



PART B
GUIDELINES

**FINAL GUIDELINES FOR PREPARATION OF
A PUBLIC ENVIRONMENTAL REPORT**

**THOR MINING PLC
MOLYHIL TUNGSTEN / MOLYBDENUM PROJECT**

MAY 2007

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These draft guidelines have been developed to assist Thor Mining PLC in preparing a Public Environmental Report (PER) for the proposed Molyhil Tungsten/Molybdenum Project in accordance with Clause 8 of the Administrative Procedures of the *Environmental Assessment Act* of the Northern Territory.

Administrative Procedures of the *Environmental Assessment Act* of the Northern Territory state that the Minister will specify the following in the guidelines:

- Matters relating to the environment which the proponent shall deal with;
- Number of copies of the report to be provided to Minister/other agencies; and
- Newspapers in which and on occasions when the proponent will publish a notice.

The PER should contain sufficient information to enable understanding and assessment of the scope and environmental implications of the proposal. The PER should clearly identify the main environmental impacts associated with the development and should contain a management strategy that demonstrates how these impacts will be minimised.

Information should be presented in a concise format, using maps, overlays, tables and diagrams where appropriate to clarify the text.

The PER should include the following sections, but need not be limited to these sections or inferred structure.

1 EXECUTIVE SUMMARY

The Executive Summary should include a brief outline of the project and each chapter of the PER, allowing the reader to obtain a clear understanding of the proposed project, its environmental implications and management objectives. The Executive Summary should be written as a stand-alone document, able to be reproduced on request by interested parties who may not wish to read or purchase the PER as a whole.

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

This section should describe the development proposal to allow a detailed understanding of infrastructure design and engineering and all stages of construction, operation and management of the project and include relevant plans, photos and maps. Aspects to be covered include:

- An explanation of the objectives, benefits and justification for the project. The purpose of this is to place the proposal in the local and regional context;
- A description of the project's location indicating distance from Alice Springs, and the project in relation to the Stuart and Plenty Highways and the Adelaide to Darwin Railway;
- A discussion on existing infrastructure and components from past mining practices, including waste rock dumps and tailings facilities. Include discussion on condition of components and treatments required to maintain stability of prior acid rock encapsulation;
- An overall layout of the proposed mine site including pits, waste rock dumps, processing plant, power generation, other infrastructure, waterways, access and existing features of interest;
- Comprehensive maps showing topography and all project components and land tenure;

- Project schedule;
- Location and design criteria for each component of the project including design limitations imposed by site characteristics;
- Land requirements, land tenure, acquisition requirements (permits, rezoning and Native Title), and the tenures under which the project would be held including details of relevant legislative processes required to grant proposed tenure;
- Infrastructure requirements and specifications (permanent and temporary) and ancillary activities (e.g. storage areas, waste dump areas etc);
- Employment and business opportunities (direct and indirect), including sources of workforce, skill levels required and opportunities for Aboriginal people and businesses; and
- Methods for storage, handling, containment and emergency management of chemicals and other hazardous substances (including fuel and explosives).

For the development and operation of the mine the proposal description should consider, as a minimum, the following:

Site Preparation

- Outline the construction timing, methods, equipment and materials (types, sources and quantities);
- Describe water requirements, usage, source, storage, treatment and disposal. Information is to be provided on how much water is required and how this water is to be sourced; and
- Describe on-site and off-site borrow material requirements, extraction methods and uses.

Mine

- Current ore reserves and mine life;
- Outline design of pits and their dimensions (including maps, plans and geological cross-sections);
- Describe mining methods, scale of operations and timetable for ore extraction and open cut operations;
- Detail drilling and blasting requirements (including frequency); and
- Outline possible future extensions to the mine operation, and discuss the probability of mining satellite ore bodies.

Waste Rock Management

- Identify total amount of waste rock to be produced;
- Characterise waste rock in terms of AGP (acid generation potential) and neutralising capacity from drill core samples and in-situ assessments (kinetic tests and field trials); include sample selection methodology;
- Identify classes and amounts of waste rock for handling purposes;
- Outline proposed waste dump locations, dimensions, water catchments, surface treatment and final landform (discuss alternatives);
- Describe in detail the methods for waste rock disposal and dump construction; including strategic positioning of different waste rock types;
- Describe means of interception and management of potential acid mine drainage; and
- Describe means of interception and management of potential mine leachate (Acid Rock Drainage [ARD] and metals under acid and circum-neutral conditions)

Ore Processing and Tailings Management

- Detail options for processing the ore;
- Describe capacity of proposed ore processing facility to treat the ore and safely dispose of the tailings produced;
- Indicate all input products (solids, gases and liquids) and pathways for each item in the process;
- Indicate all output products (solids, gases and liquids) and pathways for each item in the process;
- Describe proposed tailings disposal;
- Characterise the tailings in terms of AGP (acid generation potential);
- Detail any proposed stockpiling of ore on site and associated management;
- Characterise tailings in terms of ARD and metals leachate (as mentioned in *Waste Rock Management*); and
- Detail Tailings Storage Facility (TSF) basal characterisation and preparation in regards to permeability and hydrogeological linkages.

Water Management

- Detail the site water requirements and identify sources;
- Provide a site water balance (all inputs and outputs) for the expected mine life, including rehabilitation;
- Describe the proposed management of clean, dirty and contaminated water;
- Describe the management of potential acid drainage and contaminated waters. Discuss management options, with the purpose of determining that the preferred option is the most effective;
- Describe the diversion of surface waters;
- Describe dewatering of the pit, including expected water quantities and qualities; and
- Describe the management of rainfall events.

Rehabilitation and Decommissioning

The rehabilitation program should be integrated into the mine plan and considered as part of the mining operation, rather than as a separate phase at the end of the mine life.

