

# **Guidelines for the Preparation of a Public Environmental Report**

## **Meat Processing Facility Project**

### **Livingstone Locality, NT**

### **Australian Agricultural Company Ltd**

**January 2012**

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## 1 Introduction

The Australian Agricultural Company Ltd (AACo) proposes to develop a meat processing facility approximately 50 km south of Darwin adjacent to the Stuart Highway. The facility will have capacity to process approximately 210 000 cattle per year.

The main components of the project are:

- Hot-boning meat processing and packaging facility;
- Rendering plant and bio-filter;
- Hide curing facility and salt recovery;
- Cattle holding yards for up to 2080 head of cattle (two days capacity);
- Effluent treatment including anaerobic/ aerobic ponds and manure/ paunch compost; and
- Fodder crop irrigation zones using treated effluent to irrigate 84 ha of crop with storage ponds to catch stormwater runoff from the irrigated areas.

The Northern Territory Minister for Natural Resources, Environment and Heritage (the Minister) has determined that this proposal requires formal assessment, under the NT *Environmental Assessment Act 1982* (EA Act), at the level of a Public Environmental Report (PER). Key potential environmental risks contributing to this decision include:

Water resources:

- Significant consumption of Darwin water supply; and
- Management of effluent and stormwater on site may lead to changes in surface water quality, leaching into aquifers and pollution of downstream environments.

Land management:

- Risks of negative impacts on the integrity of the soil due to irrigation activities; and
- Risk of introducing weed species to the site and the region.

Community health and amenity:

- Risks to health and amenity through odour, noise, light, dust, mosquitoes and vermin; and
- Risks to traffic and rail safety through increased traffic.

Information about the proposal and its relevant impacts, as outlined in this document, is to be provided in the PER. This information must be sufficient to allow the Minister to make informed recommendations to the Responsible Minister and relevant consent authority in accordance with the EA Act.

## **2 General advice on PER**

### **2.1 General content**

The PER should be a stand-alone document. It should contain sufficient information to avoid the need to search out previous or additional, unattached reports.

The PER should enable interested stakeholders and the Minister to understand the environmental consequences of the proposed development. Information provided in the PER should be objective, clear, succinct and, where appropriate, be supported by maps, plans, diagrams or other descriptive detail. The body of the PER is to be written in a clear and concise style that is easily understood by the general reader. Technical jargon should be avoided wherever possible. Cross-referencing should be used to avoid unnecessary duplication of text.

Detailed technical information, studies or investigations necessary to support the main text should be included as appendices to the PER.

The level of analysis and detail in the PER should reflect the level of significance of the expected and potential impacts on the environment, as determined through adequate technical studies. Any and all unknown variables or assumptions made in the assessment must be clearly stated and discussed. The extent to which the limitation, if any, of available information may influence the conclusions of the environmental assessment should also be discussed.

The PER is to be prepared and submitted within three years of the date final Guidelines are issued. The Minister should be notified in advance should AACo be unable to submit the PER within this timeframe.

### **2.2 Format and style**

The PER should comprise three elements, namely:

- The Executive Summary;
- The main text of the document; and
- Appendices containing detailed technical information and other information that can be made publicly available.

The structure of these Guidelines may be adopted as the format for the PER. This format need not be followed if the required information can be presented alternatively for better effect. However, each of the elements in these Guidelines must be addressed to meet NT Government regulatory requirements.

The Executive Summary must 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. It must be written as a stand-alone document, able to be reproduced on request by interested parties who may not wish to read the PER as a whole.

The main text of the PER should include a glossary to define abbreviations, technical terms, acronyms and colloquialisms.

The appendices must include:

- A copy of these Guidelines;
- A list of persons and agencies consulted during the PER;
- Contact details for the proponent; and
- The names, qualifications, and work done by, the persons involved in preparing the PER.

The PER must be written so that any conclusions reached can be independently assessed. To this end, all sources must be appropriately referenced using the Harvard Standard. The reference list should include the address of any internet pages used as data sources. All referenced supporting documentation must be available upon request.

The PER should be produced on A4 size paper capable of being photocopied, with any maps and diagrams on A4 or A3 size and in colour if possible.

