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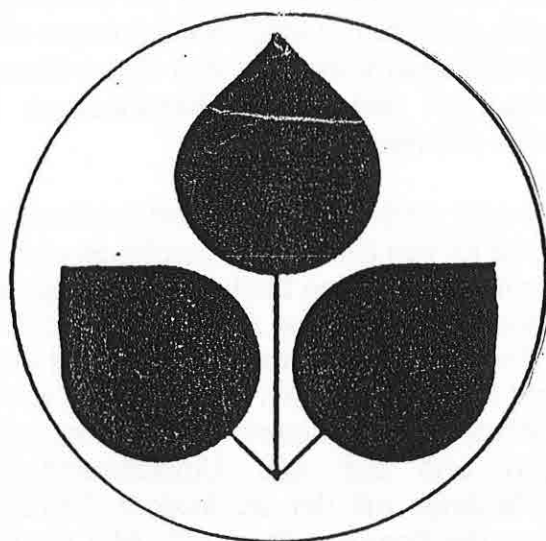
Dossier Nr. 44

Grundsätze für das Umweltmanagement australischer Bergbauunternehmen in Papua-Neuguinea
(engl. Original)

Anmerkung der Redaktion

<u>Deutsche Einleitung</u>
Bergbauarbeiten haben signifikante Auswirkungen auf die umliegenden Ökosysteme, einschließlich der dort lebenden Bevölkerung. Bei der Überlegung, wie weitreichend und dauerhaft diese Auswirkungen sein können oder dürfen, spielen vor allem die Umweltplanung sowie die angewandten Abbaumethoden eine Rolle. Nur wenn die jeweilige Bergbaugesellschaft die negativen Auswirkungen auf die Umwelt zu minimieren versucht, kann sie das Vertrauen und die Unterstützung der betroffenen Bevölkerung für das Projekt gewinnen. Letztlich kann sogar diese Unterstützung der Bevölkerung einen wirtschaftlichen Vorteil für das Unternehmen bedeuten, dadurch nämlich, daß Entschädigungs- und Ausgleichszahlungen über einen längeren Zeitraum hinweg vermieden werden können.

Damit die Umweltauswirkungen eindeutig identifiziert werden und Gegenmaßnahmen ergriffen werden können, ist es von Seiten der Bergbaukonzerne notwendig, daß sie die Umwelt als ein aus vielen Einzelteilen bestehendes Ökosystem begreifen lernen. Darunter sind auch der Mensch und seine Gesellschaftsform zu subsumieren. Aus diesem Grund muß die Ressourcengewinnung sowohl mit den sozioökonomischen und kulturellen, als auch mit den ökologischen Bedingungen vor Ort äußerst behutsam umgehen. Eine solche Wahrnehmung hat direkte Konsequenzen auf die Abschätzung der Umweltauswirkungen und auf das Umweltmonitoring. Bevor einzelne Bergbaugesellschaften allerdings mit der ansässigen Bevölkerung das Gespräch suchen, sollten sie sich über die Komplexität und Struktur der jeweiligen Gesellschaft informieren.

Dieses Dokument beinhaltet grundlegende Prinzipien für das Umweltmanagement. Es ist hier nicht Aufgabe, detaillierte Anleitungen zu geben, sondern es sollen zum einen die Verbindungen zwischen den unterschiedlichen Bereichen des Managements verdeutlicht und zum anderen ein Rahmen aufgezeigt werden, von dem aus eine Arbeitsmethode entwickelt werden kann.
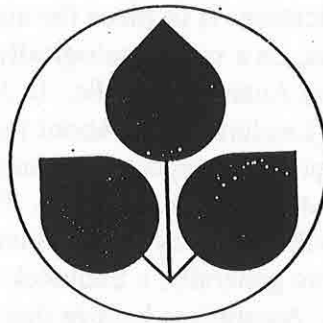
Dieser Arbeit liegen bekannte Dokumente zur Umweltproblematik und -politik zugrunde. Darunter fallen Veröffentlichungen der Minenindustrie, der Industrie im allgemeinen sowie anderer Institutionen.

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FOREWORD

The Australian Conservation Foundation has vigorously contributed to discussions about the conduct of mining companies both domestically and off-shore in many forums. In the Commonwealth Government's Ecologically Sustainable Development Mining Working Group, representatives from the mining industry, the ACF, Federal Government departments, the ACTU and CSIRO achieved consensus on a range of issues. Taken together, recommendations 63, 65, 66 and 84 of the Mining Working Group report articulate the need for Australian mining companies to improve environmental management through the development of codes of conduct in collaboration with community organisations.

This document is an attempt to provide a starting point for such collaboration. It augments recent publications by the ACF, namely "Mining and Ecologically Sustainable Development" and the "Report into the Impacts of the Ok Tedi Mine in Papua New Guinea". Indeed, the latter report and extensive discussions with government and non-government organisations in PNG has informed the scope and focus of this document.

The theme of ACF's publications is to place the activities of Australian mining companies, both at home and overseas, on a more ecologically sustainable footing. This theme clearly reflects the concerns of the Australian public. In January 1994, a survey sponsored by the Prince of Wales Business Leaders Forum about the activities of Australian companies in Asia, indicated that 80% of Australians expect companies to be at least as careful or more careful about the environment in Asia than in Australia. Furthermore, 62% of respondents stated that they would be less inclined to buy the products of companies that were damaging the environment in Asia. More generally, a Saulwick Poll conducted in March 1994 indicated that despite the recession, Australians believe that environmental protection is a higher national priority than economic growth - by almost a two-to-one majority (57% vs 33%).