The project description should consider, as a minimum, the following:

- Identification of a post mining land use and rehabilitation objectives;
- Rehabilitation commitments and timetables (for both temporary and permanent facilities) including waste management, pollution control and stabilisation and rehabilitation plans for mined areas;
- Provision of progressive and final rehabilitation plans for the tailings storage facility;
- Analysis of the feasibility of backfilling of pits with waste rock; and
- In detail describe the following:
 - Progressive and final rehabilitation plans for pits, waste rock dumps, ROM pad, roads and infrastructure sites;
 - Design of rehabilitated landforms, in particular rehabilitation techniques, including methods to reconstruct the landscape using the materials available;
 - Profile reconstruction and viability for the growth of native species;
 - Collection and selection strategy for native species, e.g. native grasses and other vegetation;
 - Runoff and erosion control measures of rehabilitated areas;
 - Final topographic and drainage morphology;

- Maintenance of water quality; and
- Revegetation procedures.

Transport

The project description should consider, as a minimum, the following:

- Description of transport systems and methods to convey all site traffic (including materials, workers and product) to and from the site (both during construction and operation) including:
 - Type, size and number of vehicles required during all phases of the proposal;
 - The estimated volumes, tonnage, composition, origin and destination of traffic generated by the proposal;
 - Estimated times of travel; and
 - Additional road infrastructure works required including site access and signage.
- Description of any proposed haul roads, including length, location, land requirements, tenure and acquisition requirements;
- Description of construction methods and timeframes for any proposed private and public haul roads;
- Consultation undertaken with relevant regulatory agencies; and
- Necessary approvals required.

3 ALTERNATIVES

Alternative proposals, which may still allow the objectives of the project to be met, should be discussed, detailing reasons for the selection and rejection of particular options. The selection criteria should be discussed, and the advantages and disadvantages of preferred options and alternatives detailed. The potential impacts of the alternatives should be described.

Alternatives to be discussed should include:

- Not proceeding with the project;
- Alternative locations, including process plant.;
- Alternative sources of raw materials for the project, including water supply;
- Alternative transport corridors and options;
- Alternative extraction and processing technologies considered;
- Alternative environmental management technologies considered, such as treatment and disposal of by-products and waste products; and
- Alternative workforce accommodation.

4 EXISTING ENVIRONMENT, POTENTIAL IMPACTS OF THE PROJECT AND MANAGEMENT

Studies to describe the existing environment should be of a scope and standard sufficient to serve as a benchmark against which the impacts of the project may be assessed over an extended period. Control areas not impacted by the project should be included in studies and long term monitoring locations established.

This section should also include an assessment of the level of significance of the impact, be it global, regional or local (e.g. global and national implications of greenhouse gases and the localised impact of service roads or artificial water bodies).

Cumulative impacts should also be discussed. The reliability and validity of forecasts and predictions, confidence limits and margins of error should be indicated as appropriate.

Description of those areas potentially impacted by the project should, as a minimum, include:

4.1 Landform

Baseline

- Provide maps and an interpretation of the regional geology and geomorphology of the site and peripheral areas;
- Discuss the soil types and land units of the site and peripheral areas;
- Provide seismic information for the site and peripheral areas; and
- Detail the existing level of soil erosion and other disturbances.

Impacts

Describe how the project will or has the potential to impact on each element with particular consideration given to the following:

- Discuss limiting properties of landform considering erosion, rehabilitation etc. This information may be provided through the development of a landform evolution model for the life of the project and beyond (this would also have benefit in assisting in progressive rehabilitation over the life of the project); and
- Detail impacts of mining to landform.

Management

Detail the safeguards, management and monitoring strategies that will be used to minimise impacts of construction and operation phases, including:

- Measures to avoid or minimise impacts;
- Management of topsoil; and
- Erosion and sediment control procedures and associated erosion and sediment control management plan.

4.2 Hydrology / Hydrogeology

Baseline

- Describe the site and regional surface water systems including:
 - rivers;
 - creeks; and
 - streamlines.
- Describe the site and regional ground water systems including:
 - confined aquifers;
 - unconfined aquifers; and
 - ground soaks, expressions etc.
- For both ground water and surface water systems, discuss:
 - their significance;
 - current uses;
 - beneficial uses;
 - flows (including flood contours) and discharge rates;

- water quality;
- release or seepage of heavy metals; and
- characterisation of all water sources (both surface and groundwater).

Impacts

Describe how the project will or has the potential to impact on each element with particular consideration given to the following:

- Impacts on surface and groundwater from mining, ancillary activities and associated infrastructure requirements, including impacts on:
 - water quality;
 - changes to/ diversion of surface waters; and
 - aquatic flora and fauna.
- Impacts associated with dewatering of the pits (including water disposal);
- Possible acidification of groundwater due to aerial exposure in the pit void;
- Possible chemical constituents in drainage, specifying test methods (provide all test information); and
- Current downstream users and their requirements.

Management

Detail the safeguards, management and monitoring strategies that will be used to minimise impacts of construction and operation phases, including:

- Treatment, storage and disposal of waste water, including stormwater run-off;
- Management of clean, dirty and contaminated water;
- Management of high rainfall events;
- Protection of beds and banks of watercourses;
- Means of interception and management of potential acid mine drainage;
- Management of pit water;
- Need for a waste discharge licence;
- Protection of surface water from potential contamination;
- Protection of groundwater from potential pollution sources;
- Proposed monitoring of surface and ground waters;
- Continued water monitoring and discharge requirements following decommissioning;
- Ongoing water requirements for the maintenance of water management structures;
- Mine operation in accordance with the Department of Health and Community Services (DHCS) Information Bulletin No. 6 *Requirements for Mining, Construction and Bush Camps* (Appendix C) and the Medical Entomology Branch (MEB) 'Guidelines for preventing mosquito breeding sites associated with mining sites (Appendix B).

Include a map of water management system showing all structures and routes. Details of surface water sampling points and groundwater investigation bores should also be included.

