

Environmental Effect Assessment for Underground And Opencast Coal Mining Operations

Information Required in Support of an Application Under
Section 59 of the Crown Minerals Act For an Access Arrangement (or access arrangement variation)
to Conduct Mining Pursuant to Section 61 of that Act.

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1 Initial Assessment

1.1 Introduction

This environmental assessment shall be used to determine the natural and historic values of the land / area detailed in the applicant's mining proposal and the effects of that proposal on those values. It provides the Department of Conservation ("the Department") with a means of assessing the impact of the operation on the natural environment, and enables the applicant to show how they intend to mitigate such impacts. The Department will use this assessment as the basis of the imposition of a number of obligatory minimum operating conditions if the application is approved.

It is highly desirable that all applicants discuss the nature of their proposals with the Department prior to submitting their application.

A full and comprehensive level of detail is required. It is advised that all applications be backed up with documents containing supporting evidence, such as drawings, maps, plans, **programme of works** and project overview. If the Department has to request additional information, the processing of the application may be delayed. It is imperative that the application be completed by someone such as a technical consultant who is familiar with all aspects of the area in question, the methodology to be employed during operations, likely environmental impacts and mitigating measures that can be employed to minimise such effects.

1.2 Relevant Legislation

Sections 59, 60 and 61 of the Crown Minerals Act (1991) cover the issue of right of access. The Act requires that both a permit and an access arrangement are needed before any prospecting, exploration or mining activities can take place in respect of minerals in, on or under Crown land. Other relevant legislation to consider is Part VI of the Resource Management Act 1991 as this deals with resource consents. Potential applicants are strongly encouraged to obtain their access arrangement requirements before seeking the necessary resource consents.

1.2.1 Section 59

59: Notice of request for grant of right of access.

- (1) Every person wishing to obtain an access arrangement in order to explore, prospect or mine on or in land shall serve on each owner and occupier of the relevant land, a notice in writing of that person's intention to obtain an access arrangement.
- (2) Every notice under subsection (1) shall, in addition to matters required by regulations, specify:
 - a) The land affected; and
 - b) The purpose for which the access arrangement is required; and
 - c) **The proposed programme of work including the type and duration of work to be carried out and the likely adverse effect on the land or the owner or occupier of the land; and**
 - d) **The compensation and safeguards against any likely adverse effects proposed;** and
 - e) The type of permit held or applied by the person giving the notice.

- (3) Where an access arrangement is obtained by agreement and the requirements of this section were not complied with in a material way, then such agreement shall be of no force or effect unless the non-compliance is waived in writing by the owner or occupier affected.

Applicants should note that the above section requires notice to be served on **every occupier** of land administered by the Department to which the application relates. Contact details for relevant occupiers may be obtained from Conservancy offices.

1.2.2 Section 60

That section sets out the provisions under which an access arrangement may be granted. It covers the following:

- a) Periods of access
- b) Regions of interest
- c) Types of works
- d) Imposition of conditions
- e) Environmental protection
- f) Compensation to be paid to the land owner / occupier
- g) Dispute resolution
- h) Manner of varying the agreement

1.2.3 Section 61

The section allows an appropriate Minister to enter into an access arrangement for Crown land. For land administered by the Department of Conservation, the appropriate Minister is the Minister of Conservation. Delegations authorise specific Department officers to exercise the Ministers authorisation on her behalf. The Minister must have regard to certain specified factors in deciding whether or not to enter into an access arrangement.

Specifically, applicants' attention is drawn to section 61(2)(d), which requires the Minister to consider "The safeguards against any potential adverse effects of carrying out the proposed programme of work;"

Under Section 61A a person may **not** prospect, explore or mine in Crown land for a mineral that is not the property of the Crown (e.g. pounamu), except where an access arrangement has been entered into by an appropriate Minister under Section 61B.

61. [Access arrangements in respect of Crown land](#)—(1) The appropriate Minister may, by agreement, enter into an access arrangement in respect of Crown land.