The proponent should consider the format and style of the document appropriate for publication on the internet. The capacity of the website to store data and display the material may have some bearing on how the document is constructed.

It is expected that the PER will be written in a scientifically rigorous style by suitably qualified professionals. Assumptions must be substantiated, and all statements must be supported by quantitative research where this exists.

### **2.3 Administration**

Eight bound copies of the PER should be lodged with the Minister, care of the Environment and Heritage Division (EHD) of the Department of Natural Resources, Environment, the Arts and Sport (NRETAS) for distribution to NT Government advisory bodies.

The PER should be provided in Adobe PDF format for placement on the NRETAS internet site (for documents with large file size the Executive Summary, Chapters and Appendices separately). The PDF is required by NRETAS one week prior to the advertising date to allow its publication on the internet. Additionally, a Microsoft Word copy of the PER should be provided to facilitate production of the Assessment Report and Recommendations.

The PER is to be advertised for review and comment in the *NT News*.

The PER should be made available with additional bound copies for public review at:

- Environment and Heritage Division, NRETAS, 2nd Floor, Darwin Plaza, 41 Smith Street Mall, Darwin;
- Northern Territory Library (NTL), Parliament House, Darwin;
- Litchfield Shire Council Office, 7 Bees Creek Road, Fred's Pass, NT; and
- The Environment Centre NT, Unit 3, 98 Woods St, Darwin.

The action officer is Gemma Gooley from the EHD of NRETAS, phone (08) 8924 4149, facsimile (08) 8924 4053 or email: [eia.nretas@nt.gov.au](mailto:eia.nretas@nt.gov.au).

### **3 General Information**

The PER should have a chapter that provides general information on the background and context of the action including:

- The title of the action;
- The full name and postal address of the designated proponent;
- A description of the proposal's location in the region and its proximity to landmark features, regional community centres, and sensitive environments such as major waterways, significant groundwater resources, historical sites and conservation reserves;
- A clear outline of the objective of the action;
- Legislative background for the proposal, including the relevant NT legislation that applies to the project;
- The background to the development of the action;
- How the action relates to any other proposals or actions (of which the proponent should reasonably be aware) that have been or are being taken, or that have been approved in the region affected by the action;
- The current status of the action; and
- The consequences of not proceeding with the action.

## **4 Description of the proposal**

To assist in determining the environmental impacts associated with the proposal, a section should be provided that describes the project in sufficient detail to allow an understanding of all stages of the proposal, including infrastructure design and engineering, construction, operation and management. Emphasis should be given to those components with the most potential for significant short and long term environmental impacts. Also describe the existing operations in relation to the proposed development.

Aspects to be covered include:

- An explanation of the social and economic aspects of the project, objectives, benefits and justification for the action;
- An overall layout of the proposed action;
- Schedule or timeline for all relevant aspects of the proposal;
- Tenure/s under which the proposal would be held and any Native Title issues;
- Relevant National and Northern Territory legislation, standards, codes of practice and guidelines;
- Employment and business opportunities (direct and indirect), including sources of workforce, skill levels required and opportunities for local people, Indigenous employment and businesses;
- Financial viability of the project, including analysis of the benefit to Territorians resulting from any government investment that may occur, and implications for the project if it doesn't;
- The sources of greenhouse gas emissions caused by the project and any offsets or actions to mitigate emissions (see Appendix A);
- Methods for storage, handling, containment and emergency management of chemicals and other hazardous substances (including fuel); and
- Rehabilitation objectives for the site beyond the intended use.

## **5 Alternatives**

Alternatives to the proposal must be discussed in sufficient detail to enable an understanding of the reasons for preferring certain options and rejecting others.

Alternatives to be discussed must include, but are not limited to:

- Not proceeding with the proposal;
- Site selection, including other sites considered and an analysis of local social and economic impacts;
- Alternative water management practices to decrease demands on drinking water; and
- Environmental management techniques.

