Northern Territory Government
Office of Environment and Heritage

PART B

DRAFT GUIDELINES FOR PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT

NT Red Claw
Aquaculture Development

Lots 6051, 6052 and 6053 Wright Road
Marrakai

September 2005

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1 Introduction to the Draft Guidelines

These Guidelines have been developed to assist NT Red Claw in preparing a Draft Environmental Impact Statement (Draft EIS) for the proposed aquaculture facility on lots 6051, 6052 and 6053, Wright Road, Marrakai, in accordance with Clause 8 of the Environmental Assessment Administrative Procedures of the *Environmental Assessment Act (1982)* of the Northern Territory.

The *Administrative Procedures* of the *Environmental Assessment Act (1982)* 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;
- Timeframe for submitting the report;
- 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 Draft EIS should contain sufficient information to enable understanding and assessment of the scope and environmental implications of the proposal. The Draft EIS should clearly identify the main environmental impacts associated with the development and should contain management strategies that demonstrate how these impacts will be avoided or minimised.

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

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

2 Executive Summary

The Executive Summary should include a brief outline of the project and each chapter of the Draft EIS, allowing the reader to obtain a clear understanding of the proposed project, its environmental implications and proposed management strategies. The Executive Summary should be written as a stand-alone document.

3 General Information

The following general project information should be provided for the proposal:

a) Name, address and contact details of the proponent and of the person responsible for implementing all environmental controls at the site;

b) Description of the experience and/ or qualifications relevant to the various components of the proposal, both of the proponent and the person responsible for implementing all environmental controls at the site;

c) Name of the person(s) or company(/ies) that have prepared the Draft EIS and all other studies as required under these Guidelines, and a description of relevant experience and/ or qualifications of these persons;

d) Project name and exact location;

e) The scale and type of proposed operations on each of the lots;

f) Project schedule, including staging of development and the timing of the stages. This includes overall timeframes for construction, operation and future closure;

g) Project objectives, benefits and justification. The purpose of this is to place the proposal in the local and regional context;

h) Regulatory framework and approvals; and

i) Proof of ownership of all lots to be used for the proposal (such as a recent certificate of title). If the proponent is not the owner, written confirmation is required from the owner giving approval for the proposed use.

3.1 Description of Proposal

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 proposal and should include relevant plans, photographs and maps. Aspects to be covered include but are not limited to the following:

a) The layout of all components of the proposal, including lakes, ponds, existing and proposed tanks, buildings, roads, pump stations, production facilities, treatment facilities, processing facility, parking, stormwater drainage, storage areas, camping areas and endangered species enclosures etc. All components are to be drawn on a scaled map, indicating exact sizes, lot numbers and lot boundaries, distance/ buffers to adjacent roads and neighbouring properties, drainage lines, topography etc;

b) Using a suitably qualified person (for example design engineer, geotechnical engineer), describe the design criteria for each component of the proposal and include any design limitations imposed by site characteristics. Describe the construction timing, methods, equipment and materials (types, sources and quantities) to be used;

c) Relevant photographs, allowing the reader to obtain a good visual understanding of the various elements at the site and the environment in which they are to be operated. It is recommended that aerial photographs are also included;

d) An accurate description of all faunal species and sub-species/ strain proposed to be cultured and/or kept on the site including their sources. For crayfish and fish, include sources for juveniles and broodstock;

e) With respect to the aquaculture facility, a description of the processes of production: breeding and grow out, feeding, will stock be moved for grading purposes and how often, harvesting methods, processing and transport to end market. Include stocking rates and planned production rates per year/ season and per lake/ tank area, and sizes/ ages of the crayfish at time of sale. Describe how stock will be transported (i.e. road transport or air, live or on ice, any biological filtration processes involved prior to transport);

f) With respect to the endangered species enclosure, describe purchasing, breeding, transport and husbandry arrangements. Detail the nutritional requirements and food sources for all endangered species to be kept. Also, include details of the animals' origin, where they are endangered and their suitability to the NT environment;

g) Include water quality requirements and other requirements that all species to be cultured and/ or kept on-site need in order to be grown successfully;

h) Describe the quantity of food to be provided on a daily basis to all species to be grown, per animal and total numbers, including a description of the food (i.e. pellet form, percentage of protein, carbohydrodrate and organic matter etc). Describe the nutrient and protein requirements for each species to be grown. Include how often all species will be fed.