(1A) The Minister of Conservation must not accept any application for an access arrangement or enter into any access arrangement relating to any Crown owned mineral in any Crown owned land or internal waters (as defined in section 4 of the Territorial Sea, Contiguous Zone, and Exclusive Economic Zone Act 1977) described in the Fourth Schedule, except in relation to any activities as follows:

- (a) That are necessary for the construction, use, maintenance, or rehabilitation, of an emergency exit or service shaft for an underground mining operation, where these cannot safely be located elsewhere, provided that it does not result in—
 - (i) Any complete stripping of vegetation over an area exceeding 100 square metres; or
 - (ii) Any permanent adverse impact on the profile or surface of the land which is not a necessary part of any such activity:
- (b) That do not result in—
 - (i) Any complete stripping of vegetation over an area exceeding 16 square metres; or
 - (ii) Any permanent adverse impact on the profile or surface of the land that is not a necessary part of any activity specified in paragraph (a):
- (c) A minimum impact activity:
- (d) Gold fossicking carried out in an area designated as a gold fossicking area under section 98 of the Crown Minerals Act 1991:

- (e) Any activity carried out in accordance with a special purpose mining permit for demonstrating historic mining methods as provided for in the relevant minerals programme required under section 13 of the Crown Minerals Act 1991.

(2) In considering whether to agree to an access arrangement in respect of Crown land, the appropriate Minister shall have regard to—

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

For public conservation lands the relevant acts would be the Reserves Act 1977, National Parks Act 1980 and the Conservation Act 1987. For example under the Conservation Act the objectives are:

- (i) preserving and protecting the natural and historic resources on the land;
- (ii) maintaining the intrinsic values of the natural and historic resources on the land;
- (iii) providing for the appreciation and recreational enjoyment by the public with regard to the natural and historic resources on the land;
- (iv) safeguarding the options of future generations with regard to the natural and historic resources on the land.

The purposes for which the land is held by the Crown involves varying different land status' such as Conservation Forest Park, Ecological Area, Stewardship area, Scenic Reserve or National Park. The purposes for which stewardship area is held so that its natural and historic resources are protected.

1.3 Costs

Refer to Section 76 of the Crown Minerals Act 1991 below:

"76. Compensation for owners and occupiers—(1) Where a person is authorised to prospect, explore, or mine on or in land by a permit granted under this Act and by an access arrangement in respect of that land, the owner and occupier of the land are entitled to compensation from the permit holder for injurious affection and all other loss or damage suffered, or likely to be suffered, by them as a result of the grant of the permit or the exercise of the rights conferred by this Act, or by the permit, or by an access arrangement; and such compensation shall include all of the following: (a) Reimbursement of all reasonable costs and expenses incurred by the owner or occupier in respect of negotiations with the permit holder and all reasonable legal and valuation fees in respect of the determination of an access arrangement: (b) Reimbursement for loss of income: (c) A sum by way of solatium for loss of privacy and amenities: (d) Reimbursement of all reasonable costs incurred in ensuring compliance with, and monitoring of, the access arrangement."

Five tiers of costs apply to those wishing to lodge an application to conduct mining operations:

- (1) Initial application fee (of \$200 + GST).
- (2) Additional information / processing costs – charged in the event that documentation tendered by the applicant proves insufficient to enable further processing.
- (3) Ordinary processing costs.
- (4) Ongoing monitoring costs.
- (5) Compensation for land use

Compensation as prescribed under section 76 of the Crown Minerals Act (1991), is payment made to the Department by the applicant to offset the affect of the applicant's activities or operations on its land. It can be asked due to injurious affection, loss or damage suffered or likely to be suffered, reimbursement for lost revenue and a loss in values.

Compensation may take the form of cash payment to a Conservancy trust fund for conservation purposes, or be a transfer or exchange of land with similar and different or comparable values or provision of services to the Department or some other form to be agreed.

The form and amount of compensation must be proposed by the applicant and may be accepted directly or after negotiations. The Department will advise whether the applicant's offer is acceptable. **No access arrangement may be entered into prior to compensation being agreed.**

1.4 Application requirements

1.4.1 Definition of the Application Area

The applicant must provide the following in order to accurately delimit and illustrate the area of interest:

- A topographical map showing the location of the area with relation to neighbouring properties and regions;
- A certified land status schedule obtained from Land Information New Zealand, together with a legal description and a cadastral map showing the property and adjacent properties;
- A detailed map, plan, drawing or aerial photograph of the application area showing topography, water courses, physical features, vegetation, land use, rights of way and any special features;
- A series of photographs showing the application area from a number of representative viewpoints.
- A copy of the minerals permit held, or applied for, including a plan of the boundaries of the permit held, or applied for.