## **6 Risk Assessment**

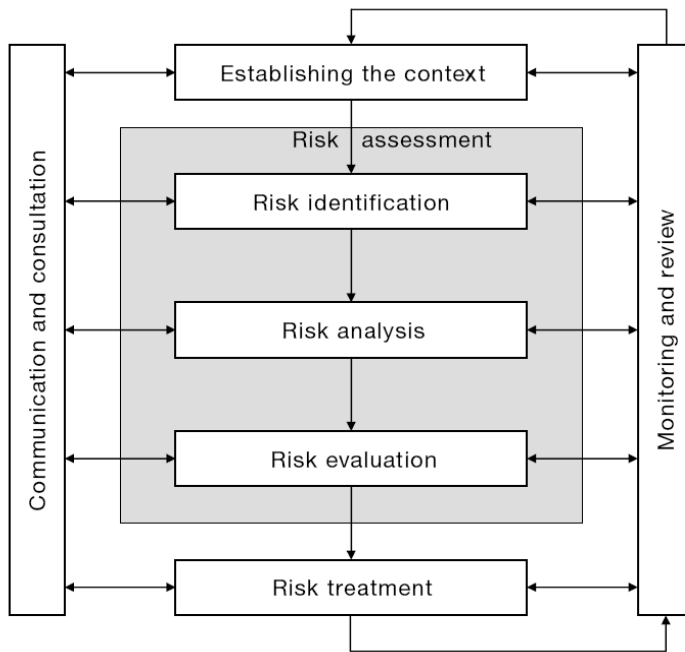
Project planning should aim to ensure best practice environmental management, with particular regard to the principles of ecologically sustainable development.

The risk assessment should be based on international best practice and undertaken using standardised methodologies including:

- AS/NZS ISO 31000:2009: Risk management - Principles and Guidelines (Standard)
- HB 203:2006: Environmental risk management - Principles and process (Guide)
- HB 158:2010: Delivering assurance based on ISO 31000:2009 - Risk management - Principles and Guidelines (Guide)

Risk is defined as the chance of something happening that will have an impact on objectives, or the effect of uncertainty on objectives. Environmental risks include risks to both humans and ecosystems. An iterative process of continual improvement should be developed and applied, such that controls implemented may include alteration of Project components or design (as shown in Figure 1).





**Figure 1. Risk Assessment Process.**

Specifically, the proponent is required to:

- Demonstrate that risks to the environment, people and nearby facilities associated with the Project will be managed effectively during the construction, commissioning, operation, and decommissioning of the development.
- Acknowledge and discuss the full range of risks presented by the proposed action, including those of special concern to the public.
- Quantify (where possible) and rank risks so that the reasons for proposed management responses are clear.
- Acknowledge levels of uncertainty about estimates of risk and the effectiveness of risk controls.
- With the intent of creating realistic community expectations, evaluate risks of the Project not realising its projected economic / social benefits.
- Identify and discuss residual risks (risks remaining once risk management strategies have been implemented) and potential environmental impacts expected to affect the community over the life of the project.

Information provided should permit the reader to understand the likelihood of the risk, its potential severity, and any uncertainty about the effectiveness of controls. If levels of uncertainty do not permit robust quantification of risk, then this should be clearly acknowledged.

## 7 Key risks

The key risks below have been identified through analysis by the Northern Territory Government of the Notice of Intent (NOI) for the Meat Processing Facility Project. It is expected that further risks will be identified by the proponent in the environmental impact assessment process. Key risks identified include:

Water resources:

- Significant consumption of Darwin water supply;
- Management of effluent and stormwater on site may lead to changes in surface water quality, leaching into aquifers and pollution of downstream environments.

Land management:

- Risks of impacting on the integrity of the soil due to irrigation activities.
- Risk of introducing weeds species to the site and the region.

Community health and amenity:

- Risks to health and amenity through odour, noise, light, dust, mosquitoes and vermin; and
- Risks to traffic and rail safety through increased traffic.

In addition to key risks outlined above, the following issues should be addressed:

- Risks of disturbance to historical sites;
- Climate change impacts; and
- Solid waste management.

### 7.1 Water Resources

#### 7.1.1 Significant draw on Darwin's water supply

##### Outcome

Proven efficient water management systems are to be developed and incorporated into the design of the facility to reduce impacts on Darwin's potable water supply.

##### Context

The notice of intent (NOI) outlined that at peak operating capacity the water consumption of the facility would be approximately 2 ML per day. This volume represents a significant draw on the potable Darwin water supply and best practice water use practices are required to minimise impacts.

