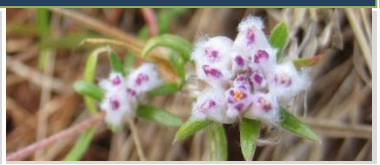
Volume 2 - Appendices

Australian Ilmenite Resources Pty Ltd

SILL80 Project,
Mining Lease Application 27422





2012

Northern Territory Government

DEPARTMENT OF
NATURAL RESOURCES, ENVIRONMENT, THE ARTS AND SPORT

Guidelines for the Preparation of a Public Environmental Report

SILL80 Project

Roper River area, NT

Australian Ilmenite Resources Pty Ltd

April 2011

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1 Introduction

Australian Ilmenite Resources Pty Ltd (AIR) proposes to strip-mine ilmenite at SILL80 (Mining Lease Application 27422), 105 km east of Mataranka and 12 km south of the Roper River. The resource is expected to be 120 million tonnes at 10% to 25% ilmenite ($FeTiO_3$), and is expected to produce approximately 200 000 tonnes of concentrate per annum. The mine is expected to have a life of 20 years. Ore would be separated on site using gravity and water, dried, and exported as ilmenite concentrate. Water is proposed to be sourced from the Roper River during the Dry season and from rainfall during the Wet season.

The three main components of the project are:

1. Strip mining of between 13 and 33 hectares per year (up to 660 ha over 20 years).

2. Progressive rehabilitation of 13 to 33 ha per year.

3. Water extraction from the Roper River.

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). Issues of concern contributing to this decision include:

- Impacts to water flow in the Roper River caused by extraction for processing ilmenite;

- Rehabilitation efficacy over large areas;

- Impacts to flora and fauna; and

- Management of soil.

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 / 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 AIR 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;
- The names of, and work done by, the persons involved in preparing the PER; and
- The expertise of the people involved in work contributing to 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.

2.3 Administration

Ten 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). Additionally, two Microsoft Word copies 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* and *Katherine Times*.

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;
- NRETAS Katherine – 32 Giles Street, Katherine;
- Katherine Town Council Public Library (8972 5500).
- Katherine Government Centre, First Street, Katherine;
- Roper Gulf Shire offices at Mataranka (Roper Tce; 8975 4576) and Ngukurr (Balamurra St; 8975 4606);

- Northern Territory Library (NTL), Parliament House, Darwin; and
- The Environment Centre NT, Unit 3, 98 Woods St, Darwin;

The action officer is Bryan Baker from the EHD of NRETAS, phone (08) 8924 4047, facsimile (08) 8924 4053 or email: 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 or proposal;
- 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 and conservation reserves;
- A description of the vegetation and the land resources;
- A clear outline of the objective of the action;
- Legislative background for the proposal, including the relevant NT and Commonwealth 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, including the proponent's long-term plan for exploration and mining in the area;
- 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.

4.1 General aspects

Aspects to be covered in the project description include:

- An explanation of the 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;
- 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.
- Provide additional details on ore characterisation, radiation levels, and the chemical and physical fate of any flocculants used in production. (If the concentration of radionuclide is higher than the exemption level specified in Schedule 4 of the National Directory for Radiation Protection, the mine will come under the *Radiation Protection Act*, and would require a Radiation Protection Plan.)
- Provide additional information on transport impacts (with reference to Appendix 2).

4.2 Social and cultural aspects

The Roper River region has several large new mining proposals and other developments that would be a significant change in land use from the region's tourism and pastoral activities. Although sparsely populated, there are likely impacts to people living in communities across the region from the establishment of these proposals, both positive and negative.

To ascertain any impacts to social or cultural values, the PER should contain the following:

- An archaeological survey of areas proposed for disturbance.
- A demonstration that sacred sites in a current Aboriginal Areas Protection Authority Certificate will be protected from disturbance by the SILL80 Project. This should include the proposed pump site and pipeline despite any existing infrastructure or disturbance in these corridors.
- A social impact assessment, that takes into account cumulative impacts, identifying likely social impacts on the wider community caused by the establishment of the SILL80 Project. Cumulative impacts are the successive, incremental and combined impacts of an activity on society, the economy and the environment. Consideration should be given to:
    - the life of the project;
    - changes in access to land for commercial, traditional or recreational purposes, including recreational fishing;
    - environmental impacts that may cause permanent or temporary loss of culturally important natural resources, such as significant flora and fauna (e.g. medicinal plants), or fisheries (commercial and recreational);
    - any cultural importance placed on the Roper River itself, or by people that may be affected by the extraction of water from the river;
    - impacts on the community at Kewulyi; and
    - increases in transport in the region including the potential for changes in transport options that would see exports through the proposed Port Roper.

