

# Work Program, Environment Strategy, Community Engagement Plan

## Notice of Application for an Exploration Licence, EL007251

*Mineral Resources (Sustainable Development) Act 1990 – Section 15(5);*

*Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2019 – Regulation 22(1) and Schedule 1*

**Name and address of applicant:** Rosetta Minerals Pty. Ltd., 15 Gray Spence Crescent, West Pennant Hills, N.S.W., 2125.

**Contact details of applicant (for map and other information requests):** Michael Leu, Geologist, Mobile: 0427000600, emails: [michael.leu@bigpond.com.au](mailto:michael.leu@bigpond.com.au)

**Applicant's website:** Further information about this application is available at the following website or other location: website [www.rosettamineralscommunity.com.au](http://www.rosettamineralscommunity.com.au).

**Details of the application:** Application No. EL007251.

**Locality of the land to which the application relates, refer to map herein:** Centre of Exploration Licence is 50.2km northwest of Ballarat, 18km southwest of Maryborough, 12km southeast of Avoca.

**Approximate area of application:** 18 graticular units, 13km<sup>2</sup>.

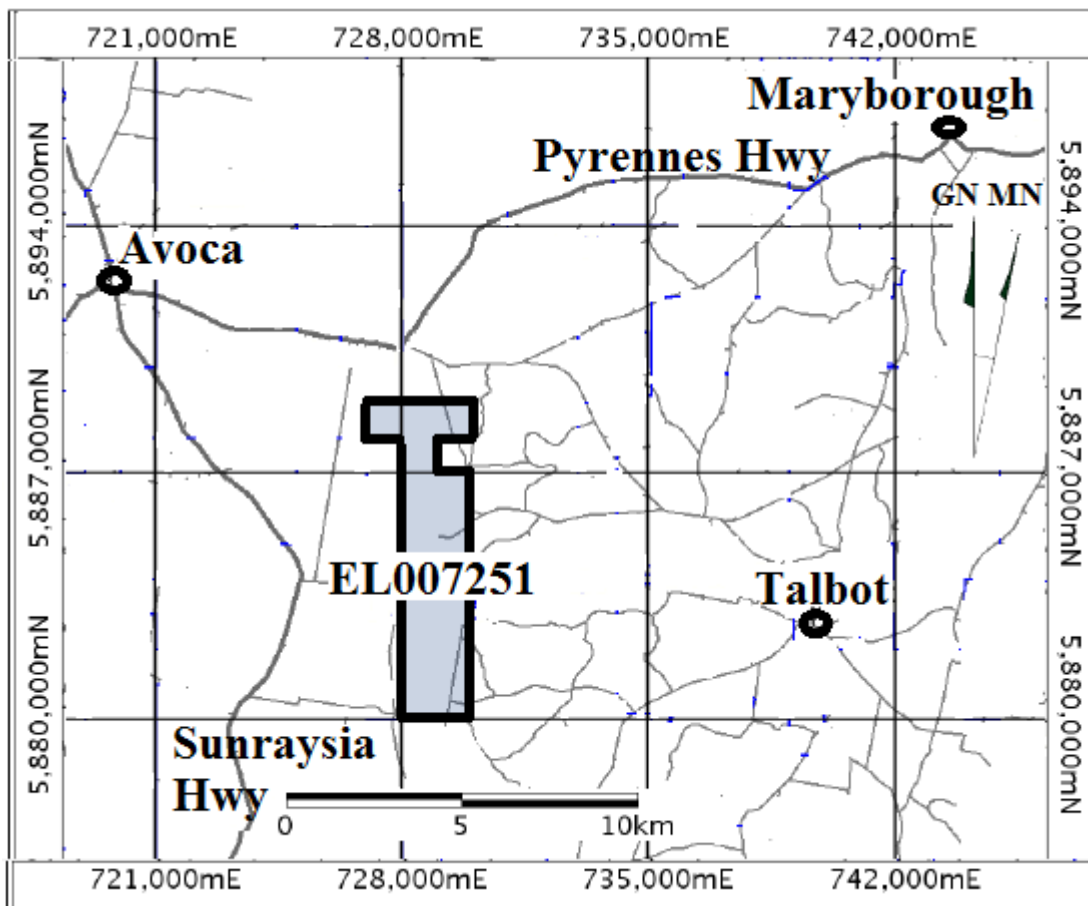
**Date of the application:** Accepted 8 July 2020.