## **Information requirements**

- Identify and incorporate into the facility design measures to improve water efficiency;
- Identify internal reuse options for treated effluent (e.g. dust suppression, use of treated effluent for washdown, etc);
- Provide a detailed water balance that represents each of the waste water streams and accounts for water inflow and subsequent reporting to effluent treatment systems including details of where losses or deficits may occur.
- With reference to information requirements for section 7.2 below, identify any requirement for use of drinking water to supplement irrigation water supplies in years of low rainfall.

### **7.1.2 Impacts on surface and ground water.**

#### **Outcome**

The proponent will demonstrate that stormwater and effluent treatment systems are adequate, climate appropriate and will have minimal if any impacts on surface and ground water quality and downstream environments.

#### **Context**

The proposed site for the facility contributes to the catchment of Berry Creek with three onsite streams. Berry Creek supports Lake Deane and Berry Springs Nature Reserve, which are popular attractions for recreational water sports, fishing and swimming. The creek system also supports high conservation value, sensitive vegetation communities such as riparian forest and monsoon rainforest.

#### **Information Requirements**

- Define the magnitude of rainfall events the facility is designed to accommodate without offsite losses and the frequency of design maximum rainfall events. Include:
  - Wastewater treatment systems;
  - Effluent and stormwater storage facilities: design of storage ponds to prevent infiltration to groundwater, including availability of construction materials;
  - Capture and treatment of water from cattle holding yards; and
  - Covering of compost areas.
- Assess the risk of offsite impacts to ground and surface water (and associated ecosystems) for rainfall events greater than the design maximum. Determine the frequency of offsite runoff occurring and

provide an estimate of physical and chemical contaminants (including weed seeds) present in runoff and their likely impacts.

- Identify potential sites of infiltration of treated effluent to groundwater, including, but not limited to, storage facilities and irrigated areas. Identify control measures to prevent infiltration to groundwater.
- Develop a water quality monitoring plan that includes characterisation of the physical and chemical contaminants present in stored waters (effluent and stormwater), including monitoring sites and parameters (nutrients, pathogens, algae) to inform reporting obligations in the event of overflows.
- Provide an analysis of the potential for toxic algal blooms in effluent and stormwater holding ponds and the potential for dispersion through irrigation infrastructure. Identify associated health or environmental impacts and any controls or mitigation methods required.
- Define concentrations of contaminants present in waters to be used for irrigation considered acceptable to achieve land management objectives and outline responsive action if contaminants are measured above these levels (see 7.2, below).
- Identify environments that could be impacted by uncontrolled discharge. Provide a comprehensive biological inventory of those environments to serve as a baseline for measuring any impacts that might occur as a result of the abattoir.
- Develop a monitoring program that includes sampling of suitable biodiversity indicators to measure the health of the aquatic and associated ecosystems within the catchment for Berry Creek and include response actions to any changes that may occur.

## **7.2 Land management**

### **Outcome**

Land management and irrigation practices shall not adversely impact or degrade soils or groundwater resources. Weeds will be controlled to prevent the spread to surrounding areas.

### **Context**

The proposed irrigation of nutrient rich effluent water onto fodder crops has the potential to impact on soil integrity and groundwater resources. Risks to the soils associated with this proposal include structure decline, sodification, salinisation, chemical contamination and erosion.

Ground water is utilised by surrounding properties for domestic use and drinking water.

Weeds have the potential to be introduced to the site and surrounding properties by cattle and trucks. Any weeds on site may need control measures in place to prevent further spread.

### **Information requirements**

- Identify the consequences of relatively low annual rainfall on the management of crops (management of water deficit);
- Define concentrations (according to applicable guidelines) of contaminants present in waters to be used for irrigation considered acceptable to achieve land management objectives and outline responsive action if contaminants are measured above these levels (see 7.1, above);
- Discuss the scientific reasoning behind fodder crop choice;
- Demonstrate that the effluent irrigation system will maintain or improve the capacity of the land to grow plants and will result in no deterioration of land quality through soil structure degradation, salinisation, water logging, chemical contamination or soil erosion;
- Outline treatment options if effluent parameters do not support irrigation (i.e. pH, salinity, algae, bacteria) (see information requirements for 7.1, above). Provide detail on any pesticides to be used on crop production and outline storage and safe disposal of pesticides;
- Identify weed prevention methods on site to prevent introducing weed species to the site, waterways, and surrounding properties. Include manure and stormwater as potential sources;
- Provide a control plan for weed species present on site and those which may be introduced;
- Develop a comprehensive Erosion and Sediment Control Plan (ESCP) that includes detailed control measures for construction and operational phases.

