

# **Guidelines for Preparation of an Environmental Impact Statement**

## **Pastoral Land Clearing Gorrie Station (NT Portion 4965, PL1173)**

### **Harding Pastoral Company**

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## **1 INTRODUCTION**

The Northern Territory Minister for Natural Resources, Environment and Heritage (the Minister) has determined that the proposal to clear approximately 1800 Ha of native vegetation on NT Portion 4965, PL 1173 Gorrie Station requires formal assessment under the NT *Environmental Assessment (EA) Act* at the level of an EIS. Issues of concern contributing to this decision include:

- The greenhouse gas emissions of the clearing proposal;
- The lack of information on flora and fauna and sites of conservation significance;
- The potential for down-gradient impacts of clearing on known potential habitat for species listed under the *Environment Protection and Biodiversity Conservation Act*, and wetlands described as having regional significance;
- The need to evaluate at a local scale the potential for hydrological changes to increase the risk of dry land salinity on the property; and
- The realistic net benefits of the proposal after consideration of the costs to the environment.

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

## **2 GENERAL ADVICE ON EIS**

### **2.1 GENERAL CONTENT**

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

The EIS should enable interested stakeholders and the Minister to understand the environmental consequences of the proposed development. Information provided in the EIS should be objective, clear, and succinct and, where appropriate, be supported by maps, plans, diagrams or other descriptive detail. The body of the EIS 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 EIS.

The level of analysis and detail in the EIS 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.

## **2.2 FORMAT AND STYLE**

The EIS 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 EIS. 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 draft EIS, 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 draft EIS as a whole.

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

The appendices must include:

- A copy of these guidelines;
- A list of persons and agencies consulted during the EIS;
- Contact details for the proponent;
- The names of, and work done by, the persons involved in preparing the EIS; and
- The expertise of the people involved in work contributing to the EIS.

The EIS 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 “web” pages used as data sources. All referenced supporting documentation must be available upon request.

The EIS 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.

## **2.3 ADMINISTRATION**

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

The EIS should be provided on CD/DVD in ADOBE \*.pdf format for placement on the NRETAS internet site (Executive Summary, Chapters and Appendices separate). Additionally, two Microsoft Word copies of the Draft EIS should be

provided to facilitate production of the Assessment Report and Recommendations.

The draft EIS is to be advertised for review and comment in the *NT News* and *Katherine Times*.

The EIS should be made available for public review at:

- Environment, Heritage and the Arts Division (Dept. Natural Resources, Environment, the Arts and Sport), 2nd Floor, Darwin Plaza, 41 Smith Street Mall, Darwin;
- Department of Regional Development, Primary Industry, Fisheries and Resources, Katherine Research Centre;
- NRETAS Katherine - Randazzo Arcade, 16 Katherine Tce, Katherine;
- Northern Territory Library (NTL), Parliament House, Darwin;
- The Environment Centre NT, Unit 3, 98 Woods St, Darwin;
- Environment Hub, Rapid Creek (Shop 9 Rapid Creek Business Village, Pearce Place, Millner)
- Katherine Town Council Public Library (telephone: 8972 5500); and
- NT Cattlemen's Association, 1 Buffalo Court, The Gardens, NT, 0800

### **3 GENERAL INFORMATION**

This should provide 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 such as the Stuart Highway and regional community centres, and sensitive environments such as major waterways including creeks or tributaries, wetlands, springs, significant patches of native vegetation, significant groundwater resources 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**

All clearing works and management elements of the proposed action must be described.

Details should include the proposed location/s of clearing activities, clearing techniques, date or time period over which clearing, follow-up works, sowing,

grazing and any management activities are expected to take place, and elements of the action that may have impacts on identified environmental factors.

Aspects to be covered include:

- An explanation of the objectives, benefits and justification for the action. For example, describe the changes to stock numbers, cattle performance and the increased load on station management that would be expected because of this development;
- An overall layout of the proposed action including buffers and wildlife corridors;
- Schedule or timeline for all relevant aspects of the proposal (for example, clearing, burning, sowing, grazing and regrowth control strategies) and the staging of these aspects in the areas proposed to be cleared;
- Tenure/s under which the proposal would be held and any Native Title issues;
- Relevant National and Northern Territory legislation, standards, codes of conduct and guidelines;
- Employment and business opportunities (direct and indirect), including sources of workforce, skill levels required and opportunities for local people and businesses;
- Methods for storage, handling, containment and emergency management of chemicals and other hazardous substances (including fuel); and
- The intentions for the cleared area if the proposed use becomes untenable.