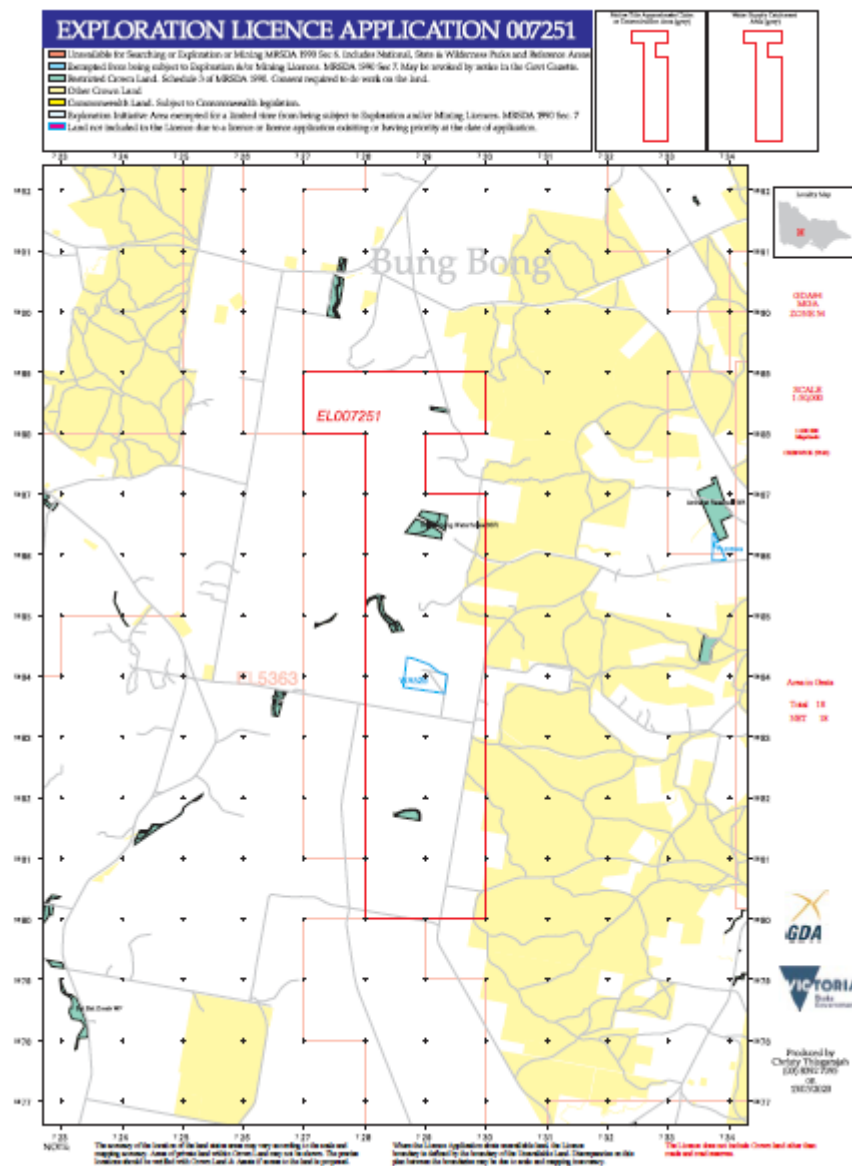
**Term the licence is applied for:** 5 years.