As Australian mining companies are increasingly venturing into the developing nations of Asia, the South Pacific, South America and Africa, these concerns are ever more relevant. Relatively under-resourced, the governments of developing countries often lack adequate legislative, administrative and technical support for environmental protection. In these situations, mining companies have a responsibility to both the communities in which they operate and to the Australian community (whom they represent), to conduct their activities according to international best practice - often in exceedance of legal obligations.

This document is an invitation to the Australian mining industry to jointly address the views of the community, through the operationalisation of the principles contained herein into practical Codes of Conduct. The paper specifically focuses on the activities of Australian mining companies in Papua New Guinea (PNG) due to the prominence of Australian companies in PNG's mining industry and problems relating to their environmental management. The general message embodied by each principle, however, is likely to be relevant to mining operations in other developing nations.

Patricia J Caswell
ACF Executive Director

1. INTRODUCTION

A mining operation by its very nature will have significant impact on surrounding ecosystems and human communities. Environmental planning and operational practices play a crucial role in determining the extent, severity and longevity of these impacts. By actively seeking to minimise adverse environmental impacts, mining companies can increase community confidence in mine management and engender support for mining projects. Improved community support can also translate into corporate economic benefits, through reduced uncertainty and compensation payments and avoidance of long term financial liabilities.

In order to effectively identify and manage environmental impacts, it is crucial that companies recognise that the environment consists of ecosystems and their constituent parts, including people and communities, as well as all natural and physical resources. Thus, resource development must be sensitive to socio-economic and cultural conditions and to the characteristics of locations which contribute to biological diversity and human amenity. This has direct implications for the scope of impact assessment and environmental monitoring. It also highlights the need for mine personnel to understand the complexities of local societies when engaging communities in discussions.

This document is comprised of fundamental principles for environmental management. It is not intended to provide detailed guidelines, but rather to emphasise the linkages between the different spheres of management and to provide a framework from which practical Codes of Conduct could be developed. The Australian Government's ESD Mining Working Group recognised the importance of Codes of Conduct in three of the recommendations resulting from its year long deliberations (recommendations 65, 66 and 84).

Prominent environmental policy documents have guided the focus and the intent of the principles. These documents have been endorsed by many industry groups and governments as representing the leading edge of responsible environmental management. These include publications by the mining industry (for example, by the International Council on Metals and the Environment, Mining Association of Canada), industry in general (the International Chamber of Commerce, Business Council of Australia, Australian Chemical Industry Council), and by other institutional bodies (such as the Australian Commonwealth Ecologically Sustainable Development Working Groups, British Standards Association and United Nations).

The principles encourage a systemic and pro-active "cradle to grave" approach to environmental management for all types of mining activity. They highlight the need to address environmental issues and to foster community participation at all phases of mining activity - from exploration to mining to rehabilitation. This requires the establishment of transparent decision-making processes, which are clear, consistent and allow the rationale for environmental management decisions to be understood by all interested parties. Such an approach is critical if operations are to avoid intransigent environmental and social problems occurring throughout mine life. This is especially important in developing nations, such as Papua New Guinea, where social tensions associated with mining ventures have proven costly if not catastrophic.

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2. PRINCIPLES

2.1 OPERATING PHILOSOPHY

2.1.1 Ecologically Sustainable Development

Recognise the linkages between ecology, socio-cultural conditions and human health and safety, both within the workplace and the surrounding environment, by ensuring that these are addressed by corporate policies and decision making processes, including impact assessment.

Note: 1. The integration of environmental, social and economic concerns is internationally recognised as essential to the attainment of ecologically sustainable development (ESD).

Note: 2. The goal of ESD will be assisted by a commitment to meaningful two-way communication with landholders, governments and employees and to link outcomes to management decisions in a transparent manner.

Ref: ESD Mining Report; BCA - Principles of Environmental Management (Item 10); ICME - Environmental Charter; The Berlin Guidelines (Item 11); Agenda 21; UNRFNRE - Environmental Protection Guidelines.

2.1.2 Maintaining Biodiversity and Ecological Integrity

Accept that mining activity, including exploration, is inappropriate in areas of high ecological, social, and cultural value.

Note: 1 These areas include formally protected environments such as national parks, nature reserves, marine reserves, wildlife management areas and World Heritage areas. They also include environments which are not formally protected but are recognised as possessing high ecological, social, and/or cultural values, such as areas identified by the *Conservation Needs Assessment* study, proposed World Heritage sites, traditional hunting grounds and sacred sites.

Note: 2 The principle of maintaining biodiversity and ecological systems is a fundamental objective of Ecologically Sustainable Development.

Ref: ESD Mining Report (Chapter 5.5)

2.1.3 Precautionary Principle

> *Adopt an anticipatory and precautionary approach to decision-making to avoid the risk of long-term or irreversible ecological damage or detrimental impact on human health.*

Note: 1. The mining of a resource or the generation of waste materials should only occur where it can be demonstrated that such activity will not jeopardise the long-term viability of species, the integrity of ecosystems within the mine catchment or the health of landholders and/or employees.