4.3 Ecology

Baseline

- Specify the extent of clearing (proposed annual and total amounts;

- Survey flora and fauna species (including migratory species) and biological communities;
- Survey methodology should:
 - follow best practice and advice from relevant agencies;
 - consider seasonality, species rarity, potential for occurrence of significant species and sensitivity of species to disturbance;
 - be included in appendices;
 - Identify existing exotic flora and fauna in the area; and
 - identify rare, threatened and endangered species against NT and Commonwealth legislation, and species with indigenous conservation values.
- Special consideration should be given to the following:
 - ecologically significant areas;
 - vegetation that is the habitat of rare, threatened or endangered species or has significant diversity;
 - communities that are exceptional examples of their type; and
 - vegetation outside its normal distribution or of other biogeographical significance.
- Timeline to obtain any permits and meet other statutory obligations under NT legislation (*Planning Act 1999* and *s.38 Pastoral Land Act 1992*) for vegetation clearing.

Impacts

Describe how the project will or has the potential to impact on each element identified above with particular consideration given to the following:

- Impacts of clearing;
- Impacts on species or communities or habitats of local or regional or national significance. Detail this with reference to the inputs and outputs from the mining and processing operations;
- Rate the risk and seriousness of each impact;
- Identify noxious weeds that may result from the project activity; and
- Impacts of groundwater drawdown on groundwater dependent ecosystems.

Management

Detail the safeguards, management and monitoring strategies that will be used to minimise impacts of construction and operation phases, including:

- Minimisation of disturbance;
- Rehabilitation methods including revegetation strategies and flora selection;
- Weed Management Plan (to be included in the Environmental Management Plan (See Section 6) and to follow best practice and advice from advisory agencies);
- Vegetation Clearing Plan (to be developed as part of the Environmental Management Plan);
- Fire Management Plan (to be developed as part of the Environmental Management Plan);
- Actions to prevent the development of mosquito and other biting insect breeding habitats; and
- Detail proposed feral animal control.

4.4 Air Quality and Noise

Baseline

- Provide background dust, air quality, noise and dispersion levels; and
- List all meteorological conditions including but not limited to:
 - prevailing wind directions and strengths;
 - maximum wind gusts;
 - precipitation data (maximum, minimum, average, design rainfall intensities);
 - temperature data; and
 - evaporation data.

Impacts

Describe how the project will or has the potential to impact on each element with particular consideration given to the following:

- Potential air emissions;
- Dust, including projected particle size and distribution;
- Noise, including levels, timing and duration and comparison to current levels (with respect to any nearby receivers); and
- Information on ore toxicity in terms of human health and Occupational Health and Safety.

Management

Detail the safeguards, management and monitoring strategies that will be used to minimise impacts of construction and operation phases, including:

- Dust suppression and monitoring, including during ore transportation; and
- Noise mitigation.

4.5 Cultural Environment

Baseline

This section should describe the anthropological, archaeological and heritage values of the development area, including sites and objects of Aboriginal significance.

As a minimum, information should be provided on the following:

- Historical uses of the site (Aboriginal and non-Aboriginal);
- Current use by Aboriginal people; and
- Descriptions of the cultural values that could be impacted by the project. These should include:
 - places nominated for listing or listed on the Register of the National Estate or the Interim list of the Register of the National Estate;
 - places nominated for listing or listed on the Commonwealth or National Heritage list;
 - nominated, proposed and declared heritage places and objects under the NT *Heritage Conservation Act 1991*;

- prescribed archaeological and heritage places and objects (Aboriginal) under the NT *Heritage Conservation Act 1991*;
- areas with special values to indigenous and non-indigenous people, e.g. traditional land use, landscape, visual environment, recreational, commercial, tourism, scientific and educational;
- areas of significance to the Aboriginal population and culture, including sacred sites within the meaning of the *Aboriginal Land Rights Northern Territory Act 1976* and the *Northern Territory Aboriginal Sacred Sites Act*;
- National Parks, conservation reserves or any other category of Territory Park or Reserve;
- Consultation arrangements and any agreements with Local Aboriginal Groups or the Central Land Council (CLC) under the *Native Title Act 1993*; and
- local society and regional centres.

For each of these cultural values, indicate: importance, conservation status, national and international treaty obligations, and clearance permits required or obtained.

The methodology by which these sites and areas were identified, and their importance assessed, should include survey details such as dates, consultants, survey area and methods.

In relation to prescribed archaeological places and objects protected under the *Heritage Conservation Act*, the proponent should seek advice from an archaeologist and document the precise location of such places and objects in relation to the proposal.

The archaeologist should undertake a desktop review of the previous archaeological survey, provide a significance assessment and recommendations for previously recorded sites. The review may also require relocation of these sites to assess their current condition and integrity.

Further survey of areas not covered by the previous survey should also be undertaken to ensure that unrecorded sites, which are also protected by the Act, are not included in the development area. Contact Heritage Conservation Services for advice regarding an appropriate scope of works.

The protocol to be followed in the event of discovery of new archaeological or heritage sites or objects during the construction phase should be documented and included in the Environmental Management Plan (see section 6). The proponent should seek advice on this from Heritage Conservation Services of the Department of Natural Resources, Environment and The Arts (NRETA).

The proponent should describe the significance of the places and objects which are to be impacted by the proposal; and options for mitigation of loss of heritage value of places and objects that lie within the area of impact.

This section of the PER should also include:

- Results of the inspection of the Register of Sacred Sites maintained by the Aboriginal Areas Protection Authority;
- Details of the application lodged with the Aboriginal Areas Protection Authority for an Authority Certificate within the meaning of Part 3, Division 1 of the *Northern Territory Aboriginal Sacred Sites Act*;
- A copy of the Certificate issued by the Authority as a result of that application containing conditions, if any, relating to the protection of sacred sites on, or in the vicinity of, the project area; and

- Status of any negotiations with native title claimants/CLC or other requirements under the *Native Title Act*.

Impacts

This section should describe the anticipated or potential impacts the project will have on each cultural value indicated in the previous section. Consideration is to be given to the impact of the proposal on local Aboriginal employment levels and the influx of additional workers into local centres. Describe how these potential impacts are to be mitigated or managed.

4.6 Waste Management

- Identify and describe all sources of waste (note that waste rock issues are dealt with separately);
- Details of effluent disposal from the mine site; and
- Outline proposed waste dump locations and dimensions (discuss alternatives).