**Outline of the proposed program of work:** Details of work plans are in website [rosettamineralscommunity.com.au](http://rosettamineralscommunity.com.au). Exploration is primarily for diatomaceous earth and clay, both shallow, environmentally friendly minerals. For the first three years low impact exploration is planned to include historical research, detailed mapping and rock sampling, soil sampling and hand augering, by foot and vehicular access with minimum impact on the environment. When higher impact activities are planned such as exploration drilling, it will involve submission of a low impact exploration plan or work plan to Earth Resources Regulation, detailed rehabilitation plans, monitoring and auditing. Throughout the exploration planning process Rosetta Minerals will consult with individual land holders and the broader community and provide information on planned exploration activities and allow opportunities for feedback to be incorporated into the planning process.

**Objections and Comments:** Any person may object or comment to a licence being granted by:  
a. putting the objection or comment in writing; and b. including the grounds on which it is made. Objections or comments must be lodged within 21 days after the latest date on which the application was advertised and can be lodged online or posted to: The Minister for Resources, c/- Manager Licensing, Earth Resources Regulation, PO Box 2392 Melbourne Victoria 3001. It is recommended that objections or comments are lodged online to ensure timely consideration: <https://rram.force.com/ObjectionSubmission>. Enquiries can be made by writing to the Manager Licensing at the above address or by phoning the Earth Resources Information Centre on 1300 366 356.

**Other information:** a. Subject to other requirements being satisfied, an exploration licence, if granted, entitles the holder of the licence to explore and search for minerals in the relevant land, but does not entitle the holder to undertake mining. b. Further information regarding the requirements that must be complied with prior to work being undertaken is available on the department's Community & Land Use page: <https://earthresources.vic.gov.au/community-and-land-use>





## Details of Proposed Work Program

### Rationale for Exploration Program

Open file geological reports confirm the Exploration Licence area contains diatomaceous earth and clay. A primary objective of the exploration program is to measure the quality, thickness and lateral extent of the diatomaceous earth to determine if economic grades and volumes exist.

Diatomaceous Earth is a natural, environmentally friendly material with many uses including:

- Silicon fertiliser, source of plant-available silicon
- Carbon sequestration credits, lock-up CO<sub>2</sub> in phytoliths
- Soil amender and fertiliser for broad acre (wheat, rice etc.) vegetable, garden and turf
- Soil amender and fertiliser for intensive horticultures, vegetable, garden and turf
- Natural, non-toxic insecticide
- Natural slug and snail control
- Chemical absorbent
- Reactive-silica source
- Light weight aggregates
- Additive for cement and concrete (pozzolan)
- Partial substitute for silica sand in cement manufacture
- Fillers (for paint, rubber, plastics), insulating material
- Filtration media (swimming pools, food and beverage manufacturing)
- Anticaking agent

- Oil/chemical clean-up absorbers
- Cat Litter
- BBQ fat absorbent
- Animal bedding (poultry, horses etc.)
- Potting mix component
- Hydroponic medium
- Mine rehabilitation
- Carrier for agricultural chemicals (fertilisers, pesticides, herbicides)
- Seed coating
- Reduction of heavy metals (Cd) in rice
- Carrier for soil wetters
- Silicon-based beauty products
- Organic food grade DE
- Animal feed additive
- Treatment of intestinal parasites
- Desiccant manufacture
- Mild abrasive
- Catalyst carrier
- Refractory

Diatomite or Diatomaceous Earth is a lightweight, highly absorbent, white sedimentary rock composed predominantly of the opaline silica skeletal (frustules) remains of microscopic, photosynthetic algae called diatoms. Under ideal conditions diatoms can flourish and their frustules can accumulate into a diatomite deposits several metres thick.

The proliferation of diatoms in bodies of water (lakes, rivers and oceans) is associated with an increase in soluble nutrients, especially silicon, nitrogen and phosphorus. Coeval volcanic activity can be the main source of these nutrients, and volcanic ash is a common constituent of diatomite deposits. Diatoms are classified into species based on shape and ornamentation.

