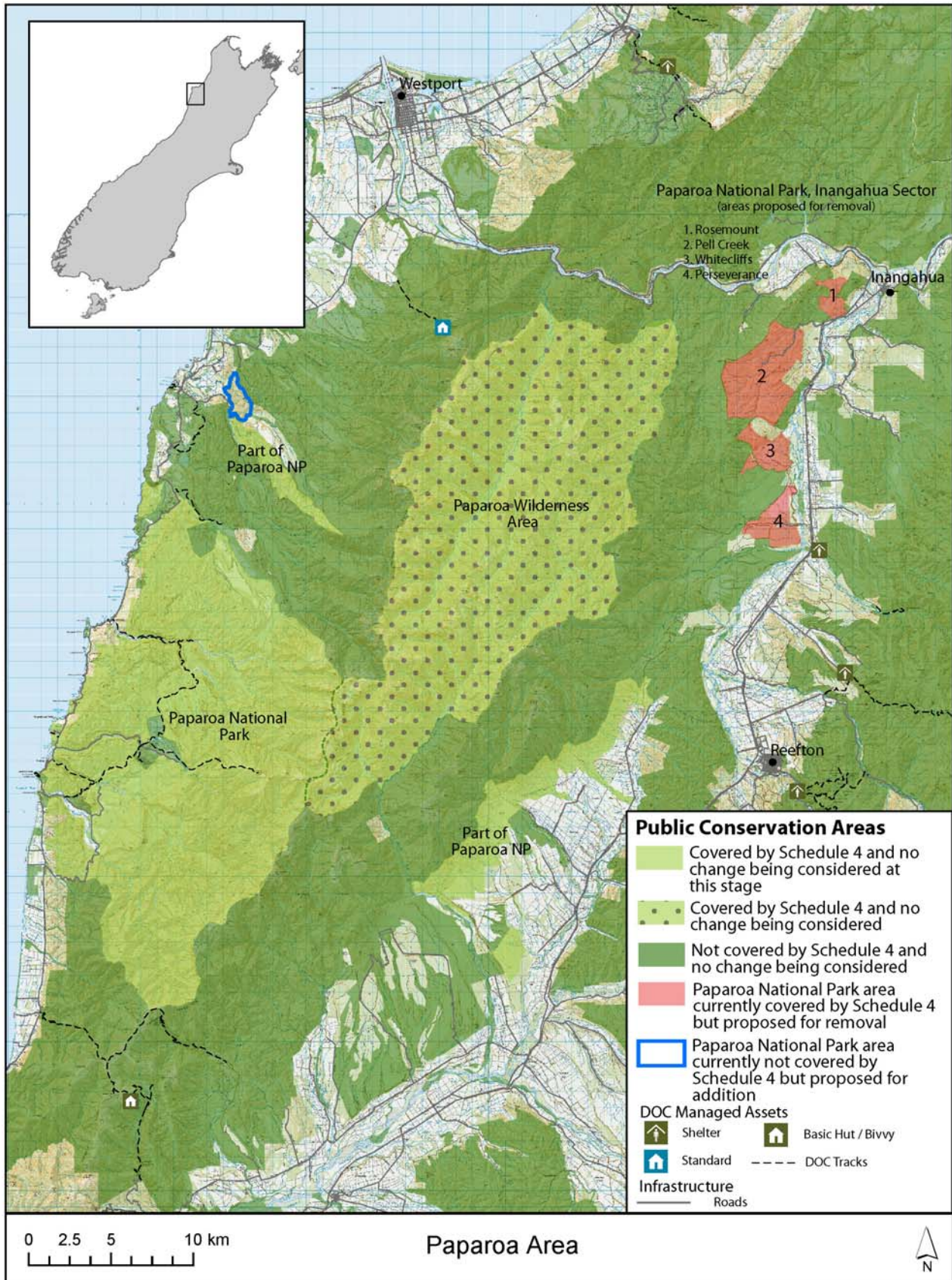
<sup>19</sup> See *Inventory and Assessment of Crown-owned Indigenous Forests Managed by Timberlands West Coast Limited: A report prepared for the Office of Treaty Settlements* dated 10 August 1997, and Watson, B., Hamilton, B., Harding, M., McSweeney, G., and Molloy, L., *Report of the Independent Review Panel on the Conservation Values of Indigenous Forests Currently Managed by Timberlands West Coast Ltd* dated 20 November 2000 (a report to the Minister for Land Information, Minister of Economic Development, Minister of Finance, Minister of Conservation and Minister of Forests).