Management

Detail the safeguards, management and monitoring strategies that will be used to minimise impacts during development and operation of the mine, including:

- Waste management program including reuse, recycling, storage, transport and disposal;
- Details of any pollutants that are likely to be released into the environment and measures to prevent or minimise this release of pollutants;
- Management of listed waste as per the *Waste Management and Pollution Control Act*; and
- Management of hazardous materials such as chemicals, fuels, oils and explosives.

4.7 Traffic and Transport

Baseline

Describe the existing transport infrastructure at locations likely to be impacted by the project.

Impacts

Describe how the project will, or has the potential to, impact on transport infrastructure during construction and operational phases. In addition, describe possible transport impacts as a result of the proposal including issues such as dust and road traffic noise.

Management

Describe proposed safeguards, management and monitoring strategies that will be implemented to minimise potential transport impacts during construction and operation including, but not limited to:

- Methods for complying with any relevant road vehicle axle limits;
- Methods for securing loads;
- Measures to prevent sediment transport off-site via transport vehicles including shakedown areas or properly controlled truck-wash facilities;

- Measures to reduce any road traffic noise impacts;
- Consultation with local communities affected by transport impacts;
- Traffic management;
- Methods to establish appropriate speed limits, with consideration given to load limits, road conditions, dust and fauna and
- Management of driver fatigue.

4.8 Greenhouse Gas Emissions

The Northern Territory Government's objective for managing greenhouse gas emissions from new and expanding operations is to reduce emissions to a level that is as low as practicable. An assessment of greenhouse gas emissions for the project should be undertaken, in accordance with the NT Assessment Guide for Greenhouse Gas Emissions found at Appendix A.

4.9 Biting Insects

There is no requirement for a 12 month biting insect assessment as outlined in Appendix B of the draft PER Guidelines.

The assessment should outline procedures to be taken ensure the prevention of mosquito breeding in the case of periodic rains during the wet season and should outline, as a minimum, the following:

- Measures to prevent the creation of mosquito breeding sites;
- Personal protection measures taken by employees to manage the possibility of periodic problems caused by floodwater mosquito species during the wet season. (This should include supplying all employees with the Medical Entomology Branch (MEB) handout 'Personal protection from mosquitoes and biting midges in the Northern Territory'); and
- Management of any seasonally flooded swamps and depressions within 4km of the mine site that could be the potential breeding sites for the common banded mosquito *Culex annulirostris*

4.10 Socio-Economic

Baseline

Describe the socio-economic characteristics of the region (including a prediction of trends over the expected operational life of the project)

Impacts

The section should present a balanced broad summary of the project's impact on the regional and Northern Territory economies in terms of direct effects on employment, income and production.

It should outline the overall economic benefits of the proposed project, the likely contribution of the project to the development of mining industry, regional economic development and Indigenous economic development in the Northern Territory, employment and skills development outcomes and linkages with other Territory business and sectors, including suppliers and other service providers.

It should specify:

- Estimated value of construction, highlighting the proportion to be spent in the Northern Territory;
- Estimate the value of annual expenditure on regional goods and services;
- Estimated the quantity and value of production/exports;
- Anticipated markets for products;
- An estimate of royalties and taxes to be paid to the Northern Territory Government and Traditional Owners;
- Opportunities for local industry and Indigenous workforce participation in the construction and operation of the facility;
- A breakdown of skills/trades required, including specific opportunities for skills development that may be of benefit to the local community, past the lifetime of the mine;
- Identification of opportunities for facilities and infrastructure development that may be of benefit to the local community, past the lifetime of the mine;
- Identification of negative impacts or potential synergies with existing land uses; and
- A description of anticipated socio-economic impacts upon local residents, communities and towns.

Management

- Detail how potential local business and employment opportunities and opportunities for synergistic facilities and infrastructure development will be identified;
- Specify the mechanisms that will be utilised to inform local business community and workers of business and employment opportunities; and
- Detail the socio-economic indications that will be monitored on an ongoing basis.

4.11 Public Health

The construction and operation of the mine and accommodation village should be undertaken with reference to Department of Health and Community Services (DHCS) Information Bulletin No. 6 – “*Requirements for Mining, Construction and Bush Camps*” (Appendix B). The village will need to be registered under the *Boarding House Act*, the *Health Act* and the *Food Act*.

5 HAZARDS AND RISKS TO HUMANS AND FACILITIES

The PER should include a preliminary hazard analysis and assessment of the risks to people, the environment and nearby facilities from potential accidents associated with the construction, operation and maintenance of the various components of the proposal, storage and transport of materials to and from the complex.

The preliminary hazard analysis and risk assessment should outline and take into account emergency plans that detail strategies, response procedures and staff responsibilities in the event of an emergency or accident. Issues such as floods, bush fires, lightning strikes, mine collapse and landslip should be considered. Contingency plans for dealing with spillage of any hazardous materials should be detailed. The risks in relation to open pit rescue should also be discussed.

The hazard and risk analysis will identify the critical areas that need to be addressed in management plans, monitoring programs, contingency and emergency plans.

5.1 Risk Scoring

		CONSEQUENCE (C)		
		<u>Low</u> <i>Little to no impact</i>	<u>Medium</u> <i>Medium term -ve impact</i>	<u>High</u> <i>Irreversible or long term -ve impact</i>
LIKELIHOOD (L)	<u>High</u> >75% Chance event will occur in life of plan	4	7	9
	<u>Medium</u> 25%<>75% Chance event will occur in life of plan	2	5	8
	<u>Low</u> <25% Chance event will occur in life of plan	1	3	6

Critical Risk	Information required immediately	
High Risk	Information required prior to acceptance	
Moderate Risk	Information required in next submission	
Low Risk	General Information for consideration	

6 PROJECT ENVIRONMENTAL MANAGEMENT

A draft Environmental Management Plan (EMP) should be provided in a form suitable for inclusion in a Mining Management Plan as required under the *Mining Management Act*. The draft EMP should be strategic, describing a framework for environmental management. Where possible specific management policies, practices and procedures should be included in the draft EMP. A final EMP would be prepared at the conclusion of the assessment, taking into consideration comments on the PER and incorporating the Assessment Report recommendations.