The frustules of diatoms consist of a minute framework of opaline (amorphous) silica, and this provides the material with a number of unusual properties. Diatomite has an extremely high surface area per unit volume and an excellent capillary attraction, making the material a good absorbent. Commercial diatomite will readily absorb its weight in water.

Charles Darwin wrote in 1872 “Few objects are more beautiful than the minute siliceous cases of the Diatomaceae”. Diatoms are vital to humankind as they make up a quarter of the earth’s plant life and they produce at least a quarter of the oxygen we breathe. The oxygen we receive in every fourth breath of air has been produced by diatoms.

Ancient sea bed dusts makes Amazon forests green. 27 million tonnes per annum of dust from the Danakil Desert (East Africa) crosses Atlantic Ocean in atmospheric currents and settles and fertilises the Amazon Basin, plants grow, turn CO<sub>2</sub> into O.

**Exploration Program** (Many different technical methods to analyse Diatomaceous Earth are listed below but not all might be undertaken in the specific year listed)

## Year 1

Discipline	Activity
Land owner and Community	Land owner and Community meeting to explain nature of exploration activities and objectives and to gain land owner preferences for the timing and location of exploration.
Desktop Studies	Geological and Geophysical Reviews. Open file exploration report, Victorian Geological Survey Reports, maps - geology and geophysics. Continue to amass a comprehensive technical library to assist research and development. Reporting
Desktop Studies	Consultancy studies, preparation geological and geophysical maps Government data bases. Map Info Specialist, plot state geophysical data (magnetic, radiometrics and gravity) over geology, topography and satellite images
Desktop Studies	Remote Sensing studies of aerial photography to locate potential exposures of diatomite based on high albedo
Desktop Studies	Remote Sensing studies of satellite imagery to locate potential exposures of diatomite based on high albedo
Mapping	Reconnaissance fieldwork broadly over entire area of EL. Geologist Ground traversing, geological sampling and mapping. Prepare samples for analyses (XRF, XRD, SEM, petrographic, CEC); precise mapping of stratigraphic succession
Mapping	Structural, especially to map Tertiary lacustrine depositional basins as potential sites for accumulation of diatomaceous sediments
Mapping	Geological, outcrop mapping with specific emphasis on locating and correlating exposures of diatomite
Mapping	Topographic plotting, development of structure contour maps to define lateral extent of diatomite beds
Sample Collection	Wide spaced Channel sampling of outcrops. Sample natural sections exposed in embankments, river cliffs and station dams
Sample Collection	Wide spaced rock chip sampling of outcrops. Sample natural sections exposed in embankments, river cliffs and station dams
Sample Collection	Sampling sections. Refining of overburden/interburden to ore ratios (OB/IB:Ore). It can become uneconomic to excavate when the overburden to ore ratio (OB:Ore) exceeds 1.
Sample Mapping	Field Assistant Assist in collecting, logging and labelling samples, screening samples for particle size analyses
Sample Analysis	Mineralogical analysis by a combination of analyses using X-ray diffraction (XRD) and infrared spectroscopy (IRS) was performed. XRD analyses will be undertaken on small aliquots of powdered. IRS analyses will be carried out on samples using a TerraSpec instrument. XRD Analyses to determine percentage of opal phases to non-diffracting. Determine presence of crystalline silica polymorphs, cristobalite and tridymite.
Sample Analysis	XRF Chemical Analyses. Australian Laboratory Services data, ALS Chemex Minerals Division: Ratios SiO <sub>2</sub> , Al <sub>2</sub> O <sub>3</sub> , MgO, CaO ratios, variations in ratios with particle sizes. Determine XRF oxide analyses. Multielement analyses by methods: ME-ICP41 (33 elements four acid ICP-AES), ME-GRA05 (H <sub>2</sub> O/LOI by TGA furnace) and ME-XRF 2 (phosphate by fusion/XRF).
Sample Analysis	Measurement of Plant-Available Silicon: Methods, PAS (CaCl <sub>2</sub> ) ppm and PAS (AAPFCO)
Sample Analysis	Petrographic Studies of Polished thin sections (PTS), microscopically in transmitted and reflected light
Sample Analysis	ALS Environmental: cation-exchange capacity (CEC) and exchangeable cations. Review of CEC
Sample Analysis	SEM, Scanning Electron Micrograph studies: To determine species of diatoms presents, associated microfossils, the integrity of diatom frustules, percentage of spherical aggregates (lepispheres) of authigenic silica (SiO <sub>2</sub> ) formed during low temperature diagenesis.
Sample Analysis	Palaeontological studies to identify diatom species and other fossils, sponge spicules, flora
Sample Analysis	Palaeoecological and Palaeobiological Studies, fossils: diatom frustules, fish scale, sponge spicules, plants
Sample Analysis	Detailed photographic records of samples: various particles sizes, raw ore, dried 150 <sup>0</sup> c, saturated with water.
Sample Analysis	Detailed measurements of absorbency and bulk density, particle size analysis, pH, contained water (LOI 100C), and hardness for various screened particle sizes. Moisture content (% w/w @ 150C), absorbency (%w/w of sample dried @ 150C) and bulk density (loose and tapped expressed both as grams/cm <sup>3</sup> and litres/kg). Bulk density and absorbency measured for particles sizing -7.00mm+1.0mm for 'Raw Ore' (as excavated, moist) and dried (150C) samples. Behaviour when saturated, e.g. disaggregation, rate of disaggregation
Sample Analysis	Determination of the lateral and vertical continuity of the weight percent of diatoms, frustule integrity, and gangue (clay, carbonate and iron) content. Proposed: determination of diatomite grade thickness; three dimensional mapping and generation of grade thickness contour maps.
Data Interp	Geologist assess analytical data; report writing
Resource Evaluation, Feasibility Studies	For JORC and Market Analysis. Research and Development Ongoing assessment of the chemical and mineralogical properties of the various beds of diatomite, with special emphasis on their suitability for horticultural, absorbent, cement and filter aid products.