## **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:

- Not proceeding with the proposal, ie, grazing cattle on uncleared land;
- Clearing methods;
- Establishment of native grass species rather than exotics;
- Scale of clearing;
- Configuration of cleared areas, buffers and wildlife corridors; and
- Environmental management techniques.

## **6 KEY RISKS**

### **6.1 EFFECTS OF LANDCLEARING**

The proponent must demonstrate that the development can be undertaken in a sustainable manner. Ecosystem function of adjoining vegetation communities should not be affected. Degradation of the adjacent environment should not occur as a consequence of this development.

### **6.1.1 Context**

Clearing of native vegetation can lead to:

- Loss of biodiversity through damage/destruction of significant vegetation communities and native wildlife habitats;
- Loss of genetic diversity by isolating populations and restricting dispersal;
- Loss of landscape connectivity and refuge areas;
- Increased erosion through exposure of soil to wind and water;
- Reduced water quality;
- Changed hydrologic conditions leading to salinisation of water and soils;
- Increased potential for weed invasion and spread;
- Disruption of nutrient cycling; and
- Increased emissions of greenhouse gases to the atmosphere.

### **6.1.2 Information Requirements**

The following factors as they relate to this proposal must be examined.

#### *6.1.2.1 Soils and topography*

- Describe the soil types of the development area and adjacent land within the property, and provide evidence of their suitability for the intended use of the land.
- Outline the physical properties (e.g. particle size, organic matter content, porosity, hydraulic conductivity) and chemical properties (e.g. pH, electrical conductivity, chloride concentration, sodicity) of these soils through the soil profile.
- Include a map of soil types/land units and topography if possible.
- Describe the slope as a percentage within the development area and indicate any variability.
- Discuss any constraints associated with soils and/or topography in the development area.
- Describe methods that may be employed to reduce grazing-induced degradation of the soil resource, ie, minimising impacts to soil structure and soil fauna.
- Discuss erosion and sedimentation potential and methods to mitigate this potential. To help with this, the NT Erosion and Sediment Control guidelines can be sourced at the following website address:  
(<http://www.nt.gov.au/nreta/natres/soil/management/index.html>).

#### *6.1.2.2 Water*

- Characterise the local and regional surface and groundwater systems and determine their interaction within the subcatchment and main catchment.
- Include monthly averaged rainfall and evaporation data for the locality including evapotranspiration rates typical for the dominant vegetation community and the proposed pasture species.

- Any potential for hydrologic impacts as a result of the development should be described. Potential impacts may include water quality degradation, loss of wetlands, concentrated runoff, rising water table, etc.
- Outline any plans to mitigate or offset these impacts.

#### 6.1.2.3 Biodiversity

- Biodiversity (plants and animals) within the property and the proposal's potential implications for both local and regional biodiversity must be described, in particular, listed species under the *Territory Parks and Wildlife Conservation Act* (TPWC Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- The above species should be determined through a flora and fauna survey of the property and any adjacent significant or sensitive vegetation<sup>1</sup>.
- Describe the conservation status (ie classification) of species surveyed or listed for the area and any management programs, plans or strategies currently in place for relevant species.
- Identify the threatening processes for listed species at a local, regional and national scale.
- Determine any additional potential threatening processes from the proposed action (land clearing and future land use) and how these processes may interact to affect local and regional biodiversity.
- Describe how habitat connectivity may be affected by the project and detail how the development design will maximise the potential for connectivity through the landscape.
- Discuss the opportunities for establishing conservation agreements, in accordance with s.74 of the *Territory Parks and Wildlife Conservation Act*,

#### 6.1.2.4 Weeds

- List the weed species on the property and surrounds and the extent of infestation.
- Discuss the potential for weed introduction and/or spread in the development, including the potential for introduced pasture species to spread into uncleared native vegetation.
- Describe strategies to prevent potential weed introduction and to control weed spread.