1.4.2 Duration and Consents

- State the number of years for which the access arrangement is sought.
- Outline any resource consents sought or obtained in relation to the proposal, and include copies of comments issued, or applications filed.

2 Environmental Description

2.1 Landscape

Provide a detailed description of the topography of the zone of interest and surrounding area. The detail required should be the following:

- Describe all the major physical features, relief, water courses and bodies of water;
- Clearly show on a plan of the area all different landforms and associated varying vegetative types that are present;
- Make an assessment of approximate percentages of the different types; i.e.: 20 % braided river bed, 5 % scree, 40 % open mountainside above tree line etc.
- Include a broad assessment of geology and soil types and drainage patterns
- Give a description of seasonal weather patterns, particularly: historical levels of precipitation and both mean and extremes of summer and winter temperatures

2.2 Nature Conservation Values and Biodiversity

2.2.1 Floral Assessment

Give a description of the major types of vegetation found in, and adjacent to, the application area. Depict the variation on a map of the site.

Each vegetation unit should be annotated as follows:

- Approximate area.
- Name of predominant species eg: kamahi, rata etc.
- Any previous use within area eg: regenerating native shrubland on land previously used for farming etc.
- Extent, if any, of modification of area eg: undisturbed soil structure/disturbed soil structure etc.
- Any known endangered species present eg: mistletoe, powelliphanta snails, kaka, kiwi etc.
- Known presence of a species at the edge of their natural range eg: rewarewa, nikau, beech etc

2.2.2 Faunal Assessment

Provide a list of wild animals present in, and adjacent to, the application area. This should include:

- Bird species and number observed
- Known native fish, invertebrate species and other aquatic fauna in any waterways and the riparian areas
- Known presence of endangered species
- Known breeding / spawning ground for any species (a map is useful for determining the areas used for breeding)

2.2.3 Habitat Assessment

Give a broad outline of the key habitat characteristics present within the application area:

- Is the area part of a larger natural environment or does it form an isolated pocket within a modified landscape
- Provide an indication of the extent to which introduced species are present eg: weed species, trout and salmon, cattle, sheep, plantation forestry
- Show the presence and extent of any natural waterways, wetlands, dune systems or tidal estuaries
- Indicate whether the application area is currently, or has been, the subject of scientific or ecological study with relation to bio-diversity and natural habitat. What searching would be required?

3 Archaeological and Historic Sites

Describe the position and significance of any sites of historical and archaeological interest within the application area. The applicant must consult with the local filekeeper of the New Zealand Archaeological Society or Historic Places Trust to determine this. It is necessary to show evidence of such consultation by summary or inclusion with the application of the filekeeper's report.

4 Social Environment

4.1 Existing Landscape and Scenic Qualities

Describe in detail the landscape of the area, with particular reference to the following:

- Historical modification of the existing natural environment
- Proximity and visibility of proposed activity to roads, tracks, pathways and routes

4.2 Noise Considerations

If machinery is to be used as part of the applicant's operations, describe the following:

- Existing noise levels
- The source(s) of any noise
- Frequency and duration of any existing noise

4.3 Use of the Area by Visitors

Provide details of existing land use by visiting members of the public, both as private individuals and as part of commercial tourist activities. In particular:

- List all existing recreational amenities in the area covered by the application, such as huts, tracks, bridges, car parks and picnic sites.
- Detail all recreational activities undertaken within, and adjacent to, the application area. These should include tramping, hunting, fishing etc. and any recreational or tourist businesses such as guiding, transport or accommodation.

5 Tangata Whenua

With reference to any application for access on public conservation land it is necessary to consult with the relevant iwi, in any case the Department will send the application to iwi at the expense of the applicant. Please provide evidence of this consultation with each group and details of its outcome.

5.1 Maori Interest

Give details of any Maori interest in the land or water within, or adjacent to, the application area, particularly:

- Any known sacred or spiritual sites
- Sites of historical occupancy, Pa etc.
- Traditional food gathering areas etc.

5.2 Water

If the application is likely to compromise any Maori interest in the water contained in the application area a full and detailed description of all effects and mitigating measures is required. Details of consultation with local Iwi is also necessary. (See section 6.8). A description of the different states of water follows, to aid provision of an accurate answer to the above.