Note 2. A pro-active approach should be adopted by developing strategies to minimise, and where practicable, eliminate risks to environmental and human health. This implies that environmental and health issues must be identified and addressed from the mineral exploration stage onwards.

Note 3. This principle recognises that reactive strategies are likely to be expensive and/or ineffective.

Ref: ICME Environmental Charter; BCA Principles of Environmental Management (Item 10); ICC - Charter for Sustainable Development (Item 10); The Berlin Guidelines (Item 8); ESD Mining Report (Chapter 3.1.6); UNRFNRE (Chapter 3.3).

2.2. POLICY FRAMEWORK

2.2.1 Corporate Priority

> *Recognise environmental management as a fundamental corporate priority by incorporating environmental policies, programs and practices fully into each business activity and by including environmental objectives in job descriptions and staff performance reviews. A corporate environmental policy and detailed environmental management plans are essential for establishing this priority.*

Note: 1. The corporate environmental policy should identify key environmental goals and issues for each business activity and provide direction regarding strategies for their management. Progress on its implementation should be reported at least quarterly to the company board. The corporate environmental policy should be publicly available.

Note: 2. The environmental manager should have a level of seniority equivalent

to operations managers, reporting directly to senior management.

Note: 3. Detailed management plans should be developed for all aspects of mine operation on an annual, five year and life of mine basis. The plans should establish clear objectives and progress towards achieving them should be annually audited.

Ref: The Berlin Guidelines (Item 1); ICME Environmental Charter; ICC Charter for Sustainable Development (Items 1, 2); BCA - Principles of Environmental Management (Item 2); BS 7750 (Section 4.2); ESD Mining Report (Page 30, Recommendation 39); Agenda 21 (Chapter 30).

2.2.2 Community Participation

> *Ensure the participation of all communities directly and indirectly affected by the mining operation in decisions relating to all phases of activity, including mine exploration, planning and management, site rehabilitation and compensation for deprivation of use and enjoyment of natural resources.*

Note: 1. The identification of affected communities should take into account the indirect impacts of operations such as those that result from degraded water quality, river bed aggradation or erosion due to road construction. Special recognition should be paid to the disproportionately negative impact that mining projects can have on the quality of women's lives.

Note: 2. The participation of affected communities will necessitate the development of culturally appropriate and gender sensitive mechanisms of liaison for the establishment of environmental priorities, progress reporting and dispute resolution. Input from local non-government organisations (NGOs) nominated by the landholders is advisable.

Note: 3. Meaningful community participation will require landholders to acquire an understanding of all aspects of mining projects. This will necessitate the translation and discussion of associated concepts. Companies should resource

local non-government organisations to conduct community awareness programs.

Note: 4. Liaison should be conducted with individuals or groups who have been nominated according to custom as representatives by the affected communities. Preference should be given to the employment of local landholders as community liaison officers.

Note: 5. Outcomes of community liaison should be linked in a transparent manner to corporate decision-making processes. Companyies should provide arbitration to resolve outstanding conflicts with affected communities. The facilitator should be independent of the company and nominated by the landholders.

Ref: ACIC Responsible Care (Community Right to Know); ESD Mining Report (Recommendations 22, 76, 83, 84); The Berlin Guidelines (Item 4).

2.2.3 Environmental Management System

> *Establish a comprehensive "cradle to grave" environmental management system that features community participation, impact assessment, environmental monitoring, waste management, contingency plans, rehabilitation, staff training and performance auditing as key elements.*

Note: 1. Transparent processes must be established to link the elements of the environmental management system with corporate decision-making. This will facilitate responsiveness to changing circumstances and to environmental problems.

Note: 2. All environmental monitoring and auditing reports should be routinely provided to Provincial and National Governments, interested non-government organisations and university departments. The content of these reports should be communicated to landholders in a culturally appropriate and gender sensitive manner.

Note: 3. The environmental management system should be designed primarily to prevent adverse

environmental impacts. The detection and amelioration of adverse impacts is its secondary objective.

Note: 4. The environmental management system should be fully documented with its specific aims and corporate lines of responsibility clearly defined.

Ref: ICC Charter (Item 2); BCA - Principles (Item 2); BS 7750 (Section 4, Annex A); ACIC Responsible Care; ESD Mining Report (Recommendations 29 & 39); The Berlin Guidelines (Item 1); UNRFNRE Environmental Protection Guidelines (Chapter 6).

2.2.4 Best Practice Environmental Management

> *Use principles and standards that reflect international "best practice", adapted to local ecological and cultural settings, as a basis for developing the environmental management system.*

Note: 1 Companies should apply standards of environmental management based on international "best practice" to all operations in which they are involved, irrespective of their location.

Note: 2 The direct discharge of tailings into marine or riverine environments is not compatible with international best practice.

Note: 3. High environmental impact, short life mines should be closed if the implementation of best practice renders the mine uneconomic.

Ref: ICC Charter for Sustainable Development (Item 3); MAC Environmental Policy (Item 2); ESD Mining Report (Recommendation 63); The Berlin Guidelines (Item 5); Agenda 21 (Chapter 30).