## Year 2

Discipline	Activity
Land owner and Community	Land owner and Community meeting to explain nature of exploration activities and objectives and to gain land owner preferences for the timing and location of exploration.
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Desktop Studies	Consultancy studies, preparation geological and geophysical maps Government data bases. Map Info Specialist, plot state geophysical data (magnetic, radiometrics and gravity) over geology, topography and satellite images
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Mapping	Topographic plotting, development of structure contour maps to define lateral extent of diatomite beds
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Sample Mapping	Field Assistant Assist in collecting, logging and labelling samples, screening samples for particle size analyses
Sample Analysis	Mineralogical analysis by a combination of analyses using X-ray diffraction (XRD) and infrared spectroscopy (IRS) was performed. XRD analyses will be undertaken on small aliquots of powdered. IRS analyses will be carried out on samples using a TerraSpec instrument. XRD Analyses to determine percentage of opal phases to non-diffracting. Determine presence of crystalline silica polymorphs, cristobalite and tridymite.
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Data Interp	Geologist assess analytical data; report writing
Resource Evaluation, Feasibility Studies	For JORC and Market Analysis. Research and Development Ongoing assessment of the chemical and mineralogical properties of the various beds of diatomite, with special emphasis on their suitability for horticultural, absorbent, cement and filter aid products.
Drilling	Reverse Circulation drilling, to test shallow diatomite horizons, vertical depth 15 metres, 7 RC holes
Site Logistics	Drill site access and rehabilitation costs



## Year 5

Discipline	Activity
Land owner and Community	Land owner and Community meeting to explain nature of exploration activities and objectives and to gain land owner preferences for the timing and location of exploration.
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Site Logistics	Drill site access and rehabilitation costs

## **Fit and Proper Licence Holder**

The applicant, Rosetta Minerals Pty. Ltd., holds clear values in relation to Community Engagement, the Environment and Health and Safety across all project areas, working closely with key stakeholders, ensuring that high standards of corporate responsibility are maintained throughout its operations. In relation to exploration, the applicant believes it has built a reputation of upholding those high corporate, social and environmental standards, recognising the importance of building respectful and inclusive relationships with local stakeholders, communities and governing organisations. The means to achieve this is briefly outlined below.