i) Provide details on water to be used for the projects, in terms of the source, quantities and quality required for all proposed activities on the site;

j) Staffing and servicing requirements, hours of operation and security of the site. Include details of staff accommodation for the site. Include power source, potable and non-potable water supply and disposal of human waste and sewage for both staff accommodation and proposed camping area;

k) Expected life of the project, rehabilitation commitments and timetables (for both temporary and permanent facilities) including waste management, pollution control, storage facilities, land stabilisation and rehabilitation plans (where appropriate) and rehabilitation of potential mosquito breeding sites; and

l) Ongoing management, maintenance and administrative requirements.

4 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 short, medium and long-term potential beneficial and adverse impacts of each of the options should be considered.

Alternatives to be discussed should include:

- not proceeding with the proposal;
- alternative locations/layout for the whole proposal;
- alternative locations/layout for components of the proposal;
- alternative operational procedures; and
- alternative environmental management techniques. For example, alternative methods for waste treatment, disposal and discharge, including recirculation and zero discharge for the proposed aquaculture facility.

5 Existing Environment, Potential Environmental Impacts and Management

5.1 Preliminary

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 and long-term monitoring locations should be established where appropriate.

This section of the draft EIS should include an in-depth description of the areas with the potential to be impacted by the project (or any feasible alternatives) and should clearly identify, qualify and quantify, where appropriate, those potential environmental impacts. The section should also include an assessment of the level of significance of the impacts taking into account the following factors:

- the nature and intensity of impacts (magnitude, duration, frequency and extent);
- the degree of mitigation and management possible;
- the degree of public interest;
- the reliability and validity of forecasts and predictions; and
- the resilience of the biophysical and social receiving environment to cope with the change.

Cumulative impacts should also be discussed including the extent to which the environment is already affected by existing development.

An Environmental Management Plan (EMP) will need to be developed in order to minimise and manage impacts associated with the project and should be outlined in the draft EIS. Where reference is made within the draft EIS to legislation, guidelines and standards, these should be named specifically.

The person(s) preparing the draft EIS and all studies associated with the draft EIS shall have the appropriate experience and/ or qualifications relevant to aquaculture projects and other proposal components or to the specific study area.

Detailed information is required on the following environmental issues for each aspect of the project. Each element should be described and the likely or potential impacts of the project considered. The safeguards, management and monitoring strategies that will be used to minimise the impacts of construction and operation of the proposal should be outlined.

5.2 Climate and Landform

The information required in this section is to be prepared by suitably qualified and/or experienced persons in the relevant areas:

Existing Environment

a) Describe the project area, in terms of broad climatic zones and present meteorologocal data including average yearly rainfall and potential flood events;

b) Provide suitably detailed maps and interpretation of the regional geology of the site and surrounding areas;

c) Discuss the soil types and land units of the sites and surrounding areas, including the potential for flooding and seepage. Include any seepage areas and nearby creeks;

d) Describe the suitability of soils for lake/ dam construction and water holding capacity, and describe all sources and quality of any fill currently on the site and any proposed fill to be used. Describe the dimensions of the lakes, including a soil description of bottom materials. Describe the lakes' design and construction including batter slopes and liners and provide evidence that it will not leak (i.e. to aquifers or off-site). Describe any ongoing engineering works required and ongoing monitoring to ensure the integrity of ponds. The construction of all lakes/ dams and use of fill is to be approved in a *geotechnical engineer's report*;

e) The *geotechnical engineer's report* should also consider soil characteristics such as erosive potential, soil particle size, soil acidity/ alkalinity, potential for dispersion, organic matter content, potential for shrink-swell/ cracking, soft/ compressible soils, permeability, settlement properties and potential acid sulfate soils. Soils to be characterised are foundation materials beneath the lake, beneath embankments, and fill materials used in embankments. This report should also describe the flood passing capacity, any spillways, pipes or other outlets required to control the water level in the dam; and

f) Detail the existing land condition in terms of soil erosion.