2.2.5 Best Practice Technology

> *Project planning for all new mines should seek to incorporate proven "best practice" technologies for reducing the environmental impact of mining and mineral processing. The balance between projected plant life and the severity of environmental impact should determine the extent to which existing developments seek to incorporate new best practice technologies into their operations.*

Note: 1. Technology has a key role in reducing the environmental impact of mining and mineral processing. The mineral industry should co-operate as a group and with other parties to continuously improve environmental technology.

Note: 2. Where site specific technology is required, a clearly defined research program should be initiated to fulfil this requirement.

Note: 3. Existing mines should fully incorporate new best practice technology every 10 years.

Ref: ICME Environmental Charter; ICC Charter for Sustainable Development (Item 13); BCA - Principles of Environmental Management (Item 9); ESD Mining Report (Recommendations 30, 49 & 69); The Berlin Guidelines (Item 6); Agenda 21 (Chapter 30).

2.2.6 Polluter Pays Principle

> *Accept responsibility for the cost of best practice environmental management, education of employees (including contractors and suppliers), community awareness programs and of damage imposed on others by degradation of the environment, including fair compensation to landholders for deprivation of the use and enjoyment of natural resources.*

Note: 1. The polluter-pays principle means that the mining company is liable for the costs of pollution prevention and control measures and of environmental restoration. The company is also liable for the costs of community awareness programs required to provide landholders with full information prior to the negotiation of agreements.

Note: 2 Fair compensation arrangements commensurate with the severity of environmental and social impacts should be negotiated with landholders. Companyies should provide independent arbitration to resolve outstanding conflicts with affected communities.

Ref: ESD Mining Report (Chapter 3.1).

2.2.7 Compliance with International Treaties, Laws and Regulations

As a minimal operational standard, companies should comply with relevant international standards and treaties, all applicable environmental laws, regulations, discharge requirements and agreements negotiated with landholders and governments.

Note: 1. A register should be maintained of all international treaties and standards, environmental laws, permit and licence conditions relevant to the operations, and agreements negotiated with governments and communities.

Note 2: Formal and well publicised corporate procedures are required to address non-compliance with regulatory requirements. These would entail a clearly established chain of accountability and a sequence of established responses.

Note 3: Australian mining companies should honour all provisions of international treaties pertaining to biodiversity conservation, wilderness and heritage values, labour conditions, human and indigenous peoples rights, which have been ratified by Australia and/or by the PNG government.

Ref: ICME Environmental Charter; MAC Environmental Policy (Item 1); BCA - Principles of Environmental Management (Item 3); BS 7750 (Sections 4.4, 4.8); ACIC Responsible Care.

2.2.8 Waste Minimisation

Seek to minimise the wastes generated during all processes in preference to waste treatment and disposal. Opportunities for prevention, recycling, recovery and reuse of wastes should be regularly evaluated and acted on. Companies should foster research into processes which re-use wastes and avoid their production.

Note: 1. Waste reduction targets should be established as corporate environmental performance goals.

Ref: ICC Charter for Sustainable Development (Item 8); ACIC Responsible Care (Waste Management); The Berlin Guidelines (Item 12); UNRFNRE (Chapter 6.12); Agenda 21 (Chapter 30).

2.3 SYSTEMS AND PROCEDURES

2.3.1 Environmental Impact Assessment (EIA)

> *Adopt a "cradle to grave" approach to environmental impact assessment, which includes assessment prior to operation, and a program of monitoring impacts during operation and at the final stages of rehabilitation. EIA must also estimate and monitor cumulative impacts, including those associated with other resource use activities in the mine catchment.*

Note: 1. Identification and analysis of all direct and indirect impacts on ecological systems and human communities are essential components of the assessment process. Community consultation is critical to ensure the identification of all potential impacts as early as possible.

Note: 2. An ongoing register of impacts should be established to facilitate their management and assessment. Impacts should be characterised in terms of their severity, level of risk, reversibility, temporal and spatial nature and propensity to contribute to cumulative environmental management concerns.

Note: 3. Comprehensive environmental and social baseline studies should be initiated at the exploration stage to provide a benchmark for the ongoing assessment of impacts. Such studies should be conducted irrespective of whether a formal EIS is legally required.

Note: 4. The nature and scope of EIA will depend on the resilience of the environment within the impact zone, the degree of community effect and interest, and the degree of certainty associated with impact predictions and impact control methods/technology.

Note: 5. The results of EIA should be reported to Government and actively distributed to interested NGOs and to the libraries of institutions such as the National Research Institute, universities, the National Archives, the National Library and provincial and national Government departments.

Ref: ICC Charter for Sustainable Development (Item 5); ICME Environmental Charter; UNRFNRE Environmental Protection Guidelines (Chapter 6); BS 7750 (Section 4.4.3).

2.3.2 Community Right to Know

> *Information regarding the environmental impacts of operations, associated hazards to surrounding communities and the environment, and control measures implemented by companies should be actively communicated in a culturally appropriate and gender sensitive manner to affected communities. This information should also be made freely available to interested NGOs and to the libraries of relevant public institutions, both in Australia and in PNG.*

Note: 1. Communication with affected landholders is likely to require both oral and visual presentations.

Note: 2. The information should be updated and published annually and should include mine and environmental management plans.

Note: 3. Companies should publish all prosecutions for breaches of regulatory standards, the results of environmental audits and associated corrective actions in their annual reports.