## **Environment**

The applicant, Rosetta Minerals Pty. Ltd., is committed to the responsible environmental management of all of its activities. The applicant is fully aware of the importance of minimising any disruption to the environment and ensuring areas are returned as near as possible to their natural state once work is completed in accordance with the code of Environmental Compliance for Exploration and Mineral Development Projects.

Access can be gained to most parts of the application area using 4WD vehicle or on foot. Localities to be drill tested will be explored using track or truckmounted, reverse circulation rigs. All drill holes will be capped. All vehicles entering or leaving the Exploration Permit area will be subject to correct wash-down procedures to prevent the dispersal of weed seeds.

To achieve the standards of environmental performance the applicant seeks to:

- Satisfy all legal obligations imposed on the Company's activities through leases, licences, approvals, consents or notices.
- Integrate environmental factors into planning of programs.
- Care for the environment and value culture heritage by having respect for the traditional rights of indigenous peoples.
- Promote environmental awareness among Company personnel and contractors to increase understanding of environmental matters.
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## **Community Engagement**

A commitment to open and transparent communication with the communities in which it operates, welcoming and providing mechanisms for stakeholder and community feedback from planning stage to on-ground exploration. Making up to date information available through various means, including door knocking, information handouts, advertising and website posting. Especially maintain close dialogue with landowners and seek their advice and preference for entry during farming phases and wet conditions. The applicant has found it prudent to schedule field programs so as to minimise interference with the seasonal activities of local landowners.

A commitment to supporting local communities in the vicinity of its projects through the provision of local employment opportunities, use of local businesses and community partnering initiatives consistent with the applicant's values.

## **Community Engagement Strategy**

There is a legal requirement, S. 39A of the Mineral Resources (Sustainable Development) Act 1990 for a licensee to consult with the community. The provision reads:-

A licensee has a duty to consult with the community throughout the period of the licence by—

(a) sharing with the community information about any activities authorised by the licence that may affect the community; and

(b) giving members of the community a reasonable opportunity to express their views about those activities.

In addition, there is a strong moral and ethical case for licensees informing their local communities as to their plans in these communities and for licensees to listen to the views of the local communities.

In general terms, the licensee must establish the extent of the local community, work out an effective manner in which to communicate with the various members of the community, actually engage in an on-going communications strategy and to effectively deal with the information that it was able to discover.

Whilst this is a very isolated location and there is a very small population living in the vicinity of the licence area, the requirement for consultation remains and the licensee will undertake suitable consultations as part of the licence procedures.

In general terms, the company's community engagement strategy is broadly based on the following:

1. Identify individuals or groups which may be impacted by the operations on the licence. This would involve the compilation of a list of adjacent landowners, persons living within perhaps 1 kilometre of the licence and other community groups which may be impacted by the operations. Groups such as the Victorian Farmers Federation or the local Field Naturalists Club. Government Departments, Federal, State or local, and other government bodies such as CMA's who have a particular interest in the land on which the licence is situated should also form part of the consultation group.
2. It will be necessary to identify the expectations or attitudes of these groups and individuals. Often a direct face to face approach is the best way to engage many members of the community.
3. The licensees will need to assess the impact of their operation on these individuals and groups. Because the operation is entirely restricted to the private land, the remoteness of the operation, and the overall size of the operation, it is expected that the impact would be considered as low. However following the consultation, the full impact would be assessed by guidelines provided by the Department.
4. An assessment will be made following the consultation as to what level of community input and involvement can be achieved. There are likely to be a whole range of matters which will need to be considered. Ideally, many of the ideas and suggestions will be mutually beneficial to both the licensee and the local community. Matters such as working hours or attitudes to working on days of high fire danger or working on hot and windy days may be matters which the local community could have views which need to be considered by the licensees.
5. Any contact or complaint will be noted in a complaints book, and the licensee will promptly make suitable arrangements to contact the complainant. Where possible, the matter would be settled between the two parties, but the local Mines Inspector or the Mining Warden may be requested to assist in resolving any issue or mediating on the matter.