Potential Impacts

a) Discuss the extent and impact of clearing as conducted at the site and any further proposed clearing, including disposal of vegetation;

b) Indicate the potential for increased erosion due to clearing, excavation, traffic and animal movements;

c) Discuss the introduction and potential spread of weed species, particularly through construction or earthmoving equipment; and

d) Assess the potential impacts from the lakes on the environment or nearby groundwater users, including when the lake is to be drained for any reason (i.e. maintenance, disease, breach of walls). Describe the potential of waterlogging or salinisation of surrounding soils. Assess the potential for any shallow groundwater or seepage to impact on the embankment stability of the lake. Assess the potential for groundwater quality to impact on pond water quality and vice versa.

Proposed Management and Monitoring

a) An *Erosion and Sediment Control Plan* should be developed for the site by a suitably qualified and/or experienced person, for both the construction and operation phases for all activities of the project. This plan should be integrated into an overall *Environmental Management Plan* for the Site.

b) Outline all preventative, remediation and rehabilitation measures undertaken to minimise the impacts associated with the clearing of the land. Provide details of proposed landscaping and a rehabilitation program after the clearing of the land and the vegetation species proposed to be replanted at the various locations at the site;

5.3 Hydrogeology and Water Quality

The information required in this section is to be prepared by suitably qualified and/or experienced persons in the relevant areas:

Existing Environment

a) Describe the water balance for the proposal (i.e. the total amount of water used and disposed of during all processes). This should include water extracted from the groundwater and bore yield, expected amount of rainwater collected and volume of water to be imported, and all wastewater to be disposed of, leakage into soils/ groundwater, evaporation, water used for irrigation and used for all other activities at the site;

b) Describe the water quality of the bore water to be used (including but not limited to salinity, conductivity, pH, dissolved oxygen, nutrients and heavy metals). Describe the suitability of the bore water for each of the species to be kept and/ or cultivated at the site in terms of water quality such as salinity etc. Also, describe the quality of the wastewater coming from all proposed activities at the site and their proposed disposal options. If the wastewater is to be disposed of off-site, provide evidence that this is to an appropriate location. If irrigation is proposed on-site, describe the irrigation areas including their size and discuss the suitability of soils and vegetation in relation to the amount of wastewater to be irrigated. Provide details on the viability of the proposed bottling of waste water and sludge for possible sale; and

c) Derscibe the existing hydrology and hydrogeology, including the groundwater level across the site, any perched groundwater layers, hydraulic gradient, catchment area, surface flow patterns, flood flows and areas of seasonal inundation, and existing water quality of surrounding watercourses, nearby groundwater users and surface discharge areas such as creeks and springs.

Potential Impacts

a) Describe the potential impacts associated with the discharge of all wastewater produced by the development in terms of quality (i.e. estimated nutrients, salinity, pH, heavy metals, dissolved oxygen) and quantity (erosion, waterlogging etc);

b) Describe the potential impacts of any proposed irrigation on groundwater, soils and adjacent land owners; and

c) Describe the impacts of any seepage from water holding areas on groundwater and the impacts of potentially contaminated stormwater on surface water systems.