Note: 4 All exploration and mining proposals, including terms and conditions of project approvals, should be publicised and made available in culturally appropriate forms accessible to local communities, NGOs and governments.

Note: 5. All environmental complaints should be rigorously examined by an independent examiner. The examiner should be appointed in consultation with landholders and local NGOs and costs should be borne by the company.

Note: 6. A register of complaints and the company's responses should be established and made publicly available.

Ref: ACIC Responsible Care (Community Right to Know); ICC Charter for Sustainable Development (Item 15); BCA - Principles of Environmental Management (Item 4); BS 7750 (Section 4.4); MAC Environmental Policy (Item 6); ESD Mining Report (Recommendations 41, 76 & 83).

2.3.3. Continuous Environmental Improvement

> *Progressively improve corporate environmental policies and practices through a process of annual review against rolling environmental performance targets. Progress towards targets should be published in annual reports.*

Note: 1. The process of review and target setting should be transparent and should actively involve affected communities to ensure that it reflects community concerns.

Note: 2. Where appropriate, performance target parameters should be quantifiable.

Note: 3. The process of annual review must be linked to management decisions in a transparent manner.

Ref: ICC Charter for Sustainable Development (Item 3); BCA - Principles of Environmental Management (Items 2 & 3); BS 7750 (section 4.5)

2.3.4 Environmental Hazards and Contingency Planning

> *Strategies should be developed to avoid environmental hazards and contingency plans should be formulated to enable rapid and comprehensive management should emergencies occur.*

Note: 1. Contingency plans should be prepared and tested. Staff, including sub-contractors, should receive on-going training to implement plans with a high level of competence.

Note: 2. Information on environmental and health hazards associated with the mining operation and suitable protective measures should be promptly reported to appropriate authorities, employees and the public.

Note: 3. The company must be prepared for off-site hazards, such as those associated with the transport of hazardous goods, as well as potential on-site accidents.

Ref: ICME - Environmental Charter; ICC - Charter for Sustainable Development (Item 12); BCA - Principles of Environmental Management (Item 7); ACIC Responsible Care (Emergency Response, Community Right to Know).

2.3.5. Accounting For Environmental Expenditure

> *Accounting procedures should be developed and maintained to enable identification of economic costs and benefits relating to environmental management and to expedite decisions regarding the retrofitting of established mining operations.*

Note: 1. Liabilities for rehabilitation should appear in company Financial Reports as a contingent liability.

Note: 2. The post-mining period will require companies to establish trust funds to address long term impacts or management requirements (for example, long term rehabilitation and environmental monitoring, management of contaminated land or final voids) or compensation requirements.

Ref: BS 7750 (Annex A.3); UNRFNRE Environmental Protection Guidelines (Chapter 6.14).

2.4. IMPLEMENTATION

2.4.1 Mineral Exploration

> *An environmental management plan and environmental management system should be developed for the mineral exploration phase. The environmental management system should incorporate the elements described for the mining process itself.*

Note: 1. The environmental impact of mineral exploration should be minimised through the use of best practice, low impact, sensitive methods.

Note: 2. Community participation should be integral to environmental management at the exploration phase. Companies should negotiate agreements with landholders as to the nature of exploration methods to be used, compensation arrangements and the rehabilitation of disturbed areas. If necessary, arrangements should be made to continue rehabilitation beyond the tenure of the exploration licence.

Note: 3. The company has an obligation to ensure that landholders clearly understand the environmental and social implications of proven economic potential.

Note: 4. A thorough understanding of many environmental characteristics (such as seasonal ecological fluctuations, hydrology and meteorology) requires long term data collection. The systematic

collection of data must begin during the advanced exploration phase. Guidelines should be developed for the conduct of baseline studies.

Ref: UNRFNRE Environmental Protection Guidelines (Chapters 5.4; 8.6); ESD Mining Report (Recommendation 84).

2.4.2 Mineral Resource Development

> *As soon as mineral exploration indicates a likelihood of economic potential, the environmental/social impact assessment process and the comprehensive collection of environmental and social baseline data should be immediately triggered.*

Note: 1. Mine feasibility studies and the EIA process should be fully integrated to ensure that the costs and logistics of environmental management (including monitoring and rehabilitation) are evaluated at the outset of development and incorporated into the assessment of economic viability.

Note: 2. Comprehensive ecological and social baseline studies are essential to the design of monitoring programs and to describe pre-mine ambient conditions against which to assess impacts. These studies should characterise uses of the local environment and socio-economic and cultural conditions (for example, clan decision-making arrangements, customary land-owning arrangements, division of labour, spiritual beliefs etc.), in addition to the physical and biological aspects of the environment. Ecological data must be collected over a minimum of three years.

Ref: MAC - Guide for Environmental Practice and Policy (Item 3); ICC Charter for Sustainable Development (Item 8); UNRFNRE Environmental Protection Guidelines (Chapters 5.4; 8.6).

2.4.3 Mine Planning

> *Environmental management considerations associated with all stages of mine development, from pre-operational to decommissioning and rehabilitation, must be incorporated into mine planning. The scope and nature of the mine plan should be guided by the information provided by the EIA initiated during the advanced exploration phase.*

Note: 1. It is critical that environmental considerations are incorporated into the overall design of the mining operation at the planning stage in order to avoid intransigent environmental problems recurring throughout mine life and associated social tensions.