## **Conclusion**

The Inangahua Sector of Paparoa National Park has medium to high mineral prospectivity, particularly in respect of coal and is the subject of considerable current permit interest. The area has generally high conservation value but there are a number of places where mining can occur without adversely affecting conservation, recreation or cultural values. Given these factors, the areas shown in Map 4 below are proposed for removal from Schedule 4 so that applications for mineral activity can be considered on a case-by-case basis.

In addition, consideration is being given to carrying out further investigation of other parts of Paparoa National Park. This may identify further discrete areas of high mineral prospectivity that could, if appropriate, be considered in the future for removal from Schedule 4.

Map 4 Paparoa National Park



## 8. Areas proposed for addition to Schedule 4

Some public conservation areas have been identified as appropriate for addition to Schedule 4. These areas are currently outside the scope of Schedule 4, mainly because they achieved their current protection status relatively recently. Most other public conservation areas with similar protection classifications are listed in Schedule 4.

Following assessment of their mineral potential and conservation values it is proposed that the areas outlined in Table 5 below be added to Schedule 4. This would effectively close the areas to any meaningful mining activity.

The areas proposed for addition total 12,400 hectares and comprise six marine reserves, two scientific reserves, one nature reserve, two scenic reserves, and recent additions to three national parks.

The assessment of these areas and maps showing their location are included in Appendix 2.

<b>Table 5 Areas proposed for addition to Schedule 4</b>	
<b>Area</b>	<b>Size (ha)</b>
Abel Tasman National Park recent additions	914
Burwood Bush Scientific Reserve, Southland	3,114
Egmont National Park recent additions	358
Horoirangi Marine Reserve, Nelson	903
Ianthe Scientific Reserve, West Coast	211
Kaikoura Island Scenic Reserve, Great Barrier Island	564
Orokonui Nature Reserve, Dunedin	236
Paparoa National Park north-west addition	240
Parininihi Marine Reserve, Taranaki	1,844
Rakitu Island Scenic Reserve, Great Barrier Island	253
Tapuae Marine Reserve, Taranaki	1,404
Taputeranga Marine Reserve, Wellington	855
Te Paepae o Aotea (Volkner Rocks) Marine Reserve, White Island	1,267
Whangarei Harbour Marine Reserve	237
<b>Total</b>	<b>12,400</b>

## 9. Establishment of a contestable conservation fund

### A dedicated fund based on mineral royalties.

In order to ensure that conservation benefits from any mineral activity that might in future be allowed in Schedule 4 areas, the Government is proposing to establish a dedicated fund based on a portion of future royalties it receives in relation to mining in public conservation areas.

New funding for conservation since the adoption of the *New Zealand Biodiversity Strategy* (2000) has helped to maintain and enhance the protection of New Zealand's conservation assets. Despite the gains, however, broader negative trends require more attention. The provision of a new contestable conservation fund will enable additional conservation activities to occur both on and off public conservation land. The existing contestable conservation funds are increasingly oversubscribed as more and more communities become engaged in conservation activities. These activities require some level of funding to facilitate their goals.

The fund would not impact on the money that DOC receives from the Crown for its conservation work, and could be used to supplement existing conservation activities by people and organisations around the country.

The fund would not be used to mitigate the effects of modern mine sites or to provide compensation as appropriate for mining activities. Mining companies would be responsible for that themselves (it would continue to form a part of their resource consent and access conditions).