In Maori belief, the five states of water are listed below:

- **Wairoa** – The purest form of water, Wairoa is used in sacred rituals to purify and sanctify. The rain is Wairoa. It remains pure only while contact with humans is protected by appropriate ritual prayers. At particular sacred sites the sanctity of the prayers and the purity of the water reinforce each other, but if one is damaged, the other is also.
- **Waimaori** – This is the category of water after it has come into unprotected contact with humans. It has become ordinary without any particular sacred associations. It is clear, clean water which runs freely. Its generally benevolent Mauri is still present and may be controlled by ritual.
- **Waikino** – This water has been spiritually polluted and can be harmful. It may hide boulders which may cause damage. The Mauri has been altered so that its contained supernatural forces have become non-selective and may cause harm to anyone.
- **Waimate** – Water which has lost its Mauri or life force and is considered spiritually dead. It has the potential to cause damage to people, their freshwater food sources and agriculture.
- **Waitai** – The sea, surf and tide. The saline end product of all the above states, from here the water is purified to fall again as Wairoa.

6 Proposed Mining Operations

6A Proposed Operations – Underground Coal Mining

6.1 Access

6.1.1 Proposals

Describe fully and illustrate on a site plan, all types of access required for personnel, plant, equipment and materials to and from the application area, including:

- Any haulage roads existing or to be constructed.
- Rail access existing or to be constructed.
- Existing and proposed culverts or bridges.
- Any tunnels, cuttings, embankments or significant batters.
- Overhead gantries, pylons or aerial cableways.
- Flume channels or pipelines.
- Helicopter landing pads.
- Personnel tracks and pathways.
- Aerial masts and communications arrays.

Indicate what type of vehicles and transport systems will be employed, frequency of operation and state whether the access requirements are 24 hour, all weather or on a more infrequent or weather dependent basis.

Show detailed proposals for construction of the above or upgrading of existing facilities and indicate what type and size of plant is to be used during such work.

6.1.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.2 Services

6.2.1 Proposals

List in detail and illustrate on a site plan all services present in the area and all proposed services that will be installed for the mining operation. These may include:

- Power lines. State voltage and means of support, width of access corridor etc. If power is to be generated on site, state size and type of generators, and show their proposed location on a site plan.
- Water mains. State pressure, source and size. Indicate depth of burial or means of support if above ground. See also separate section on water management.
- Compressed air. Show site of compressors and route and size of all lines. Indicate working pressure.

In all cases, show how it is proposed to install the services and by whom they shall be installed. Indicate means of plant access to install power poles / dig trenches etc.

6.2.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.3 Site Preparation

6.3.1 Proposals

Detail topsoil and sub soil depth in the area around the mine mouth and any other area to be affected by building works.

- Assess the volume (m³) to be stripped and stockpiled.
- Show stockpile locations, volumes (m³) and stabilisation methods.
- Detail method of stripping and subsequent reinstatement.

6.3.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.4 Accommodation

6.4.1 Proposals

If temporary or semi-permanent work camps are to be established for any stage of the proposed work, state size, location, duration of occupation and the number of people occupying any such accommodation facility. Detail any other amenities and facilities to be constructed as part of any work camp. In particular, describe the proposed means of dealing with sewage, foul water and refuse from the camp(s).

Show the positions of the above on a site plan.

6.4.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.5 Surface Structures

6.5.1 Proposals

On a site plan, clearly indicate the proposed extents and number of any temporary or semi-permanent offices, workshops or other buildings. For each structure, show:

- Size and type
- Nature of intended use
- Proposed duration of existence
- Services required within (power, phone, water etc.)

The above should include all load out, processing and washing plants, maintenance shops and welfare facilities. Preliminary design details should be available for all structures for which an engineering design is likely to be required. Included with the proposal should be:

- Types, number and size of any footings and foundations required.
- Construction details and methods, including relevant plant and equipment specifications.
- Service requirements for each structure (water, power etc.)
- Details of vehicle parking and hard standing areas.
- Extents of concrete aprons between structures.
- Areal extents and depths of any settlement or washing ponds (see section on Water Management)

6.5.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.6 Portals and Stockpiles

6.6.1 Proposals

On a site plan, clearly show where it is intended to situate the mine entrance portal(s), return airway discharge, points of access for personnel and materials (if different from the above), fan houses and their associated access ways.