### **7.3 Community health and amenity**

#### **Outcome**

Operation of the facility will not unduly impact community amenity or cause detrimental effects to the health of residents or the environment.

#### **Context**

The proposed project has the potential to cause community and environmental health impacts given its proximity to residential properties and sensitive receiving environments. Residents have expressed concern over the adequacy of controls to manage environmental issues. Of particular concern were odour, dust, noise, light, traffic safety and insects and vermin.

### **Information requirements**

- Show treatment measures to reduce impacts of noise, odour and dust on neighbouring properties.
- Outline measures to mitigate unacceptable impacts on sensitive receiving premises (odour, dust, light, noise), including procedures for response to community complaints when the facility is operational.

#### Odour:

- Identify the materials to be used in the odour control Bio filter, maintenance requirements and susceptibility to failure through climatic extremes (e.g. high rainfall and waterlogging).
- Identify all likely sources of odour (point and diffuse) and identify any likely impacts of odour on the nearest sensitive receivers, taking into account climatic conditions (seasonal variations, wind direction etc) in order to demonstrate minimal impact and to demonstrate the effectiveness of the proposed management measures. Monitoring measures should be described and contingency plans developed.

#### Noise:

- Measure current ambient noise levels during day and night and develop a noise management plan that ensures the cumulative noise levels from all aspects of the site do not cause nuisance or environmental health issues through noise pollution.

#### Dust:

- Identify the potential for dust generation from intended stockpiles, livestock trucks, construction phase and harvested crop zones. Outline techniques for mitigating dust issues.
- Detail the potential for creating health issues in the receiving community.

#### Light:

- Detail the proposed lighting layout and determine where light spill onto neighbouring properties may occur or affect neighbours. Indicate intended treatment options if light spill becomes a nuisance.

#### Biting insects and vermin:

- Demonstrate control measures for mosquito breeding and vermin on the site;
- Demonstrate that manure storage methods will not provide a breeding source for flies and insects (store manure undercover); and
- Outline the management plan for insect and vermin infestation.

#### Traffic:

- Indicate the intended treatment of the intersection, access road and rail crossing to address safety concerns.

## **7.4 Other issues**

### **7.4.1 Solid waste management**

The facility is expected to produce solid wastes from a number of activities such as hide curing and salt evaporation, composting of manure and paunch materials and the sludge removed from effluent treatment ponds. Sustainable management of these solid wastes is important to ensure no adverse impacts on the environment occur.

- Provide details of the amount of salt to be used during the hide curing process and proposed disposal or reuse methods for the salt recovered from the hide curing process;
- Outline the proposed treatment methods for the composting area to minimise susceptibility to climatic conditions (e.g. assess the need for coverage of compost areas);
- Discuss the methods for pond sludge removal and treatment or disposal;
- Identify the necessity for establishing contingency plans for catastrophic events such as disease outbreak and mass carcass disposal.

### **7.4.2 Heritage Protection**

A number of sites of historical significance are situated onsite and nearby the proposed facility. The WWII Livingstone Airfield, Camp and Anti-Aircraft Gun sites are located near the proposed facility. These sites are not declared Heritage Places on the NT Heritage Register, but are deemed to hold historical value. The WWII Livingstone Airfield and Camp have been assessed previously, but were not recommended for listing. The Anti-Aircraft Gun site was not included in that assessment. Although the building plans indicate there is to be no building near this site, it should be protected from disturbance.

#### **Information requirements**

- Document the Anti- Aircraft Gun site in the south west of the site.
- Outline intended treatment of the wetland areas in the southwest of the site.