#### 6.1.2.5 Chemical use

- Discuss whether any chemical herbicides will be used for weed and regrowth control for this development;
- If herbicides will be used, provide details on their active constituents, relevant application rates, target species effects (based on application rates), persistence and toxicity in the environment and potential impacts to ground and surface water, known direct effects to non-target flora and fauna species

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<sup>1</sup> Significant or sensitive vegetation communities include rainforest, vine thicket, closed forest, wetlands or riparian vegetation.

and information on the environmental testing regimes for the product/s if available.

#### 6.1.2.6 *Other constraints to development*

- The proponent should be aware of their obligations under the *Heritage Conservation Act 1991*, in regard to prescribed archaeological places and objects. All prescribed archaeological places and objects, for example stone tools, shell middens and rock art sites, are automatically protected, regardless of whether they have been recorded previously or not. It is an offence under the Act to disturb or remove prescribed archaeological places or objects without a permit. Should any archaeological materials be unearthed during works for this development, the proponent or their contractor should cease all works immediately and contact the Heritage Branch [Telephone (08) 8999 5036];
- The proponent is to contact the Aboriginal Areas Protection Authority [Telephone (08) 8981 4700; fax (08) 8981 4169; or email [enquiries.aapa@nt.gov.au](mailto:enquiries.aapa@nt.gov.au)] to determine whether sacred site clearance is required under the *Northern Territory Aboriginal Sacred Sites Act*;
- Economic considerations should be outlined, such as commodity prices, input costs, etc and the implications of economic variability to the viability of the action and to ongoing environmental management at the site. Discuss how the clearing will improve grazing productivity relative to current grazing conditions and still remain productive and sustainable into the longer term. Examine the environmental costs (eg. loss of carbon storage service) of the land clearing proposal to provide a realistic account of the net benefits, particularly to the broader community.

## 6.2 GREENHOUSE GAS EMISSIONS

The proponent must demonstrate an understanding of anthropogenic climate change and the contribution that vegetation clearing has to this issue. The development must be justifiable in this context.

### 6.2.1 Context

The NT Government recognises that climate change is a serious environmental threat with significant social and economic impacts. The NT Government is committed to minimising the Territory's greenhouse gas emissions, including through better land clearing controls. This commitment recognises that vegetation clearing contributes significantly to greenhouse gas emissions from the Territory through the loss of stored carbon from existing vegetation and emissions of carbon dioxide, methane and nitrous oxide from the burning and decaying of cleared vegetation.

Climate change as a result of greenhouse gas emissions 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.

### 6.2.2 Information Requirements

#### 6.2.2.1 *Greenhouse gas emission estimates*

A preliminary estimate of greenhouse gas emissions from the proposed clearing was made previously by NRETAS based on information available in the initial

application, to aid in the determination of the proposal's significance. This estimate was calculated using the FullCAM Carbon Accounting Model, developed as part of the National Carbon Accounting System (NCAS), the Australian Government's world-leading system to account for greenhouse gas emissions from land based sectors.<sup>2</sup>

In order to refine the estimate at this formal assessment stage, the proponent must provide NRETAS with site-specific information from which a more accurate estimate can be calculated. The information required is as follows:

- An accurate calculation of the total area to be cleared;
- Identification of vegetation types and their extent within the area to be cleared at a finer scale to aid in refining greenhouse gas emissions;
- Identification of the soil type(s) and their extent in the area to be cleared;
- Provide a clear and appropriately scaled map identifying the areas to be cleared, providing geographical coordinates in decimal degree format for all corners of the clearing polygon(s);
- Provide an estimate of above-ground-biomass (AGB) per hectare for each of the vegetation types or land units proposed to be cleared. Measurements of all trees in at least three 50m x 50 m plots per vegetation type or land unit proposed to be cleared should be included in calculations. All calculations should be shown. Proponents are referred to the following publication for an acceptable methodology for developing an estimate of AGB per hectare: Richard J. Williams, Ayalsew Zerihun, Kelvin D. Montagu, Madonna Hoffman, Lindsay B. Hutley and Xiaoyong Chen (2005). Allometry for estimating aboveground tree biomass in tropical and subtropical eucalypt woodlands: towards general predictive equations. *Australian Journal of Botany* 53: 607-619. This is available at: <http://www.publish.csiro.au/nid/66/issue/1049.htm>;
- Describe in detail the proposed timing and method of clearing, including the intensity and timing of any proposed burning of cleared vegetation, planned timing of the introduction of any pasture or crop, and planned timing for the commencement of grazing;
- Describe in carbon-dioxide equivalent terms the increase in greenhouse gas emissions generated by any planned increase in number of grazing stock on the property after the proposed clearing. Methane (CH<sub>4</sub>) production from enteric fermentation in cattle is a major contributor to agricultural greenhouse gas emissions. Emissions from cattle are estimated to be around 60kg CH<sub>4</sub>/head/year for a range of cattle classes and live weights, which equates to 1.26 tonnes CO<sub>2</sub>-equivalent/head/year. More information can be found at [http://www.nt.gov.au/d/Content/File/p/Climate\\_Change/CCFS03.pdf](http://www.nt.gov.au/d/Content/File/p/Climate_Change/CCFS03.pdf) and [http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4\\_Volume4/V4\\_10\\_Ch10\\_Livestock.pdf](http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_10_Ch10_Livestock.pdf), in particular in Table 10.11; and
- Describe any proposed measures that might minimise or delay emissions, including carbon sink enhancement actions.

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<sup>2</sup> For more information see <http://www.climatechange.gov.au/ncas/>

The above information should be provided to NRETAS well in advance of EIS publication so that refined emissions estimate(s) can be generated by NRETAS using FullCAM and included in the EIS for public review.

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 Territory and national context in the EIS. Information on the Territory's and Australia's emissions profiles can be obtained from the Department of Climate Change at <http://www.climatechange.gov.au/inventory/>.

#### *6.2.2.2 Impacts of climate change*

Proponents should discuss how projected climate change has been taken into account in planning the proposal, and how climate change is expected to affect the proposal over its stated lifetime. Proponents should discuss how climate change-related risks (for example, risk of impacts on projected enterprise productivity due to increased frequency of very hot days, or risk of erosion due to increased likelihood of 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 proposal 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: <http://www.climatechangeinaustralia.gov.au>.

#### *6.2.2.3 Offsets*

Offsetting refers to compensating for emissions through the creation or purchasing of "carbon credits" or "offsets" generated by projects that cause a reduction in greenhouse gas emissions elsewhere. The Australian Government is in the process of developing a National Carbon Offset Standard, which is proposed to apply to offsets in the voluntary offsets market, meaning those that are not part of the Carbon Pollution Reduction Scheme or another emissions trading scheme. More information about these issues is available at <http://www.climatechange.gov.au>.

Any proposed voluntary offsets should be detailed. Location of offsets projects within the NT is encouraged. NRETAS staff can discuss possible options with proponents. Proposed voluntary offsets projects should include an estimate of greenhouse gas emissions savings that will be achieved and discussion of whether and how the offset is likely to meet the prospective National Carbon Offset Standard.

## **7 ENVIRONMENTAL MANAGEMENT**

Specific safeguards and controls, which are proposed to be employed to minimise or remedy environmental impacts identified in Section 6, are to be included in the Property Management Plan (PMP).

For the purposes of the EIS, the PMP should be strategic, describing a framework for 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 during the public exhibition phase. Where possible, specific management practices and procedures should be included in the PMP.

The PMP should, as a minimum, consider the relevant information provided in the NRETAS draft Native Vegetation Clearing Guidelines 2009.

The PMP must incorporate the Adaptive Management framework developed by the Daly River Management Advisory Committee. Using an adaptive management framework for vegetation clearing will ensure that any clearing will retain healthy functioning landscapes, preserve regional ecosystem values, not harm or interfere with cultural values, meet government and community requirements and provide landholders with information on the effectiveness of management actions.

NRETAS staff can assist with the development of an adaptive management PMP.

The PMP 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 EIS and incorporating the Assessment Report recommendations and conclusions.

## **8 PUBLIC INVOLVEMENT AND CONSULTATION**

The EIS 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.