The draft EMP should:

- Define the management structure of both the construction and operational phases and the relationship to the environmental management of the site;
- Describe the proposed measures to minimise adverse impacts and the effectiveness of these safeguards (e.g. provide performance indicators by which all anticipated and potential impacts can be measured);
- Describe how employees and visitors will be made aware of environmental responsibilities and safeguards (including induction process);
- Describe monitoring to allow early detection of adverse impacts;
- Describe remedial action for any impacts that were not originally predicted;

- Detail how monitoring will be able to determine the differences between predicted and actual impacts;
- Include a summary table listing undertakings and commitments made in the PER, including performance indicators, with cross-references to the text of the report; and
- Provide for the periodic review of the management plan itself.

Reference should be made to relevant legislation and standards, and proposed arrangements for necessary approvals and permits should be noted. The agencies responsible for implementing and overseeing the management plan should be identified. Proposed reporting procedures on the implementation of the management plan, independent auditing or self auditing and reporting of accidents and incidents should also be described.

7 PUBLIC INVOLVEMENT AND CONSULTATION

Public involvement and the role of government organisations should be clearly identified. The outcomes of surveys, public meetings and liaison with interested groups should be discussed, and any resulting changes made to the proposal clearly identified. Details of any ongoing liaison should also be discussed including any negotiations with native title claimants.

Negotiations and discussions with local and community government, the Territory Government and the Commonwealth Government should be detailed, and any outcomes referenced. Details of any ongoing negotiations and discussion should also be presented.

8 INFORMATION SOURCES, REFERENCE LIST, BIBLIOGRAPHY

The PER should contain a comprehensive reference list or bibliography. Any source of information such as studies, research, maps and personal communications used in the preparation of the PER should be clearly identified, cited in the text and referenced in the bibliography.

9 APPENDICES, GLOSSARY

Information and data related to the PER, but unsuitable for inclusion in the main body of the statement, should be included as appendices. This may include detailed analyses, monitoring studies, baseline surveys, and raw data.

A glossary should be provided, defining the meaning of technical terms, abbreviations and colloquialisms. (Note: throughout the PER, technical terms and jargon should be minimised).

10 ADMINISTRATION

- Once the PER is ready for comment, 25 copies of the draft PER should be submitted to the EPA Program for distribution to NT Government advisory bodies;
- The PER is to be publicly advertised for review and comment in the NT News and the Centralian Advocate. The PER is to be made available for public comment for 28 days;

- The PER should be placed on public review at:
 - NRETA offices in Darwin and Alice Springs;
 - Department of Primary Industry, Fisheries and Mines offices in Darwin and Alice Springs;
 - NT Library, Parliament House Darwin, Council Offices and/or Libraries in Darwin and Alice Springs;
 - Arid Lands Environment Centre, Alice Springs; and
 - Central Land Council, Alice Springs.
- The PER should be provided on CD ROM disc so that the PER can be placed on the Department's Internet site. The CD ROM copies should be in ABODE[®] pdf format for placement on the Internet; and
- The EPA Program Assessment Officer for this project is Ms Annie Andrews, who can be contacted by telephone (08) 8924 4123, facsimile (08) 8924 4053, or by email: annie.andrews@nt.gov.au.

APPENDIX A:

NT ENVIRONMENTAL IMPACT ASSESSMENT GUIDE: GREENHOUSE GAS EMISSIONS

PURPOSE

The Northern Territory Government's objective for managing greenhouse gas emissions from new and expanding operations is to minimise emissions to a level that is as low as practicable.

This Guide aims to assist proponents in providing the information needed by the Environment Protection Agency (EPA) Program to assess the impact of greenhouse gas emissions from proposed projects during assessment under the *Northern Territory Environmental Assessment Act 1994*¹.

GUIDANCE

Emissions estimates

Proponents should detail the following in their environmental impact assessment documentation:

1. An estimate of the greenhouse gas emissions for the construction and operation phases:
 - (a) in absolute and carbon dioxide equivalent figures (refer to the Glossary in this Guide) for each year of the project;
 - (b) identified on a gas by gas basis; and
 - (c) by source (including on site and upstream sources such as emissions arising from land clearing and the production and supply of energy to the site).

Emissions estimates are to be calculated using the methodology developed and periodically updated by the National Greenhouse Gas Inventory Committee² or another national or internationally agreed methodology.

2. Details of the project lifecycle greenhouse gas emissions and the greenhouse gas efficiency of the proposed project (per unit and/or other agreed performance indicators).

Lifecycle emissions and greenhouse gas efficiency should be compared with similar technologies producing similar products.

To provide an understanding of the broader impact of the proposal, proponents are encouraged to place the estimated greenhouse gas emissions from the proposal into a national and global context³.

¹ As required under Action 6.4 of the NT Strategy for Greenhouse Action 2006, available at http://www.nt.gov.au/nreta/environment/greenhouse/publications/pdf/greenhouse_action.pdf

² Up to date methodology can be obtained from the Australian Greenhouse Office. See www.greenhouse.gov.au.

³ Information on Australia's national emissions profile can be obtained from the Australian Greenhouse Office at www.greenhouse.gov.au; international emissions from the United Nations Framework Convention on Climate Change (UNFCCC) website at <http://unfccc.int/2860.php/>.

Measures to minimise greenhouse gas emissions

Proponents must demonstrate consideration of a wide range of options and indicate the intended measures and efficient technologies to be adopted to minimise total greenhouse gas emissions from the proposed project, including:

- (a) identifying energy conservation measures, opportunities for improving energy efficiency and ways to reduce fugitive emissions where applicable;
- (b) indicating where potential savings in greenhouse gas emissions can be made through the use of renewable energy sources, taking into account fossil fuels used for supplementary power generation; and
- (c) their commitment to offsetting greenhouse gas emissions.

The design measures to maximise efficiency and minimise emissions should represent best practice at the time of seeking project approval.

Proponents are to advise whether they will join the Commonwealth Government's Greenhouse Challenge program.