### The objective of the fund would be to enhance conservation outcomes for New Zealand.

Decision makers would have a broad ability to use the available funds in ways that would maximise the conservation benefits for New Zealand, both at the community and national level. It would not be restricted to public conservation areas.

The proposed broad objective could include conservation outcomes related to management of natural areas and native species, historic and cultural resources, the provision of recreational opportunities and the engagement of communities in conservation.

Clear criteria will need to be set to streamline the operation of the fund, guide decision making, and manage expectations from applicants and the wider community.

### The annual budget for the fund would be based on 50 percent of royalty revenue from minerals (other than petroleum) from public conservation areas with a minimum of \$2 million per annum for the first four years and a maximum of \$10 million per annum.

The Government considers that 50 percent of Crown royalties on minerals (other than petroleum) from public conservation areas is an appropriate starting point for the fund. Even if a number of areas are removed from Schedule 4 so that mineral activity applications can be considered, it will be some years before any mining activity actually takes place in those areas and earns money. Therefore mineral royalties from public

conservation areas will remain limited in the short term. However, in time, royalty revenues could become very significant.

To ensure that the fund is meaningful and to give a degree of certainty, a minimum contribution to the fund of \$2 million per annum for the first four years is proposed, with funding rising to a maximum of \$10 million per annum as royalties from mining on conservation land increases. This could make a real difference to our conservation outcomes.

**The fund will be contestable and open to all including government departments.**

Providing for a contestable process would help to ensure that projects that best contribute to the fund's objective are supported. Most similar funds are contestable.

Allowing a wide range of applicants recognises that conservation activities are undertaken by a variety of individuals, organisations and groups.

**Allocation and fund management decisions would be made by an independent panel appointed by the Ministers of Energy and Resources and Conservation.**

Having an independent panel make allocation decisions would:

- a. allow decisions to be made by conservation experts
- b. ensure that the fund is separate from existing conservation funding provided to DOC.

The panel would work within criteria and objectives set for the fund, with the overall aim of maximising the conservation benefits for New Zealand from the available funding.

**Administrative support would be provided to the panel by an existing government department.**

It is proposed that administrative support be provided from within an existing government department, to reduce the administrative costs.

DOC administers a number of funds with similar objectives currently and already has a conservation focus. Other government departments including MED administer a number of different types of contestable funds, and MED administers the collection of royalties.

## Have your say

### Process and submissions

Table 6 Proposed Schedule 4 stocktake process	
MED and DOC officials review the conservation and mineral values of all Schedule 4 areas	August 2009 to February 2010
Discussion paper released with stocktake findings and policy proposals	March 2010
Six-week period for public submissions	March to May 2010
Submissions reviewed and recommendations made to Cabinet for approval	May to August 2010

MED and DOC would welcome feedback on this discussion paper, particularly the specific questions set out below. To assist you with structuring your submission, a submission form that may be downloaded and/or filled in online is available at [www.med.govt.nz/Schedule4](http://www.med.govt.nz/Schedule4).

Responses are due by **5.00pm on Tuesday 4 May 2010**.

When making a submission (electronic submissions are preferred), please include your name, organisation's name (if applicable), and your address (postal and/or email) and either:

- fill in the online form at [www.med.govt.nz/schedule4](http://www.med.govt.nz/schedule4), or
- download and fill in the online submission form or write your submission and either:
  - send your comments by email, preferably in a Microsoft Word document, to [schedule4@med.govt.nz](mailto:schedule4@med.govt.nz), or
  - mail a hard copy to:

Schedule 4 Stocktake  
Ministry of Economic Development  
PO Box 1473  
Wellington 6140

### Posting and release of submissions

Written submissions may be posted at [www.med.govt.nz/schedule4](http://www.med.govt.nz/schedule4). We will consider you to have consented to posting by making a submission, unless you clearly specify otherwise in your submission. If sensitive material in your submission cannot be published, please provide two versions of your submission – a full version and a publishable version.