### **7.4.3 Greenhouse gas production**

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 will help fulfil the objective of minimising greenhouse gas emissions from the NT into the future.

- Estimate greenhouse emissions according to Appendix A, include calculations of fugitive emissions of methane and other greenhouse gases from the effluent treatment system, in particular anaerobic

ponds. Discuss the advantages of covering the ponds for capture of gases.

## **8 Environmental Management**

Specific safeguards and controls, which are proposed to be employed to minimise or remedy environmental impacts identified in previous sections, are to be included in an Environmental Management Plan (EMP) or similar plan.

The EMP should be strategic, describing a framework for environmental management of the proposal and the property; however, as much detail as is practicable should be provided to enable adequate assessment of the proposed activity. Where possible, specify the management practices and procedures to be included in the EMP.

Where practicable, the EMP should include:

- The proposed management structure of the operation and its relationship to the environmental management of the site;
- Management targets and objectives for relevant environmental factors;
- The proposed measures to minimise adverse impacts and maximise opportunities, including environmental protection outcomes;
- Performance indicators by which all anticipated and potential impacts can be measured;
- Proposed monitoring programs to allow early detection of adverse impacts;
- Information on how the land will be managed if it is taken out of production;
- A summary table listing the undertakings and commitments made in the PER, including clear timelines for key commitments and performance indicators, with cross-references to the text of the PER; and
- Provision for the periodic review of the EMP itself.

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

The EMP would continue to be developed and refined following the conclusion of the assessment process, taking into consideration the proposed timing of development activities, comments on the PER and incorporating the Assessment Report recommendations and conclusions.



## 9 Public involvement and consultation

The PER has an important role in informing the public about this proposal. It is essential that the proponent demonstrate how any public concerns were identified, and will influence the design and delivery of the proposal. Public involvement and the role of government organisations should be clearly identified. The outcomes of any surveys, public meetings and liaison with interested groups should be discussed including any changes made to the proposal as a result of consultation. Details of any ongoing liaison should also be discussed.

An outline of negotiations and discussions with local government and the Northern Territory Government should be provided.

## 10 NT Policy and guidance notes

### 10.1 Greenhouse gas emissions and climate change guidelines

The Northern Territory Government's objective for considering future climate change in the assessment process is to ensure projects and developments are planned taking climate change science and projections into account, to minimise future environmental, social and economic costs and take advantage of any opportunities.

The Environmental Impact Assessment Guide (Appendix A) aims to assist proponents in providing the information needed by the Department of Natural Resources, Environment, the Arts and Sport (NRETAS) to assess the impact of greenhouse gas emissions from proposed projects and assess other potential impacts from proposed projects under projected future climatic conditions under the Northern Territory *Environmental Assessment Act*.

### 10.2 Environmental offsets

The Draft NT Environmental Offsets Policy provides guidance on when and how offsets should be incorporated into development proposals so that there is no net loss of environmental quality. Offsets are designed to compensate for significant residual damage that cannot be avoided, reduced or mitigated at reasonable cost at the development site. The draft NT Environmental Offsets Policy is available at [www.greeningnt.nt.gov.au/climate/environmental\\_offsets.html](http://www.greeningnt.nt.gov.au/climate/environmental_offsets.html). Consideration of proposed activities or projects that could be implemented to offset the residual detriment should be discussed with the NRETAS Offsets Group.

The PER should provide information on:

- Any identified impacts or detriments that cannot be avoided, reduced or mitigated at reasonable costs; and.
- Risks of failure of management actions (such as rehabilitation, weed control, etc.) and uncertainties of management efficacy should be identified.

### **10.3 Biodiversity and natural resource guidelines**

NRETAS has developed standardised methodologies for surveying terrestrial vertebrate fauna and flora in the Northern Territory (available upon request). Proponents should use these methodologies when conducting fauna and flora surveys or a suitable alternative such as [www.environment.gov.au/epbc/guidelines-policies.html](http://www.environment.gov.au/epbc/guidelines-policies.html).

For any vegetation surveys reference should be made to the Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping (Brocklehurst et al. 2007), Guidelines for Surveying Soil and Land Resources (McKenzie et al. 2008 (eds.)) and The Australian Soil and Land Survey Handbook (NCST, 2009) for further discussion of the techniques and requirements associated with particular scales of mapping.