Note: 2. The mine plan should clearly articulate the environmental management objectives, limits of acceptable impacts and the intended impact control strategies, including for indirect environmental impacts, such as river bed aggradation or erosion due to road construction.

Note: 3. Community participation in the development of the mine plan is essential to ensure that it incorporates, at the outset, the concerns of directly and indirectly affected landholders.

Note: 4. The mine plan should be provided to governments, universities and interested NGOs and communicated to landholders in a culturally appropriate and gender sensitive manner.

Ref: ICC Business Charter for Sustainable Development (Items 2 & 8); BS 7750 (Annex A); UNRFNRE Environmental Protection Guidelines.

2.4.4 Rehabilitation

> *Ecosystems disturbed by mining or mineral exploration should be progressively rehabilitated throughout the life of the mine to a stable landform that is commensurate with the surrounding ecology and the desires of affected communities.*

Note: 1. A rehabilitation strategy based on measurable goals should be an integral part of the initial development proposal and of the mine plan.

Note: 2. The rehabilitation goals should be established in collaboration with affected communities. The goals should endeavour to restore pre-mine habitats (requiring flora and fauna recolonisation) or provide for some other agreed beneficial use. In the latter situation,

viable habitat islands and wildlife corridors should be incorporated.

Note: 3 The company should set aside funds at the commencement of mining which are sufficient to cover the full costs of achieving the rehabilitation goals and the costs of post-mine monitoring.

Note: 4 Prior to the establishment of rehabilitation goals, the company should resource NGOs to conduct awareness programs to educate communities about the full range of options.

Ref: UNRFNRE Environmental Protection Guidelines (Chapter 6.8); ESD Mining Report (Recommendation 31).

2.4.5 Waste Management and Treatment

Utilise "best practice" waste prevention and treatment technologies to minimise pollution impacts, including of acid mine drainage and air emissions. Maintain a program of training employees in the use of such technologies. Routinely monitor characteristics of the waste stream and actual environmental impacts and ensure that waste management is responsive to the findings. Avoid the contamination of land and water and the discharge of toxic and bio-accumulative compounds. Direct river and ocean disposal must be avoided for all new mineral projects

Note: 1. A quantitative inventory of all wastes generated and the method and location of their treatment and/or disposal should be established and maintained. The inventory should be publicly available.

Note: 2. Conduct research into and document the biological and physical properties of each waste stream (including its toxicity), its distribution in the environment and its actual and potential impact on local ecosystems and human health.

Note: 3. The waste stream should be monitored at the point of discharge at a frequency that would enable the detection and rectification of pollution problems within hours. Samples should be collected at least hourly and analysed no less frequently than at 12 hourly intervals.

Note: 4. Wastes should be treated, rather than diluted, for the purpose of complying with disposal standards.

Note: 5. Hazardous waste awaiting treatment or disposal should be contained

in a secure manner and its storage regularly monitored.

Note: 6. Independent reviews should be conducted, at least every two years, of waste treatment and storage procedures, in the light of new technological developments.

Ref: ICC Charter (Item 8); ACIC Responsible Care (Waste Management); BCA - Principles (Item 10); UNRFNRE Environmental Guidelines (Chapter 6.7).

2.5 MONITORING, AUDITING AND REPORTING

2.5.1 Environmental Monitoring

> *A comprehensive environmental monitoring program is required to under-pin EIA and regulatory compliance and to expand scientific knowledge of the operation's impact on ecosystems and human communities. It should be linked in a transparent manner to mine management so as to ensure the protection of human and environmental health at all times.*

Note: 1. The maintenance of surrounding ecosystems and human health are key goals of the environmental monitoring program. At a minimum, ecological research should include biological surveys of representative habitats; investigations of chronic and sublethal toxic effects of mine discharges; and regular measurement of mine derived contaminants in sediments/soil, water and biota.

Note: 2. On the basis of information provided by the social baseline study, markers should be developed to facilitate the monitoring of human health and socio-cultural impacts.

Note: 3. Culturally appropriate and gender sensitive mechanisms (encompassing visual and oral presentations) should be established to allow affected communities to participate in the development of the environmental and social monitoring programs and to be informed of monitoring results. Local communities have an intimate knowledge of ecosystems and their concerns about health and cultural changes should guide the social monitoring program. Monitoring results should be regularly presented to landholders and NGOs.

Note: 4. Monitoring should continue after the cessation of mining to ensure the effectiveness of rehabilitation and on-going management of long term problems, such as the instability of wastes or leaching of contaminants. In some cases, it may be necessary to continue monitoring over several decades.

Note: 5. Environmental monitoring, should be undertaken at a frequency sufficient to ensure protection of environmental and human health at all times.

Note: 6. Publication of results in scientific journals should be encouraged to facilitate the broadest possible application of research findings.

Ref: MAC Environmental Policy (Item 4); ICC Charter for Sustainable Development (Item 9).

2.5.2 Environmental Audits

> *Regularly conduct audits to verify and improve the efficacy of the environmental management system. Some key elements to be audited include EIA (impact predictions and control), community participation, rehabilitation, waste management and emissions, and compliance with laws, regulations, international treaties and landholder / government agreements. Audit results and corrective actions should be published in annual reports or as a separate annual environmental report.*

Note: 1. An audit plan should be established to document the specific activities and areas to be audited, the frequency of auditing, the responsibility and protocol for auditing and the procedures for reporting audit findings. The audit plan should be publicly available.