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;
- Site selection;
- Rehabilitation methods;
- Other sources of water; and

- Environmental management techniques.

6 Risk Assessment

6.1 Risk assessment approach

Understanding environmental risk and uncertainty is a major element of the National Strategy for Ecologically Sustainable Development. This PER should be undertaken with specific emphasis on identification, analysis and treatment of risks through a whole-of-project risk assessment. Through this process, the PER will:

- 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;
- Risk assessment should include the potential scenario where benefits of the project for the wider community may not eventuate; and
- Explicitly identify those members of the community expected to accept residual risks and their consequences, providing better understanding of equity issues.

Statements about levels of uncertainty should accompany all aspects of the risk assessment. Steps taken to reduce uncertainty or precautions taken to compensate for uncertainty should also be identified and their effect/s demonstrated.

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.

The risk assessment should be based on international best practice. Processes for risk management are formalised in Standards Australia / Standards New Zealand (e.g. AS/NZS ISO 31000:2009; HB 436:2004; HB 158:2010).

7 Key risks

The major risks below have been identified through analysis by the Northern Territory Government of the Notice of Intent for the SILL80 Project. It is

possible that further risks will be identified in the environmental impact assessment process. The three major risks identified are:

1. Extraction of water from the Roper River used for processing ore:
    - Average cease to flow occurrences in the Roper River may increase with significant amounts of extraction;
    - Impacts may be caused downstream from the extraction point to water quality and supply for other users and wildlife.
2. Effectiveness of the proposed rehabilitation over large areas:
    - Identification of suitable revegetation species;
    - Supply and sources of an adequate seed bank or seedlings;
    - Soil erosion and weed management over large areas;
    - Timing of establishment and water requirements.
3. Potential impacts to threatened species:
    - Annual clearing and strip mining of 13 to 33 ha of native vegetation could impact on local threatened species;
    - Identifying any listed threatened species, particularly flora, will provide better information for management and rehabilitation.

7.1 Water management including extraction from the Roper River

Outcome

The proponent will demonstrate that water extraction from the Roper River will not significantly impact the aquatic environment or affect water supply to other downstream users.

Context

Water flowing in the Roper River at the proposed point of extraction is fed by groundwater flows from the Tindal Limestone aquifer at Mataranka during the Dry season and from combined rainfall and groundwater during the Wet season.

Water in the Tindal Limestone aquifer will be allocated under the Mataranka Water Allocation Plan to approximately 19,365 ML/year. When fully allocated, cease to flow conditions downstream of the aquifer will be more common.

Extraction from the Roper River for consumptive uses should not exceed the threshold level of 20% of flow at any time in any part of the river (Northern Territory Water Allocation Planning Framework 2006).

Daily water requirements proposed for processing ilmenite are 1.5 ML per day in the first year, doubling to 3 ML per day thereafter (42 L/s and 84 L/s respectively).

Proposed sources of water for the SILL80 Project are from the Roper River during the Dry season (pumped via a pipeline 12 km south to the processing site) and from collected rainwater during the Wet season.

Current data indicates that the Roper River, on average, ceases to flow at Red Rock gauging station (60 km downstream of the proposed extraction point) approximately 18 days of the year, and with full allocation of water entitlements from the Tindal Limestone this would increase to 73 days per year at Red Rock. At the upstream extraction point these figures would be higher.

During the Wet season river-side pumps would be removed due to potentially damaging floods, and production of ilmenite would then rely on stored water and collected rainfall.

Information requirements

- Provide a water management plan outlining water consumption, anticipated water extraction limits, water recovery and recycling, fate of used water, and proposed water use minimisation measures.
- Provide details on how water flow will be monitored at the extraction site to demonstrate that no more than 20% of river flow is extracted.
- Assess how salinity will be impacted at downstream sites, particularly for human consumption quality, that may be caused by increased extraction by the SILL80 Project.
- Estimate the average annual duration of cease to flow in the Roper River and assess how this may impact operations at the SILL80 site.
- Determine, using best available information, the timing and duration that river-side pumps would need to be removed due to flooding of the Roper River.
- Provide details and methods of rainfall collection for production of ilmenite, such as volume of pits or tanks, the feasibility of rainfall recovery and filtering, with regard to local climatic conditions.
- Provide an indication of whether and how water supply for nearby communities, that also extract water from the Roper River, will be affected by increased extraction for production by AIR.
- Provide an assessment of the fate of any flocculants proposed and if they could be detrimental to surface water quality through runoff from backfilled pits.
- Provide a biting insect management plan demonstrating that excavations for the SILL80 Project will not provide breeding sites for human pest species during works and following rehabilitation[1].