Proposed Management and Monitoring

a) Describe the suitability of the tanks to be used for growing crayfish and describe the quality of the tanks (i.e. water leaks to surrounding environment, potential for leaching of heavy metals to the water inside the tanks);

b) Ongoing monitoring will be required for any leaks in the tanks and these will need to be repaired within a reasonable timeframe, in order to prevent excess waste water leaking into soils or groundwater and wastage of waters. A *water management plan* will need to be prepared that includes the water balance, states how it is intended to compensate for water loss through evaporation and routine maintenance of the lakes and tanks, and includes water supply and demand volumes that show that the existing bore can service the development. This plan should be included in the overall EMP;

c) Detail the proposed ongoing groundwater and surface water quality monitoring program incorporated into the W*ater Management Plan, (*for example water levels, nutrients, salinity, pH, heavy metals and dissolved oxygen). Threshold levels for water quality parameters on-site and off-site will need to be established at which contingency measures should be undertaken, and a description will need to be provided of what these contingency measures entail and their impacts on the environment;

d) Undertake a risk assessment of the development on the adjacent aquatic system from sources of wastewater and run off (including spills);

e) Discuss the preferred regime for treatment and disposal of wastewater including the ablution facilities; and

f) Outline stormwater management techniques, including overflows from production and treatment ponds and from sludge treatment areas.

5.4 Air Quality, Noise, Dust and Odours

Existing Environment

a) Describe background air quality, noise, dust and odour levels; and

b) Discuss the potential for sensitive receptors for noise, dust and odour issues (for example adjacent residents) and describe distances and buffers from potential nuisance-causing activities to sensitive receptors, such as campground activities, dusty internal roads, noise generating aerators, pumps, generators and vehicles.

Potential Impacts

a) Identify likely noise levels, timing and duration from all proposed activities, and compare these to background levels;

b) Identify the potential for dust generation from activities at the site;

c) Identify the potential for odour generation from processing, storage of products and waste including sewage; and

d) If the operation will generate emissions to air (including greenhouse gases), these should be identified and quantified, and a description should be provided indicating techniques to minimise these.

Proposed Management and Monitoring

a) Outline any proposed noise management measures;

b) Outline any proposed odour management measures; and

c) Outline dust suppression and proposed dust monitoring techniques, particularly during construction.

5.5 Ecology

Existing Environment

a) Describe the existing flora and fauna species, communities and habitats present that may be affected by the proposal. This should include flora and fauna that are designated threatened species under the relevant Territory and Commonwealth legislation. Describe all ecologically outstanding areas that are potential habitat for rare, threatened or endangered species or that have outstanding biodiversity values; and

b) Describe any weed species present. This study will need to be conducted by a person with the appropriate qualifications and/or experience in Northern Territory flora and fauna.

Potential Impacts

a) Discuss the potential impacts to flora and fauna communities and habitats as a result of all proposed activities including clearing. Include a discussion of the possible effects on native species resulting from the keeping of endangered species.

Proposed Management and Monitoring

a) Describe how the impacts on flora and fauna will be minimised;

b) Discuss how the impacts of feral animals will be minimised, this would include domestic pets; and

a) A *Weed Management Plan* is to be developed, which should be integrated into an overall *Environmental Management Plan* for the Site. This *Weed Management Plan* should identify precautions to minimise weed introduction and spread (e.g. wash down of equipment) and should include all reasonable measures to prevent the land being infested with a declared weed and to prevent a declared weed or potential weed on the land spreading to other land.

5.6 Waste Management

a) Identify, quantify and describe all sources of waste associated with the construction, operation and decommissioning of the project including but not limited to chemicals, hazardous waste, dead animals, wastewater, sludge, sewage, putrescible waste, food bags etc; and

b) Provide a characterisation of the sludge reuse, its general management and disposal, in terms of quantity and quality (heavy metals, nutrients and salts); and

Potential Impacts

a) Describe on-site wastewater management for sewage;

b) Outline sludge treatment practices, including removal, conditioning and disposal;

c) Describe the anticipated impacts of household waste and litter, both on-site and on surrounding properties; and

d) Outline any problems anticipated with the on-site wastewater disposal, given the elevated water table in the wet season in the Marrakai area.