Emission offsets include activities that remove carbon from the atmosphere or reduce the greenhouse gas intensity (output per unit product) from current or future activities.

Examples may include but are not limited to:

- establishment and maintenance of perennial vegetation;
- sequestration of carbon by geological, chemical, biological or other means;
- reducing the carbon intensity of existing activities;
- replacing fossil fuels with renewable fuels;
- trading emissions permits in a nationally approved system;
- synergistic linking of enterprises to reduce net greenhouse gas outputs; and
- development of new greenhouse gas efficient technologies.

Proposed emissions offsets projects should include an estimate of greenhouse gas emissions savings that are likely to be achieved through implementation.

Measures that offset emissions within the NT are encouraged, and EPA staff can discuss possible options with proponents.

Emissions monitoring and reporting

Consistent with the principles of continuous improvement, a program is to be outlined in the proponent's Environmental Management Plan which includes ongoing monitoring, investigation, review and reporting of greenhouse gas emissions and abatement measures. It should be noted that in 2006, large energy users (those using greater than 0.5 petajoules per year) will be required by the Commonwealth Government to report publicly on their greenhouse gas emissions.

Preparedness for climate change

Proponents should demonstrate due consideration of the risk of climate change impacts to the proposal. Relevant variables may include, but are not limited to:

- increasing average temperature and evaporation rates;
- variation in rainfall and the incidence of floods;
- sea level rise;

- increased frequency and intensity of cyclones and storm surge levels; and
- altered distribution of pests and disease.

In assessing climate change risk, proponents should be guided by recent projections published by organisations such as the CSIRO and the Intergovernmental Panel on Climate Change. (For CSIRO projections, see:

<http://www.ipe.nt.gov.au/whatwedo/greenhouse/documents/pdf/ntclimatechange.pdf>

GLOSSARY OF GREENHOUSE TERMS:

Abatement: Limiting, abating, avoiding or sequestering greenhouse gas emissions through source reduction, fuel displacement or switching, carbon stabilising techniques or sink enhancement.

Absolute emissions: Refers to the total emissions of greenhouse gases expressed in terms of the actual mass of each individual gas emitted over a specified time period.

Best Practice: A best practice is a process, technique, or use of technology, equipment or resource that has a proven record of success in minimising energy use and greenhouse gas emissions. A commitment to use best practice is a commitment to use all available knowledge and technology to ensure that greenhouse gas emissions are minimised.

Carbon Dioxide Equivalent: A unit of greenhouse gas emissions calculated by multiplying the actual mass of emissions by the appropriate Global Warming Potential. This enables emissions of different gases to be added together and compared with carbon dioxide (see Table 1 below).

Commonwealth Government's Greenhouse Challenge program: A cooperative effort by industry and the Commonwealth Government to reduce greenhouse gas emissions through voluntary industry action. See: www.greenhouse.gov.au/challenge.

Greenhouse Gases: Table 1 lists the greenhouse gases proponents are required to report on.

Global Warming Potential (GWP): The warming potential of a gas, compared to that for carbon dioxide. GWPs are revised from time to time as knowledge increases about the influences of different gases and processes on climate change. Refer Table 1.

Project Lifecycle Greenhouse Gas Emissions: Those greenhouse gas emissions measured cumulatively over a defined period. Typically this period is from the point of extraction of the raw materials to either the beginning of the consumer phase of a product or the final disposal or recycling stage of a product, depending on its nature. Proponents should justify their choice of the defined period.

National Greenhouse Gas Inventory Committee: A committee comprising representatives of the Commonwealth, State and Territory Governments that oversees the development of greenhouse gas inventory methods and compilation of inventories for Australia.

Sequestration: Removal of greenhouse gases from the atmosphere by vegetation or technological measures. Sequestration is not yet precisely defined for the purposes of recognised trading or offset schemes. Accordingly, the EPA Program will take a common sense approach on a case by case basis in the interim. To assist proponents, the EPA regards sequestration as a process that results in the isolation of carbon dioxide from the atmosphere for a period which is significant in terms of influencing the global warming effect.

Source: Any process or activity that releases a greenhouse gas into the atmosphere.

Table 1: Greenhouse gases and respective Global Warming Potentials (GWPs)*

Greenhouse Gas	Global Warming Potential
Carbon dioxide (CO ₂)	1
Methane (CH ₄)	21
Nitrous oxide (N ₂ O)	310
Perfluorocarbons (CF _x)	6500 - 8700
Hydrofluorocarbons (HFCs)	560 – 11 700
Sulphur hexafluoride (SF ₆)	23 900

Greenhouse gas emissions expressed in carbon dioxide equivalent (CO₂-e) are calculated by multiplying the actual mass of emissions for each greenhouse gas by its respective GWP factor

* GWP factors listed are those published by the International Panel on Climate Change at the time of publication of this Guide

APPENDIX B:

REQUIREMENTS FOR MINING, CONSTRUCTION & BUSH CAMPS (DHCS Information Bulletin No. 6)

This information bulletin has been developed to provide information to proponents of Mining, Construction & Bush Camps with regard to the Department of Health and Community Services' (DHCS) environmental health requirements. Issues covered include food business registration, boarding house registration, on-site wastewater disposal, wastewater stabilisation ponds, potable water supply, solid waste disposal, fuel storage, public health nuisances, and environmental management plans.

Registration as a Food Business

Larger camps that are not self-catering generally incorporate a commercial food preparation area (kitchen). The *Food Act 2004* defines a food business as 'any business or activity that handles food intended for sale or selling regardless whether the business is of a commercial, charitable or community nature or whether it involves handling or selling on one occasion only'. Consequently the camp's commercial food preparation area is considered to be a food business and therefore requires registration with DHCS in accordance with the *Food Act 2004*.

Registration can be carried out on-line and does not attract a fee. The Registration period is for 12 months with renewals due on 1 July.