The licensees will produce an information sheet to be distributed to the community outlining the project and seeking community views and attitudes to the proposed activities.

Such interaction with the community will be used to identify any issues that may be arising from the operations on the licence and will attempt to accommodate the views of the stakeholders in dealing with any such issues.

In practice, the community has been welcomed for their interest and input into ensuring that there is a minimum of adverse effects to the amenity of the area or the impact on the expectation of the community for the peaceful enjoyment of their local environment.

The licensee should be mindful of the need to maintain these exceptionally good community relations and to ensure that the channels of communication between the licence holder and the community in which it operates are kept open. All discussion with the community is based on mutual trust and respect.

With regards to any specific matters which were raised as a result of the advertising of the application for the licence and subsequently an objection the grant of the licence was made, the licensee will, when preparing the work plan or other authority for doing work on the tenement, ensure that the matters raised in any objection are adequately addressed.

### **Health and Safety**

The applicant strives to maintain a safe and healthy working environment for all employees and contractors. Occupational safety and health is therefore an integral part of the applicant's philosophy and management systems. The policy has been developed to ensure compliance with relevant legislation and will be reviewed regularly with the aim of continually improving safety and health in the workplace. The applicant will ensure adequate resources are available to implement the policy.

The objects of the policy are to:

- Prevent work place accidents and disease.

- Protect employees from safety and health hazards which may arise out of their work by providing and maintaining safe work places, plant and systems of work.

- Have employees understand that they have a positive responsibility to ensure their own safety and the safety of others and comply with proper instructions.

- Establish and maintain proper programs to meet the policy.

- The objectives of the safety and health policy are to:

  - Establish and maintain work practices which are safe and reduce the risk to health.

  - Provide training, re-training, information, instruction and supervision of all employees to enable them to perform their duties safely.

  - Develop procedures for hazard identification, risk assessment and to implement measures to control the risk.

The policy includes, but is not limited to:

- Induction.

- Safe work systems and practices.

- Hazard identification, risk assessment and control procedures.

- Accident / incident reporting, recording and investigation.

- Provision of personal protective equipment

### **Statement of Technical Capability**

#### **Technical Manager, Chief Geologist, Michael Leu B.Sc. (Hons 1) MAusIMM, MAIG**

Michael Leu is a geologist with over 40 years professional experience in exploration and mining across a range of mineral commodities within Australia and some Pacific (Fiji, Papua New Guinea, New Zealand), SE-Asian-Asian (Vietnam, Laos, Cambodia, Indonesia, Malaysia, Thailand, China, Mongolia, North Korea) and South American (Guyana) countries. He has worked in industry (Freeport, Getty Oil, Queensland Ores), as a private consultant and for seven years on the academic staff of Macquarie University. He had held positions as CEO and Chief Geologist of ASX listed Sovereign Gold Company Limited and Managing Director of ASX listed Precious Metal Resources (PMR).

He has expertise in mineral exploration for: epithermal and porphyry gold±Cu deposits; intrusion-related gold systems; metahydrothermal gold; greisen-hosted molybdenite, wolfram and tin; volcanic-hosted massive sulphides; chromite; uranium; alluvial gold and platinum; a range of industrial minerals.