Show also all surface stockpile areas for coal and waste rock. Give volumes of throughput (m³ per week / tonnes per week etc.). Detail how the stockpiles are to be contained, drained and stabilised, and show their maximum heights and areal extents.

6.6.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.7 Underground Mining Method

6.7.1 Proposals

Give full description and details of the proposed method for winning coal underground:

- General method: hydraulic, CM etc.
- Machinery: type, size, capacity, use and power source.
- Shift sizes, work hours, expected output per week.
- Surface lighting methods and extents.
- Transportation method for coal, personnel and materials.
- Handling methods
- Use of chemicals and other potentially hazardous materials, their type, nature, storage proposals, quantities and safeguards to avoid / mitigate spillages.
- Diesel plant, storage and transportation of diesel fuel, emission control etc.
- Waste rock: type and expected quantities, amounts surfaced, disposal / storage methods.
- Any use of explosives: type, quantity per round, purpose and frequency of blasting, expected limits on air overpressure and vibration from each round, storage and licensing requirements, qualified personnel, safety procedures etc.
- Extents of areas and amounts likely to be affected by subsidence or surface cracking as a result of coal extraction.

6.7.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.8 Water Management

6.8.1 Proposals

6.8.1.1 Existing Hydraulic Environment

Detail all impacts on natural water courses and bodies due to the implementation of the proposal. Show any diversions, bunds, stopbanks etc to be constructed to prevent compromise of the natural aquatic environment. Detail all site surface and underground drainage and show how this is prevented from entering natural water courses directly without treatment.

6.8.1.2 Water Supply

Give full details of the following:

- Quantity required.
- Type i.e.: potable or 'grey'
- Source i.e.: municipal main, reservoir, creek, borehole etc.
- Effects of removing water on the source, especially during low flow or drought conditions.
- Effects of installing equipment in watercourses.
- Effects of the above on other water users. Detail whom.
- Type and size of any pumping equipment.
- Any impoundment structures to be constructed.

- Any disturbance which may be caused to the banks or bed of the watercourse.

6.8.1.3 Water Use

Describe the use of water with regard to the proposal. In particular detail:

- Uses underground and on the surface.
- Any methods of recycling.
- Contamination details, i.e.: silt, clay, coal fines, other particulates, chemicals, pH, heat, discolouration.
- Methods to be used to prevent contaminated and clean water being mixed.
- Details of remediation and treatment of water, such as settlement ponds / tanks, chemical admixtures, flocculants, on-land disposal.

Detail how periodic processes such as sump cleaning and desilting shall be dealt with in regard to water management and cleanliness. Procedures should be in place to prevent such activities creating an unacceptable sediment load in the discharged water.

6.8.1.4 Water Disposal

Detail the proposals for efficient and harmless discharge of water from the site. Show:

- Volumes (litres per sec. etc.)
- Frequency.
- Duration.
- Quality, pH, levels of suspended solids etc.
- Effects of addition to existing water courses.
- Contingencies in the event of freezing, delivery pipe blockage etc.
- How sewage from accommodation units, offices etc is to be dealt with.

6.8.1.5 Maori Interests (See section 5.2)

If the use of water in the proposal affects in any way the interests of Maori, detail procedures and / or agreements and negotiations entered into in order to mitigate these effects.

6.8.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.9 Waste Processing

6.9.1 Proposals

Describe in detail the provisions for waste management, both for bulk rock and general rubbish, in terms of both on and off site disposal. Include:

- Transport arrangements.
- Disposal locations.

- Frequency of movements.

6.9.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6B Proposed Operations – Opencast Coal Mining

6.1 Access

6.1.1 Proposals

Describe fully and illustrate on a site plan, all types of access required for personnel, plant, equipment and materials to and from the application area, including:

- Any haulage roads existing or to be constructed.
- Rail access existing or to be constructed.
- Existing and proposed culverts or bridges.
- Any tunnels, cuttings, embankments or significant batters.
- Overhead gantries, pylons or aerial cableways.
- Flume channels or pipelines.
- Helicopter landing pads.
- Personnel tracks and pathways.