In any case, all information provided to MED and DOC is subject to public release under the Official Information Act 1982. Please advise if you have any objection to the release of

any information contained in a submission, and in particular, which part(s) you consider should be withheld, together with the reason(s) for withholding the information. We will take into account all such objections when responding to requests for copies and information on submissions to this document under the Official Information Act 1982.

## **Privacy**

The Privacy Act 1993 establishes certain principles with respect to the collection, use, and disclosure of information about individuals by various agencies including MED and DOC. It governs access by individuals to information about themselves held by agencies. Any personal information you supply in the course of making a submission will be used by MED and DOC only in conjunction with the matters covered by this document. Please clearly indicate in your submission if you do not wish your name to be included in any summary of submissions that MED or DOC may publish.

## **Questions**

### **Q1 On the areas proposed for removal from Schedule 4:**

Section 7 of this document sets out the areas proposed for removal from Schedule 4. Do you think these areas should be removed from Schedule 4 so that applications for exploration and mining activity can be considered on a case-by-case basis? Yes or No? And why?

*(Your response may be in relation to any one or more of the areas discussed. Please clearly identify the area(s) to which your response relates.)*

### **Q2 On the areas proposed for addition to Schedule 4:**

Section 8 of this document sets out the areas proposed for addition to Schedule 4. Do you agree with the proposal to add these areas to Schedule 4? Yes or No? And why?

*(Your response may be in relation to any one or more of the areas discussed. Please clearly identify the area(s) to which your response relates.)*

### **Q3 On the assessment of areas:**

The assessment of areas covered by Schedule 4 and those proposed for addition is outlined in sections 7 and 8 of this document and Appendices 1 and 2.

(a) What are your views on the assessment of the various values (conservation, cultural, tourism and recreation, mineral, other) of the land areas discussed?

(b) Do you have any additional information that may be important for Ministers to make their decisions?

*(Your response may be in relation to any one or more of the areas or values discussed. Please clearly identify the area(s) to which your response relates.)*

#### **Q4 On the proposal to further investigate the mineral potential of some areas:**

The Government is carrying out a research and investigation programme on the mineral potential of areas with significant mineral potential over the next nine months, including the Coromandel, parts of Paparoa National Park and Rakiura National Park, and a number of non-Schedule 4 areas.

(a) Do you have any comments on the type of information that would be the most useful to mineral investors?

(b) Are there any particular areas that the Government should consider including in its investigation programme?

#### **Q5 On a new contestable conservation fund:**

Section 9 describes a proposed contestable conservation fund the Government proposes to establish, which would be made up of a percentage of the money the Crown receives from minerals (except petroleum) from public conservation areas.

(a) A broad objective, to enhance conservation outcomes for New Zealand, is proposed for the fund. Do you agree with the proposed objective?

(b) What do you think the fund should be used for? What should its priorities be?

(c) An independent panel appointed by the Minister of Energy and Resources and the Minister of Conservation is proposed to run the fund. Do you think this is a good idea?

(d) It is proposed that half of royalties from public conservation areas are contributed to the fund, with a minimum of \$2 million per year for the first four years, and a maximum of \$10 million per year. Do you think the amounts proposed for the fund are appropriate?

(e) Do you have any other comments that might help the Government to make decisions on a new conservation fund?

#### **Q6 On approval of access arrangements:**

In section 6 it is proposed that the joint approval of the land-holding Minister and the Minister of Energy and Resources be required for an access arrangement on Crown land for mineral exploration or development. Do you think this is appropriate?

Why or why not?

#### **Q7 On any other issues:**

Do you have any further suggestions or comments on what has been said in this document?

## Glossary of terms

In this paper, capitalised terms have the following meanings unless the context requires otherwise:

**CM Act** means the Crown Minerals Act 1991.

**DOC** means the Department of Conservation.

**GNS** means GNS Science.

**MED** means the Ministry of Economic Development.

**RMA** means the Resource Management Act 1991.

**Schedule 4** means Schedule 4 of the CM Act.