### **10.4 Erosion and sediment control guidelines**

It is important that the Proponent comprehensively addresses the need for erosion and sediment controls, sediment capture, runoff collection and storm water drainage, dust control, etc. as described in the NT Erosion and Sediment Control Guidelines to ensure best practice: [www.nt.gov.au/nreta/natres/soil/management/index.html](http://www.nt.gov.au/nreta/natres/soil/management/index.html).

### **10.5 Public health premises and food premises**

If shops or accommodation facilities are to be provided on the project site, Northern Territory Department of Health (DOH) will require detailed plans submitted via a building certifier, prior to construction, for any future public health or food premises built on the proposed lots. This would include food businesses, public accommodation, swimming pools, childcare centres etc.

### **10.6 Water supply**

The provision of an adequate potable water supply needs to be provided for work places. All water supplies collected from groundwater must be at least 100 metres from any effluent drainage system or other water bodies as described in the *NT Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent (The Code)*.

### **10.7 Wastewater**

If an existing effluent treatment system at the site is to be used to treat effluent, written certification will be required from a suitably qualified hydraulic consultant, stating that the existing effluent disposal system has the capacity to handle the extra load in accordance with the Code.

If a new effluent treatment system is to be installed to treat effluent, DOH requires a notification to install a waste water treatment system outside of a building control area. Any waste water treatment system(s) installed on-site shall be capable of collecting, treating and disposing of waste water on-site in accordance with the Code.

It should be noted that if the daily waste water flow exceeds 22kL/day or a capacity of 150EP an application for recycled water systems will be required. All waste water from ablution facilities shall be directed to the waste water treatment system.

Further information can be found at:

[http://www.health.nt.gov.au/Environmental Health/Wastewater Management/index.aspx](http://www.health.nt.gov.au/Environmental_Health/Wastewater_Management/index.aspx)

Any discharge of wastewater will require a Waste Discharge Licence under the *Water Act 1992*. Guidance and application forms can be found at the following site: [www.nt.gov.au/nreta/environment/licences/guides.html#water](http://www.nt.gov.au/nreta/environment/licences/guides.html#water).

### **10.8 Solid waste storage and disposal**

Disposal of waste should be conducted in such a way as to avoid potential public health nuisances and environmental pollution.

### **10.9 Guidelines for the prevention of mosquito breeding**

Guidelines exist for the prevention of creating breeding conditions for mosquitoes through appropriate design of wastewater treatment facilities. Where possible the proponent is to adhere to the relevant sections of these guidelines.

Relevant guidelines:

- *Policy for the design of off- site sewage ponds and disposal of refuse of sewerage pond effluent*
- *Recommendations for the design details of sewage pond effluent refuse or disposal facilities to prevent mosquito breeding*
- *Guidelines for preventing the creation of mosquito breeding sites in non-residential rural subdivisions or developments*
- *Mosquito breeding and sewage pond treatment in the NT*

Available from

[http://health.nt.gov.au/Medical Entomology/Publications/Development Guidelines/index.aspx](http://health.nt.gov.au/Medical_Entomology/Publications/Development_Guidelines/index.aspx)

## **Appendix A**

### **NT ENVIRONMENTAL IMPACT ASSESSMENT GUIDE:**

### **GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE**

**(updated December 2011)**

#### **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 will help fulfil the objective of minimising greenhouse gas emissions from the NT into the future.

The Northern Territory Government's objective for considering future climate change in the assessment process is to ensure projects and developments are planned taking climate change science and projections into account, to minimise future environmental, social and economic costs and take advantage of any opportunities.

This Guide aims to assist proponents in providing the information needed by the Department of Natural Resources, Environment, the Arts and Sport (NRETAS) to assess the impact of greenhouse gas emissions from proposed projects and assess other potential impacts from proposed projects under projected future climatic conditions under the Northern Territory *Environmental Assessment Act*.