Proposed Management and Monitoring

a) Outline waste storage and disposal options for all wastes generated on the site;

b) Describe methods for storage, handling, containment and emergency management of chemicals and other hazardous substances (including fuel, diseased stock). The use of chemicals is limited to the List of Approved Aquaculture Chemicals issued by the National Aquaculture Council. These chemicals are to be stored in proper chemical storage cabinets and used in accordance with the manufacturers' instructions;

c) Outline spill containment and management measures;

d) Provide a *waste management plan* including reduction, reuse, storage, transport and disposal. Include a certification of acceptance by proposed disposal site of waste products where appropriate. This *waste management plan* is to be included in the overall EMP.

e) Include a description of the treatment method proposed for the wastewaters and sludge, the volume of storage required to store waste water and describe the proposed methods for disposal;

f) Describe treatment of the ponds in between crops i.e. drying of the ponds between crops, and timeframes; and

g) Any wastewater generated from harvesting practices will need to be managed in a manner that prevents wastewater from ponding in any nearby depressions or stormwater drains, and prevents wastewater from increasing the nutrient load in natural drainage lines. Any dead stock or other organic waste should be appropriately disposed of in order to prevent fly breeding.

5.7 Historical and Cultural Heritage

a) Detail any sites of significance including archaeological, historical, cultural and Aboriginal sacred sites; and

b) Provide evidence of an Authority Certificate under the *Northern Territory Aboriginal Sacred Sites Act*.

5.8 Pests and Diseases/ Insect Control

Existing Environment

a) Describe the diseases, parasites and predators that can impact on all species to be kept on-site; and

b) Describe the existing situation in relation to mosquito breeding and numbers, and any other biting insects or venomous animals that can impact on visitors to the farm; and

Potential Impacts

a) Describe the potential increase in biting insect numbers due to the construction and the operation of the project;

b) Describe the impact of any existing and anticipated biting insect populations in the area on the construction work force, future visitors to the development and impact on adjacent land owners;

c) Describe the potential increase in feral and native scavenging animals due to storage of food and waste; and

d) Details the potential for spread of disease due to fauna scavenging on dead and/ or diseased animals, or through any other vector.

Proposed Management and Monitoring

a) An *Insect Control Management Plan* should be developed that is to be incorporated into the EMP. Guidance can be sought from the Medical Entomology branch;

b) The proposal in the draft EIS should conform to the Medical Entomology's "Guidelines for preventing the creation of mosquito breeding sites in non residential rural subdivision or developments" which has been provided as attachment 1;

c) Describe measures to be taken to minimise the potential for aggravating existing biting insect populations including pond/tank design and management and vegetation management. Consideration should also be given to appropriate disposal of potential water holding containers, and appropriate site rehabilitation;

d) Indicate how mosquito breeding will be minimised through appropriate tank management, including a monitoring program for mosquito larvae;

e) Describe measures to be taken to prevent the impact of diseases, parasites and predators;

f) Outline biosecurity measures to prevent the onset of disease within the farm and its spread to or from natural fisheries. Include a description of procedures to contain all production wastes on site for a considerable timeframe, treatment methods, and how treated wastes can be safely disposed of. Outline the hygiene and quarantine requirements and monitoring;

g) Outline measures to prevent escape of stock from the farm to the natural environment; and

h) Describe the type and quantity of shelter that is to be provided in the tanks to prevent cannibalism immediately after moulting, and describe protection provided against other predators on the property.

6 Project Environmental Management

A summary table listing potential impacts, environmental management practices and safeguards, monitoring and management methods, and commitments, cross-referenced to the text of the report should be provided with the draft EIS, together with the outline of an Environmental Management Plan (EMP). The EMP should:

a) Provide details of proposed measures to minimise adverse impacts and the effectiveness of these safeguards during construction and operational phases;

b) Ensure that safeguards are being effectively applied;

c) Enable remedial action for any impacts which are not originally predicted; and

d) Measure the differences between predicted and actual impacts (monitoring); and provide for the periodic review of the management plan itself.

The EMP should be prepared in consultation with, and to the satisfaction of, relevant Northern Territory agencies and key stakeholders. An approved EMP will form part of the aquaculture licence.

6.1 Resourcing and Policies

Information is to be provided on strategic matters relating to environmental management and should include:

a) staffing arrangements to ensure that the measures described in the report will be carried out effectively;

b) procedures and instructions to employees on minimising unnecessary environmental impacts; and

c) a staff induction and education program to ensure an informed response to construction and operational environmental concerns.