To register, go to the DHCS website link or contact the relevant Environmental Health Office:

<http://www.transact.nt.gov.au/ths/healthmanager/HealthNotifications.nsf>

The *Food Act 2004* also requires all food businesses to meet the minimum standards prescribed by the *Food Safety Standards*:

- 3.1.1 Interpretation and Application;
- 3.2.2 Food Safety Practices and General Requirements; and
- 3.2.3 Food Premises and Equipment

These nationally endorsed standards have been designed to be descriptive, rather than prescriptive and provide the food industry with an increased flexibility in meeting the desired outcome of providing safe food to consumers. Accordingly, Environmental Health Officers (EHO) are also now required to adopt a more flexible approach when assessing how businesses are able to meet the criteria contained within these Standards.

Australian Standard AS 4674 "*Design, Construction and Fit-out of Food Premises*" has been developed to assist the food industry in meeting the outcomes of the Standards. It is not prescribed by law that a premises must meet the requirements contained within, however a premises that meets AS4674 is deemed to comply with the *Food Act* and *Food Safety Standards*.

A food premises that does not meet the requirements of AS 4674 may still be able to meet the requirements of the relevant legislation. However, further evidence may be required to be provided to the EHO to ensure that they can be assured that the

business will comply through other means. In some instances, a design issue may be able to be addressed through the development and implementation of appropriate workplace policies or procedures. This may, in turn, sometimes result in a delay of the approval process, and require the submission of more information than the typical application.

Approval Process

The approval process of a food business is dependent on its location, however it generally involves at least one inspection. Camps are by nature located in remote areas where Building Control in terms of the *Building Act* is not applicable. Building Control essentially means that a Building Certifier must certify all building structures to ensure compliance with the Building Code of Australia. Proponents are referred to Appendix 1 to determine if their project is located within a Building Control Area.

Inside a Building Control Area

Under the provisions of the *Building Act*, DHCS is a Reporting Authority and as such, Building Certifiers are required to seek the Department's comments on all building applications involving, amongst other things, new or existing food businesses. The Building Certifier must submit detailed plans to the relevant Environmental Health Office prior to the construction of works. Following assessment and approval, the premises must be registered as a Food Business with the relevant Environmental Health Office prior to operating.

Outside a Building Control Area

Since Building Certification does not apply then DHCS becomes the first point of contact for approval of a food business. The proponent must submit detailed plans and specification to the relevant Environmental Health Office prior to the construction of works. Following assessment and approval, the premises must be registered as a Food Business with the relevant Environmental Health Office prior to operating.

Registration as a Boarding House

The accommodation section of the Camp will require registration as a boarding house in accordance with the *Public Health Act and Public Health (Shops, Eating-Houses, Boarding Houses, Hostels and Hotels) Regulations*. The Registration period is for 12 months with renewals due on the 31 December. Annual Fees are applicable and are based on the number of bedrooms:

3-10	Bedrooms	\$100 p.a.
11-20	Bedrooms	\$125 p.a.
21-40	Bedrooms	\$150 p.a.
> 40	Bedrooms	\$250 p.a.

A Boarding House application form can be downloaded online or by contacting the relevant Environmental Health Office:

http://www.nt.gov.au/health/healthdev/environ_health/environ_health.shtml

>application forms

Following a review of Northern Territory public health legislation, DHCS has developed *Public Health Guidelines for Commercial Accommodation 2005*. These Guidelines will eventually replace the current provisions relating to boarding houses in the *Public Health (Shops, Eating-Houses, Boarding Houses, Hostels and Hotels) Regulations* offering a less prescriptive approach and a clear set of minimum standards.

Room sizes in the Camp must comply with the provisions of *Public Health (Shops, Eating-Houses, Boarding Houses, Hostels and Hotels) Regulations* or the yet to be endorsed Guidelines. However, if the latter is chosen, it will be necessary for the proponent to make application in writing to the Chief Health Officer seeking approval to utilise the Guidelines.

Approval Process

The approval process of a boarding house is dependent on its location in a similar manner to food businesses, and also generally involves at least one inspection. Camps are by nature located in remote areas where Building Control in terms of the *Building Act* is not applicable. Building Control essentially means that a Building Certifier must certify all building structures to ensure compliance with the Building Code of Australia. Proponents are referred to Appendix 1 to determine if their project is located within a Building Control Area.

Inside a Building Control Area

Under the provisions of the *Building Act*, DHCS is a Reporting Authority and as such, Building Certifiers are required to seek the Department's comments on all building applications involving, amongst other things, new or existing boarding houses. The Building Certifier must submit detailed plans to the relevant Environmental Health Office prior to the construction of works. Following assessment and approval, the premises must be registered as a Boarding House with the relevant Environmental Health Office prior to operating.

Outside a Building Control Area

Since Building Certification does not apply then DHCS becomes the first point of contact for approval of a boarding house. The proponent must submit detailed plans and specification to the relevant Environmental Health Office prior to the construction of works. Following assessment and approval, the premises must be registered as a Boarding House with the relevant Environmental Health Office prior to operating.

Sanitary Accommodation & Ablution Facilities

Adequate numbers of ablution facilities and sanitary accommodation to be accessible for all operations in accordance with Building Code of Australia and relevant Northern Territory legislation.

Environmental Management Plans

The proponent shall provide the relevant Environmental Health Office with copies of Environmental Management Plans that relate to the Camp or Project Operations for initial comment.

On-site Wastewater Disposal

On-site wastewater disposal using septic tanks is likely to be the most suitable option for camps that have no major site constraints and comprise less than 20 staff. Larger camps may need to consider other options such as a treatment plant or waste stabilisation ponds. In all cases, the proponent should seek advice from a qualified hydraulic consultant about the most suitable wastewater disposal system. Reliability and low maintenance costs of remote on-site wastewater disposal systems should not be underestimated.

The design of septic tank systems is detailed in the Northern Territory *Code of Practice For The Small On-Site Sewage And Sullage Treatment Systems And The Disposal Or Reuse Of Sewage Effluent* ('the Code'). The Code was gazetted on the 11 November 1998 and is called up in Regulations 28-28B of the *Public Health (General Sanitation, Mosquito Prevention, Rat Exclusion and Prevention) Regulations*.

The Role of Regulatory Authorities

Local Government Authorities in the Northern Territory have no jurisdiction over on-site wastewater management, i.e. approval or monitoring of septic tank installations.