Indicate what type of vehicles and transport systems will be employed, frequency of operation and state whether the access requirements are 24 hour, all weather or on a more infrequent or weather dependent basis.

Show detailed proposals for construction of the above or upgrading of existing facilities and indicate what type and size of plant is to be used during such work.

6.1.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.2 Services

6.2.1 Proposals

List in detail and illustrate on a site plan all services present in the area and all proposed services that will be installed for the mining operation. These may include:

- Power lines. State voltage and means of support, width of access corridor etc. If power is to be generated on site, state size and type of generators, and show their proposed location on a site plan.
- Water mains. State pressure, source and size. Indicate depth of burial or means of support if above ground. See also separate section on water management.
- Compressed air. Show site of compressors and route and size of all lines. Indicate working pressure.
- Aerial masts and towers for any RF communications etc.

In all cases, show how it is proposed to install the services and by whom they shall be installed. Indicate means of plant access to install power poles / dig trenches etc.

6.2.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.3 Site Preparation

6.3.1 Proposals

Detail topsoil and sub soil depth in the area around the mine pit and any other area to be affected by building or stripping works.

- Assess the volume (m³) to be stripped and stockpiled. If the mine is to be worked as a pit, show where the entire volume of overburden can be stored.
- Show stockpile locations, volumes (m³) and stabilisation methods.
- Detail method of stripping and subsequent reinstatement. For both open pit and strip type operations, indicate the elapsed period between initial overburden removal and reinstatement.

6.3.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.4 Accommodation

6.4.1 Proposals

If temporary or semi-permanent work camps are to be established for any stage of the proposed work, state size, location, duration of occupation and the number of people occupying any such accommodation facility. Detail any other amenities and facilities to be constructed as part of any work camp. In particular, describe the proposed means of dealing with sewage, foul water and refuse from the camp(s).

Show the positions of the above on a site plan.

6.4.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.5 Surface Structures

6.5.1 Proposals

On a site plan, clearly indicate the proposed extents and number of any temporary or semi-permanent offices, workshops or other buildings. For each structure, show:

- Size and type
- Nature of intended use
- Proposed duration of existence
- Services required within (power, phone, water etc.)

The above should include all load out, processing and washing plants, maintenance shops and welfare facilities. Preliminary design details should be available for all structures for which an engineering design is likely to be required. Included with the proposal should be:

- Types, number and size of any footings and foundations required.
- Construction details and methods, including relevant plant and equipment specifications.
- Service requirements for each structure (water, power etc.)
- Details of vehicle parking and hard standing areas.
- Extents of concrete aprons between structures.
- Areal extents and depths of any settlement or washing ponds (see section on Water Management)

6.5.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.6 Pits and Stockpiles

6.6.1 Proposals

On a site plan, clearly show where it is intended to situate the pit(s), declines and points of access for personnel.

Show also all surface stockpile areas for coal and overburden. Give volumes of throughput (m^3 per week / tonnes per week etc.). Detail how the stockpiles are to be contained, drained and stabilised, and show their maximum heights and areal extents.

6.6.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.7 Opencast Mining Method

6.7.1 Proposals

Give full description and details of the proposed method for winning coal in the opencast situation:

- General method: hydraulic, drill and blast, mechanical etc.
- Machinery: type, size, capacity, use and power source.
- Shift sizes, work hours, expected output per week.
- Surface lighting methods and extents.
- Transportation method for coal and men and materials.
- Handling methods.
- Use of chemicals and other potentially hazardous materials, their type, nature, storage proposals, quantities and safeguards to avoid / mitigate spillages.
- Diesel plant, storage and transportation of diesel fuel, emission control etc.
- Overburden: type and expected quantities, disposal / storage methods.
- Any use of explosives: type, quantity per round, purpose and frequency of blasting, expected limits on air overpressure and vibration from each round, storage and licensing requirements, qualified personnel, safety procedures etc.

6.7.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.8 Water Management

6.8.1 Proposals

6.8.1.1 Existing Hydraulic Environment

Detail all impacts on natural water courses and bodies due to the implementation of the proposal. Show any diversions, bunds, stopbanks etc to be constructed to prevent compromise of the natural aquatic environment. Detail all site surface drainage and show how this is prevented from entering natural water courses directly without treatment.