#### **GUIDANCE**

##### **Emissions estimates**

Note that the Australian Government is establishing a national carbon pricing mechanism (the Clean Energy Future legislative package) which, while not coming into effect until July 2012, may have implications for some proponents. More information on the Clean Energy Future legislative package is available at [www.cleanenergyfuture.gov.au/clean-energy-future/an-overview-of-the-clean-energy-legislative-package/](http://www.cleanenergyfuture.gov.au/clean-energy-future/an-overview-of-the-clean-energy-legislative-package/)

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 Committee or another national or internationally agreed methodology. See: [www.climatechange.gov.au/climate-change/emissions](http://www.climatechange.gov.au/climate-change/emissions) for access to the National Greenhouse Accounts Factors which may assist.

For emissions from clearing of vegetation, emissions estimates are to be calculated using the National Carbon Accounting Toolbox, or another nationally recognised methodology. For more information see: [www.climatechange.gov.au/government/initiatives/ncat](http://www.climatechange.gov.au/government/initiatives/ncat)

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 Project, proponents are encouraged to place the estimated greenhouse gas emissions from the Project into a national and global context. Information on Australia's national emissions profile can be obtained from the Department of Climate Change at [www.climatechange.gov.au/government/initiatives/national-greenhouse-accounts](http://www.climatechange.gov.au/government/initiatives/national-greenhouse-accounts)

International emissions can be seen at the United Nations Framework Convention on Climate Change (UNFCCC) website at [http://unfccc.int/ghg\\_emissions\\_data/items/3800](http://unfccc.int/ghg_emissions_data/items/3800)

### **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) Whilst recognising the voluntary carbon market and the Clean Energy Future carbon pricing mechanism, 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.

### **Offsets**

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. The Australian Government has developed a National Carbon Offset Standard (see: [www.climatechange.gov.au/en/government/initiatives/national-carbon-offset-standard](http://www.climatechange.gov.au/en/government/initiatives/national-carbon-offset-standard)).

Measures that offset emissions within the NT are strongly encouraged, and NRETAS staff can discuss possible options with proponents. Proposed emissions offsets projects should include an estimate of greenhouse gas emissions savings that will be achieved through implementation.

### **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.

The Australian Government has established a nationally consistent framework for greenhouse and energy reporting by industry. Projects with significant emissions are required to report their emissions under the *National Greenhouse and Energy Reporting Act 2007*. Data reported through the system will underpin the Clean Energy Future carbon pricing mechanism. For more information see

[www.climatechange.gov.au/government/initiatives/national-greenhouse-energy-reporting](http://www.climatechange.gov.au/government/initiatives/national-greenhouse-energy-reporting)

### **Impacts of climate change**

Climate change is projected to result in changes to sea level, land and sea temperatures, cyclone intensity, frequency of fire, weather, and frequency of extreme weather events including storms, drought and flood.

Proponents should discuss how projected climate change has been taken into account in planning the Project, and how climate change is expected to affect the Project over its stated lifetime. Proponents should discuss how climate change-related risks (for example, risk of failure of Project infrastructure during potential extreme weather events) will be managed.

Potential impacts of climate change on the surrounding environment including water, land, biodiversity and ecosystems, coastal zones, and the social environment should also be taken into account in Project planning.

In assessing climate change risk, proponents should be guided by recent projections published by organisations such as the CSIRO, the Bureau of Meteorology (BoM), and the Intergovernmental Panel on Climate Change. For the latest CSIRO and BoM projections for Australia, see:

[www.climatechangeinaustralia.gov.au](http://www.climatechangeinaustralia.gov.au)

## 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).

**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, NRETAS will take a common sense approach on a case by case basis in the interim. To assist proponents, NRETAS 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 Potential (GWP) factors**

Greenhouse Gas	Global Warming Potential
Carbon dioxide (CO <sub>2</sub> )	1
Methane (CH <sub>4</sub> )	21
Nitrous oxide (N <sub>2</sub> O)	310
Perfluorocarbons (CF <sub>x</sub> )	6,500 – 9,200
Hydrofluorocarbons (HFCs)	140 - 11,700
Sulphur hexafluoride (SF <sub>6</sub> )	23,900

Greenhouse gas emissions expressed in carbon dioxide equivalent (CO<sub>2</sub>-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 in its 4<sup>th</sup> Assessment Report, 2007, see [http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1\\_Print\\_Ch02.pdf](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Ch02.pdf)