The Department of Planning and Infrastructure (DPI) administer the provisions of the *Building Act & Regulations* with respect to all septic tank installations within a Building Control Area.

DHCS administers the provisions of the *Public Health Act & Regulations* with respect to the:

- type approval of septic tanks and associated products;
- conventional septic tanks located outside Building Control Areas;
- notification to install an Alternative Septic Tank System (ASTS) for a single residential dwelling; and
- site-specific design approval of an ASTS.

Conventional Septic Tanks and Alternative Septic Tank Systems

Conventional Septic Tanks (e.g. septic tank reticulating to absorption trenches or evapotranspiration beds) must be installed by self-certifying plumbers and drainers within Building Control Areas or by licensed plumbers and drainers outside Building Control Areas. The administrative process is dependent on whether the installation is located within a Building Control Area (urban areas and along main highways) or outside a Building Control Area (remote areas).

Alternative Septic Tank Systems (ASTS) are septic tank systems that treat effluent to a higher quality than that offered by conventional septic tank system. For example, these include Aerated Wastewater Treatment Systems (AWTS), Composting Toilets, Hybrid Systems and Ecomax Systems. In addition to the self-certification of the installation, ASTS require either a notification to install or site specific design approval.

Septic Tank application forms can be downloaded online or by contacting the relevant Environmental Health Office:

http://www.nt.gov.au/health/healthdev/envIRON_health/envIRON_health.shtml

>application forms.

Connection to existing Septic Tank Systems

If the proposal can utilise existing infrastructure such as septic tank systems, then the proponent will need to demonstrate that such infrastructure has adequate hydraulic capacity. This will require the proponent to engage a qualified hydraulic consultant to provide the relevant Environmental Health Office with as-constructed drawings of the existing infrastructure.

Trade Waste Pre-treatment Devices

Trade waste is defined as a “*liquid or liquid borne waste generated from any industry, business, trade, manufacturing process or similar that is approved for discharge to sewer but does not include wastewater from a toilet, shower, hand basin or similar fixture*”.

It is not recommended that trade waste be discharged to septic tank system, however a Camp's commercial food premises may prepare cooked food generating liquid trade waste that comprises of food scraps, detergents, fats, oils and grease. This liquid trade waste has a substantial impact on a septic tank system, and if not contained by pre-treatment equipment will cause system failure. For this reason, it is mandatory that all greasy liquid trade waste must be discharged to sewer via a pre-treatment device that has been approved by Power and Water Corporation's Trade Waste Section.

The requirements for trade waste pre-treatment devices are detailed in the following documents:

- Power and Water Corporation - *Guidelines for On-site Pre-treatment* which can be downloaded from the website at: http://www.powerwater.com.au/powerwater/business/trade_waste.html
- DHCS Information Bulletin – *Trade Waste Pre-treatment Devices* which can be obtained from the relevant Environmental Health Office.

Waste Stabilisation Ponds

Waste stabilisation ponds (also known as sewage ponds) are used extensively in the Northern Territory for the treatment of wastewater prior to final disposal.

There is legislation to control the reuse or disposal of treated sewage effluent. The responsibility for enforcement of such legislation is vested with DHCS and the Environment Protection Agency (EPA). The discharge of treated sewage effluent to land or water may therefore occur, but only in accordance with pertinent legislation, or in its absence, to any reasonable conditions imposed by the relevant government agency.

Where treated sewage effluent is proposed to be discharged to a waterway and where the discharge does not have a potential to impact on public health, DHCS will liaise with the EPA as part of the approval process. Consideration will be given to the reuse/irrigation of treated sewage effluent in controlled public access areas, constructed and operated for this express purpose.

Approval Process

Any proposal to construct waste stabilisation ponds at a camp shall require the submittal of plans, design specifications and disposal methodology to the relevant Environmental Health Office & the EPA for approval, prior to construction.

Environmental Health Office will seek specific comment with regard to mosquito breeding from the Department's Medical Entomology Branch.

Potable Water Supply

The camp must have a potable that complies with the NH&MRC *Australian Drinking Water Guidelines*. The relevant Environment Health Office may set conditions on the

provision of water testing results. Proponents should note that water analysis can be carried out by the Water Laboratories at:

- Alice Springs – Department of Natural Resources, Environment and the Arts - located at the Tom Hare Building, phone (08) 8951 8233; and
- Darwin – Department of Primary Industries and Fisheries - located at Berrimah Farm, phone (08) 8999 2346

Bore setbacks to onsite wastewater disposal shall be in accordance with the Code of Practice for Small On-Site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent.

Solid Waste Disposal

The *Waste Management and Pollution Control Act 1998* requires that certain waste management activities be licensed or approved by the EPA Program. EPA approval for a landfill (rubbish dump) is not required if the landfill is for domestic waste generated on the premises or domestic waste from temporary construction camps.

An EPA licence for a landfill is required if the Camp serves a permanent population of more than 1000 persons or if the Project Operations generates hazardous waste. Further information can be obtained by contacting the EPA on (08) 8924 4139 or by going to their website: <http://www.nt.gov.au/nreta/environment/index.html>

Providing the landfill does not have to be licensed or approved by the EPA, then the proponent will still need to demonstrate to the relevant Environmental Health Office that the Camp's landfill meets best practice and will not cause an environmental or public health nuisance. Reference should be made to the *Guidelines for Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory 2003* which can be downloaded from the EPA website: <http://www.nt.gov.au/nreta/environment/waste/codes/index.html>

Fuel Storage

Camps and their respective operations generally have a fuel storage facility. Environmental Health does not regulate fuel storage and therefore proponents should discuss this issue with the EPA. Reference should be made to AS 1940-2004 (and amendments) *Storage and handling of flammable and combustible liquids*.

Public Health Nuisance

The proponent shall ensure that the construction and operation of the Camp does not create a public health nuisance, in particular from dust or other particulate matter. Environmental Health has provisions to deal with public health nuisances under the *Public Health (Nuisance Prevention) Regulations*.