6.2 Monitoring and Reporting Strategies

Specific programs of monitoring or measuring the success of the Project's environmental management should be outlined. These should be covered in greater detail in the Environmental Management Plan.

7 Health and Safety

Health and Safety issues pertaining to the design, construction and operational phases of the project should be investigated. This should address issues concerning employees visiting the site and members of the public.

- Discuss issues relating to provision of emergency first aid treatment and transport of sick or injured persons to the nearest appropriate medical facility;
- Prepare a management and administration plan outlining strategies and procedures in the event of an emergency;
- Discuss issues relating to the minimisation of mosquito breeding habitat, and protection of the workforce from mosquito and biting midges. Medical Entomology Branch should be consulted during the design phase of this development; and
- Discuss the potential for health and safety issue to arise with contact between people and endangered and other fauna on the site.

8 Risk Assessment and Emergency Management

8.1 Risk Assessment

While the draft EIS must deal comprehensively with on site risks, it is suggested that external risks to the project also be considered, such as external risks from natural hazards.

A review of potential hazards and accidents, during the construction, operational and decommissioning phases should be provided. The likelihood of an event, the possible consequences of the event and safeguards to be implemented to reduce the potential risks will be discussed in quantitative terms where possible.

8.2 Emergency Management

An outline of the proposed emergency management procedures is to be provided and should include for each site:

a) contingency plans to deal with disease and mortality of stock during the operation and maintenance of the project;

b) contingency plans to account for natural disasters such as storms, floods and fires during the construction, operation and maintenance phases;

c) ensure that development of emergency planning and response procedures are determined in consultation with regional emergency service providers; and

d) include the relevant Commonwealth and Territory agencies in relation to emergency response and medical transport and first aid matters.

9 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.

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 with government agencies should also be presented.

Northern Territory Government
Department of Health and Community Services

10 Attachment 1

GUIDELINES FOR PREVENTING THE CREATION OF MOSQUITO BREEDING SITES IN NON RESIDENTIAL RURAL SUBDIVISION OR DEVELOPMENTS

Medical Entomology Branch
Department of Health and Community Services

General Comments

1. The development of irrigated areas has the potential to create new mosquito breeding sites. The developers and purchasers should be made aware of the potential for mosquito breeding and the need to design farming areas such that they do not create mosquito breeding sites.

The methods of irrigation must be such that there is no dry season discharge of nutrient rich water into rivers or streams both on or adjacent to the properties, or to roadside stormwater drains, to prevent the creation of mosquito breeding sites. Any depressions in irrigated areas that will retain nutrient rich water from irrigation runoff for a period over 5 days must be filled or made free draining.

2. There must be no impedance of natural flow of surface water by site development (eg. construction of access roads), to prevent the creation of mosquito breeding sites. Access roads may need to be fitted with culverts of sufficient size to prevent upstream flooding for periods that will enable mosquito breeding.

3. Erosion prevention structures and silt retention facilities should be constructed where appropriate (eg. on the down stream side of culverts, dam spill ways or storm water drains) to prevent erosion and siltation of water features that will promote the creation of mosquito breeding sites.

4. Any artificial depressions within 1.6 km of a residential area capable of holding water for a period greater than 5 days (eg. from extractive industries) must be rectified by filling, draining or other treatment to prevent the creation of mosquito breeding sites.

5. Dams or other constructed water features within 1.6 km of a residential area should be constructed with steep straight sides, have a level bottom and be relatively deep (1.8 m) to prevent the establishment of marginal semi-aquatic vegetation that will promote mosquito breeding.

6. Drainage reserves or an undertaking to prevent disturbance should be considered over permanent and semi-permanent swamps, lagoons, creek lines, or other wet season inundated areas within the proposed development.

7. Drainage reserves or an undertaking to prevent disturbance should be considered between water features that will be connected during the wet season, to prevent the impedance of water along natural flow lines.