Note 2. Auditing should be undertaken with sufficient frequency to ensure rapid detection and rectification of environmental management problems.

Note: 3. Audits should be performed by appropriately qualified personnel who are independent of the specific activities or areas being audited. Ecologists should always be included in environmental audit teams. External auditors will provide a higher level of credibility and impartiality than internal auditors.

2.5.3 Corrective Action

> *Corrective action should be taken immediately on the basis of environmental monitoring and audit results to mitigate adverse effects. This would entail the development of clearly established chains of accountability and a sequence of established responses for each operational area audited.*

Note: 1. The establishment of formal and transparent links between the environmental management system and senior mine management is required.

Note: 2. The communication of corrective actions to landholders, NGOs and Governments will build community confidence in the company.

Ref: ICME Environmental Charter; BS 7750 (section 4.8.4).

2.6. EDUCATION AND PERSONNEL

2.6.1 Local Employment Generation

> *Mining companies should demonstrate a commitment to train and employ local women and men and to facilitate the development of mine-independent businesses.*

Note: 1. Annual training and employment targets for men and women should be established in consultation with local communities and relevant trade unions for the full range of job categories, from site workers to senior management. Training and employment targets should be subject to annual audit.

Note 2: Local business development should focus on facilitating the self-sufficiency of local communities through low-input, low energy technologies, including indigenous practices. Women as well as men should be assisted through this program.

Ref: ESD Mining Working Group Report (Recommendation 81); Agenda 21 (chapter 32).

2.6.2 Environmental and Cultural Awareness

To educate, train and motivate employees at all levels in the organisation, from senior management to site workers, to conduct their activities in an environmentally and socially responsible manner.

Note: 1. Success in meeting environmental standards and targets should be an important factor in job description and evaluation.

Note: 2. Staff training should involve cultural awareness workshops facilitated by non-government organisations, including relevant trade unions, to engender sensitivity and respect for the needs of local communities.

Note: 3. Environmental and cultural training should extend to all agents of the company physically involved with mineral production such as contractors, suppliers and small-scale individual miners with whom the company has a commercial relationship.

Ref: ICME Environmental Charter; ICC Business Charter for Sustainable Development (Item 4); BCA - Principles of Environmental Management (Item 5); ACIC Responsible Care; BS 7750 (Section 4.3.4); The Berlin Guidelines (Item 3); ESD Mining Working Group Report (p 30); Agenda 21 (Chapter 30).

2.6.3 Competence of Environmental Staff and Laboratories

Personnel undertaking environmental work should be qualified on the basis of appropriate education, training and/or experience. Analytical laboratories utilised by the company should be accredited to National Australian Testing Authority or equivalent standard.

Note: 1. Environmental staff should be provided with adequate infrastructure and in-service training (for example, in analytical and information systems).

Note: 2. Senior environmental staff should have membership of an appropriate professional body (such as the Royal Australian Chemical Institute or international equivalent), a sound knowledge of the sciences associated with the work performed, and a demonstrated ability to supervise staff.

Note: 3. Records demonstrating the qualification/training of staff must be maintained.

Note: 4. Laboratories should routinely dispatch 10% of analytical samples to independent NATA accredited laboratories for quality control of analytical methods.

Ref: MAC - Guide for Environmental Practice and Policy (Item 3); BS 7750 (section 4.3); The Berlin Guidelines (Item 9).

2.6.4 Occupational Health and Safety (O H & S)

Companies should apply standards of OH & S commensurate with international "best practice" to all operations in which they are involved, irrespective of their location. Safety training and regular drilling should be mandatory for all employees.

Note: 1. Companies should establish Workplace Safety Committees consisting of worker elected representatives and management staff to improve OH & S standards. Transparent processes should link the recommendations of Workplace Safety Committees with decisions of senior management.

Note: 2. The safety training program should include basic training for all new employees; training in first aid, contingency plans, fire fighting, chemicals and equipment safety; the establishment of rescue teams; and the training of personnel to monitor health and safety conditions.

Note: 3. Employees should be encouraged to make suggestions to improve the safety and environmental performance of existing practices and procedures. The suggestions and responses of management should be documented and made publicly available.

Note: 4. A safety training program should be developed and provided to all agents of the company physically involved with mineral production, such as contractors, suppliers and small-scale individual miners with whom the company has a commercial relationship.

2.6.5 Contractors and Suppliers

All contractors and suppliers should be required to meet the standards of environmental management outlined in company policy and environmental management plans.

Note: 1. Contracts with contractors and suppliers should clearly state the requirement to adhere to company environmental policy and plans. Failure to adhere should be seriously viewed by the company as a breach of contract.

Note: 2. The activities of contractors and suppliers should be audited to ensure that the required standard of environmental management is met.

Note: 3. Contractors and suppliers should receive training from the company in environmental management, contingency procedures and OH&S.

Ref: ICC Charter (Item 11); BCA Principles (Item 8); ACIC Responsible Care (Waste Management); BS 7750 4.8.2).

3. REFERENCE DOCUMENTS

3.1 INTERNATIONAL COUNCIL ON METALS AND THE ENVIRONMENT (ICME): ENVIRONMENTAL CHARTER

The International Council on Metals and the Environment was established in 1991 and is now composed of 27 of the world's largest mining companies including BHP Minerals, Western Mining Corporation, Mount Isa Mines and CRA. The Environmental Charter was approved in June 1993 by the ICME Board.