Mr. Leu has conducted extensive exploration for diatomite throughout Australia for over 30 years and has authored several exploration reports on deposits in New South Wales and central and northern Queensland. He has managed a Diatomaceous Earth Mining Lease at Badgingarra, north of Perth, Western Australia,

Some of his previous work program resulted in the discovery of extensive previously unknown and unreported commercially viable diatomite/opal-CT deposits east of Rolleston, central Queensland. Some of the diatomite beds were characterised by high cation-exchange capacities and/or high SiO<sub>2</sub> contents, properties that have significant commercial potential. Further, vertical and lateral sampling from costeans located carbonate-rich diatomites. The work program progressed exploration to the level where commercial development was feasible.

Mr. Leu is one of the few geologists in Australia who is qualified as competent person for ASX and JORC reporting for diatomaceous earth resources.

Mr. Leu also has had many years experience in the mineral industry, specifically in terms of mine operation, mineral processing, packaging, marketing and distribution. He has extensive expertise in assessing the commercial viability of diatomaceous earth deposits.

The applicant has managed the exploration, mining and rehabilitation of the diatomaceous earth deposits located at Barraba, New South Wales; at Conjuboy in Far North Queensland and at Badgingarra, north of Perth, Western Australia. The applicant also consults nationally and internationally for industrial minerals projects.

The applicant regularly engages specialist consultants and organisations to conduct various types of analytical methods for evaluating and studying diatomaceous earth. The broad range of technical expertise includes characterising chemical/physical properties (petrographic, SEM, XRD, XRF analyses), establishing JORC compliant resources and evaluating the suitability of the various diatomite resources for specific commercial applications. These include:

- **Australian Laboratory Services data, ALS Chemex Minerals Division:** XRF, XDR, studies. Ratios SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, MgO, CaO ratios, Variations in ratios with particle sizes. Determine XRF oxide analyses.
- **ALS Environmental:** cation-exchange capacity and exchangeable cations.
- **Southern Cross University, Environmental Analysis Laboratory:** Measurement of Plant-available Silicon (PAS).
- **Dr. Paul Ashley, (MAusIMM, FSEG), Paul Ashley Petrographic and Geological Services Adjunct Professor University of New England,** specialities are economic geology, ore deposits and petrology. Principal of Paul Ashley Petrographic and Geological Services. Consultant to many exploration companies involved in projects in Australia, Canada, South America and Europe. Multiple scientific publications. Paul Ashley Petrographic and Geological Services Mineralogical analysis by a combination of analyses using X-ray diffraction (XRD) and infrared spectroscopy (IRS) was performed. XRD analyses were undertaken on small aliquots of powdered sample at the Electron Microscope-X-Ray Unit, University of Newcastle, and the IRS analyses were

carried out on the bulk samples using a TerraSpec instrument at the University of New England. Geochemical analyses of the samples (analysed by ALS, Brisbane) were supplied to assist in the interpretation of mineralogy. These analyses were performed by a combination of XRF and ICP techniques.

- **Dick England, M. Sc. (A. N. U.) Duncraig, W. A. Mr. England has specialist experience with both petrographic and SEM work on diatomite.** Petrographic Studies: Preparation of Polished thin sections (PTS), microscopically in transmitted and reflected light. Scanning Electron Microscopy of Diatomaceous Earth.
- **Consultant MapInfo Specialist:** Stuart Lloyd, B.Sc., Applied and Exploration Geology, Curtin University of Technology; M.Sc., GIS (Geographic Information Science, UNE). Specialist in Geographical Information Systems including MapInfo.
- **Consultant Geophysicist:** Peter Gidley MAusIMM, Australian Soc. of Exploration Geophysics Society of Exploration Geophysicists. Principal Geophysicist Eureka Consulting, 30 years experience.
- **X-ray & Particles Laboratory, Central Analytical Research Facility, Queensland University of Technology:** XRD Mineralogy Analyses, powder X-ray Diffraction Analysis.
- **Geological Technicians:** Experienced in managing field exploration crews. Proficient in RC drilling, diamond drilling, soil, stream and rock chip sampling.