6.8.1.2 Water Supply

Give full details of the following:

- Quantity required.
- Type i.e.: potable or 'grey'
- Source i.e.: municipal main, reservoir, creek, borehole etc.
- Effects of removing water on the source, especially during low flow or drought conditions.
- Effects of installing equipment in watercourses.
- Effects of the above on other water users. Detail whom.
- Type and size of any pumping equipment.
- Any impoundment structures to be constructed.
- Any disturbance which may be caused to the banks or bed of the watercourse.

6.8.1.3 Water Use

Describe the use of water with regard to the proposal. In particular detail:

- Uses in the mine itself and elsewhere.
- Any methods of recycling.
- Contamination details, i.e.: silt, clay, coal fines, other particulates, chemicals, pH, heat, discolouration.
- Methods to be used to prevent contaminated and clean water being mixed.
- Details of remediation and treatment of water, such as settlement ponds / tanks, chemical admixtures, flocculants, on-land disposal.

Detail how periodic processes such as sump cleaning and desilting shall be dealt with in regard to water management and cleanliness. Procedures should be in place to prevent such activities creating an unacceptable sediment load in the discharged water.

6.8.1.4 Water Disposal

Detail the proposals for efficient and harmless discharge of water from the site. Show:

- Volumes (litres per sec. etc.)
- Frequency.
- Duration.
- Quality, pH, levels of suspended solids etc.
- Effects of addition to existing water courses.
- Contingencies in the event of freezing, delivery pipe blockage etc.
- How sewage from accommodation units, offices etc is to be dealt with.

6.8.1.5 Maori Interests (See section 5.2)

If the use of water in the proposal affects in any way the interests of Maori, detail procedures and / or agreements and negotiations entered into in order to mitigate these effects.

6.8.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

6.9 Waste Processing

6.9.1 Proposals

Describe in detail the provisions for waste management, both for bulk rock and general rubbish, in terms of both on and off site disposal. Include:

- Transport arrangements.
- Disposal locations.
- Frequency of movements.

6.9.2 Likely Adverse Effects, Safeguards and Mitigation Measures.

Describe with relation to the above, possible adverse environmental effects that could arise as a result of the applicant's proposal. Indicate what safeguards are to be put in place and what measures will be taken in order to mitigate any such effects.

7 Disturbance of Existing Environments

7.1 Effects

With reference to the proposed operations, describe any additional potential adverse or positive effects which the proposed operations outlined in section 6 may have on natural, historic and cultural resources, and on recreational activities as detailed previously in sections 3 - 5.

The above must specifically indicate whether the proposal is likely to cause any of the following:

- Noise: State levels, frequencies, duration etc.
- Increased fire risk.
- Introduction of noxious weeds.
- Visual intrusion.
- Dust and airborne pollution.
- Degeneration of vegetation

In each case, describe safeguards which will be put in place and what measures will be taken in order to mitigate any such effects.

7.2 Monitoring of Effects

Outline in detail what measures shall be adopted to instigate an on-going monitoring system to:

- a) Identify changing conservation values
- and
- b) Ensure that an effective response can be implemented to mitigate any detrimental change in the above values.

In particular describe which parameters the applicant intends to monitor and for each type, detail the monitoring scheme's:

- Location.
- Frequency.
- Reporting body.
- Relevant governing legislation and acceptable limits.
- Method of analysis.
- Any consultants employed and for what purpose.

The above should include (as a minimum):

- Discharge water turbidity, suspended solids and pH.
- Dust levels around the mine.
- Floral and faunal impacts.
- Fish numbers.

- Noise levels.
- Blasting vibration and overpressures.

8 Reinstatement and Rehabilitation

Detail all proposals for rehabilitation and reinstatement of the entire mine affected area upon cessation of mining activity. In particular:

- Show how reinstatement shall be carried out, and how environmental considerations are to be dealt with **during** the reinstatement works.
- If the pit is to be left open and not filled in completely, detail proposals for its final end use.
- Show where any additional topsoil is to be obtained from if stockpiled quantities prove to be insufficient.
- Detail how existing vegetation is to be regrown in the reinstatement area.
- Show how any affected watercourses are to be returned to their natural routes.
- Describe what if any of the mine infrastructure is to be left and for what purpose. In particular, give details of roadways and access routes which may be left open.

Detail proposals for water containment, drainage and monitoring beyond the life of the mine.