3.2 INTERNATIONAL CHAMBER OF COMMERCE (ICC): CHARTER FOR SUSTAINABLE DEVELOPMENT

The International Chamber of Commerce launched its Business Charter for Sustainable Development in April 1991. Comprising of sixteen principles, it provides a voluntary code of practice for industry groups.

3.3 MINING ASSOCIATION OF CANADA (MAC): GUIDE FOR ENVIRONMENTAL PRACTICE AND ENVIRONMENTAL POLICY

The Mining Association of Canada is the national organisation of the Canadian mining industry. It adopted an environmental policy in 1989, to which member companies formally agree to adhere. In 1990, a Guide for Environmental Practice was developed.

3.4 BUSINESS COUNCIL OF AUSTRALIA (BCA): PRINCIPLES OF ENVIRONMENTAL MANAGEMENT

"Principles of Environmental Management" was launched in 1992 by the Business Council of Australia. The membership of the council comprises the eighty largest corporations in Australia and includes mining companies such as BHP, RGC, MIM, WMC, CRA, Alcoa, Newcrest Mining and Pasminco.

3.5 AUSTRALIAN CHEMICAL INDUSTRY COUNCIL (ACIC) - RESPONSIBLE CARE

"Responsible Care" was introduced by the Australian Chemical Industry Council in 1989 to improve health, safety and environmental management within the industry, and is an obligation of membership to that council. Eight detailed codes of practice encompass aspects of operations and products: Waste Management, Community Right to Know, Emergency Response, Community awareness, Product Stewardship, Research and Development, Manufacturing, Warehousing and Storage, and Transportation.

3.6 BRITISH STANDARDS ASSOCIATION: BS 7750 ENVIRONMENTAL MANAGEMENT SYSTEMS

The British Standard for Environmental Management Systems was launched in April 1992 as the world's first standard in environmental management. It contains a specification for an environmental management system for ensuring and demonstrating compliance with stated

environmental policies and objectives. It also provides guidance on the specification and its implementation within the overall management system of an organisation.

3.7 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD) WORKING GROUPS: FINAL REPORT - MINING

This document was developed during the Ecologically Sustainable Development consultative process initiated by the Commonwealth of Australia in 1990. Its 88 recommendations to the Commonwealth Government reflect the consensus viewpoint of representatives from industry, government, union and conservation groups with regard to policy initiatives required to achieve ESD in the Australian mining industry.

Four recommendations are directly relevant to the performance of Australian companies in developing nations and domestically. These are:

* Recommendation 63:
- *that Australian mining companies with operations overseas endeavour to operate to at least Australian practices and standards of environmental management, in a manner which respects local environmental values and cultures and provides appropriate returns to the economy in which they operate.*

* Recommendation 65:
- *that the Australian mining industry support and participate actively in the development of international codes of practice which support principles consistent with those of ESD.*

* Recommendation 66:
(a) that the Australian Government, in consultation with industry and non-government organisations (such as environmental and overseas aid organisations) develop codes of conduct addressing environmental, social and indigenous peoples issues for overseas mining and mineral exploration projects; and

(b) compliance with the Australian Government code of conduct be a condition of entering into aid contracts, for both companies and government agencies alike.

* Recommendation 84:
- *that the mining industry, in consultation with relevant parties, continue to develop and implement company-based codes of conduct and that industry wide codes be developed with as wide a range of inputs by interest groups as possible, dealing with agricultural, Aboriginal and environmentally sensitive land, and that those codes of conduct include suggestions on how industry can best consult with interested parties.*

3.8 UNITED NATIONS BERLIN CONFERENCE: MINING AND ENVIRONMENT GUIDELINES

The Berlin Guidelines were formulated at a round table conference entitled 'Mining and Environment' held in June 1991. The conference was jointly organised by United Nations Department of Technical Co-operation for Development (UN/DTCD) and the Development Policy Forum of the German Foundation for International Development (DSE). The formulation of the guidelines was based on consultation between representatives from industry, governments and non-government organisations.

3.9 UNITED NATIONS REVOLVING FUND FOR NATURAL RESOURCES EXPLORATION (UNRFNRE): ENVIRONMENTAL PROTECTION GUIDELINES

The UNRFNRE was established in 1973 to assist developing countries by financing high risk mineral exploration. The aims of the environment protection guidelines are to establish a code of conduct for all personnel engaged by UNRFNRE in mineral resource developments and to inform recipient governments of the possible environmental, social and cultural impacts of mining operations.

3.10 UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT (UNCED): AGENDA 21

Agenda 21 is a global action plan for sustainable development to be implemented over the next decade and beyond. It was signed by over 150 nations, including Australia, at the United Nations Conference on Environment and Development held in Brazil in June 1992 Its 40 chapters represent the most comprehensive international strategy to date for combating the problems of poverty, development and environmental degradation.

Two important themes are developed throughout the document - the importance of broad public participation in decision-making as a prerequisite for sustainable development and the devolution of responsibility for resource management. Chapter 30, "Strengthening the Role of Business and Industry", focuses on industry's responsibility to reduce its environmental and social impacts.