[1] The mining development should also conform to applicable sections of the Medical Entomology guideline 'Guidelines for preventing biting insect problems associated with mining sites in the Northern Territory'

7.2 Rehabilitation of disturbed areas

Outcome

The proponent will demonstrate that impact caused by strip mining and disturbance to riparian habitats can be mitigated through effective and timely rehabilitation with appropriate species, erosion and sediment control, and weed management.

Context

The proposed annual area of disturbance at the SILL80 project is 13 to 33 ha, with progressive annual rehabilitation, and will vary with ore depth and production output. Excavations will be dug along 50 to 100 m wide strips to an average depth of 1.2 m (maximum 3 m) where ilmenite-bearing soils occur. Drill holes are also present, used to define the extent of ore bodies.

Very little top soil is present on the surface that can be used to provide a seed bank of local species, and the vegetation is sparse providing little brush cover available for protection of seedlings and soil. Although existing vegetation is sparse, effective rehabilitation may require a higher density of plantings to ensure long-term survival of individual plants and effective soil erosion prevention. Rehabilitation should replicate strata and growth form of existing vegetation.

The returned regolith is processed and washed soil. Soils are known to be clay-rich in the areas where they are ilmenite-bearing. Disturbed soils without vegetation cover are less resilient to forces of wind and water erosion.

Mapping of vegetation, soils and landforms should be considered at scales that provide a useful resource for the intended outcome.

Information requirements

- Provide a Rehabilitation Management Plan outlining proposed rehabilitation methods, and include adaptive management details that would demonstrate successful rehabilitation prior to on-going mining. Include details about rehabilitation of access roads.
- Provide a description of the existing vegetation within MLA 27422 (at an improved scale than existing 1:1 000 000 mapping) to facilitate identification of any sensitive vegetation or likely habitats for threatened species.
- Any vegetation survey and mapping should be conducted at a scale that will allow for the identification of homogeneous vegetation associations and unique functional habitat types across the proposed project site. This will allow for effective appraisal of risks associated with operations and planning for rehabilitation to be undertaken on a

- Provide a list of species to be used for rehabilitation, identifying those occurring naturally in the area, with details of their strata and growth form.
- Provide a description of the landforms within MLA 27422 indicating drainage and slope where rehabilitation will take place.
- Provide details or mapping of soil types within MLA 27422 and what constraints they pose for rehabilitation.
- Discuss rehabilitation methodologies and the benefits and disadvantages of each with reference to local climatic and geological conditions, and indicate which method/s will be proposed for rehabilitation.
- Detail any water or fertiliser requirements for successful rehabilitation. Also provide detail on what protective measures against erosion and disturbance from large herbivores will be employed.
- Indicate whether rehabilitation activities could provide local employment opportunities.
- Provide an Erosion and Sediment Control Plan (ESCP) with reference to ESCP Guidelines published by NRETAS, for all disturbed areas including roads and tracks managed by AIR.
- Provide a weed management plan covering the broader site as well as rehabilitation areas, including rehabilitated access roads and tracks.
- Discuss any proposed review or monitoring of rehabilitated areas to determine effectiveness, including flora and fauna surveys.
- If threatened species are identified within areas of proposed disturbance, detail how proposed flora surveys will inform rehabilitation.
- Identify sources of top soil to be used to re-establish vegetation in the event insufficient soil is available from pre-mined areas.

Note: Reference should be made to *The Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping* (Lewis *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 for vegetation survey purposes.

7.3 Potential impacts to threatened species

Outcome

Impacts to threatened species are avoided or mitigated with effective rehabilitation.

Context

The NT Government 2030 Strategy provides generic targets for biodiversity protection, stating that there shall be no deterioration in the health of biodiversity in the Northern Territory.

Threatened species may occur in areas proposed to be disturbed both at the mine site and at the Roper River. The NOI lists 12 species that could occur at the mine site and a further three at the Roper River pump site.

The proposed mine site and adjacent habitats have been poorly surveyed, and there is inadequate information to currently assess potential impacts to threatened species.

Vegetation, soil and landform mapping produced for Section 7.2 should be used to provide a spatial context to assess risks associated with impacts to threatened species.

Information requirements

- Provide results of formal flora and fauna surveys conducted on the lease and at the river-side water extraction point. It is preferable that the survey be undertaken during the 'Build Down' (late Wet season/early Dry season).
- Provide details on any listed threatened species identified through flora and fauna surveys and measures proposed to mitigate impacts of disturbance.
- Identify any significant vegetation communities, fauna aggregations or colonies and measures to mitigate impact of disturbance on these.
- An assessment should be provided of potential impacts to aquatic vertebrate species that may be impacted by decreased water flows during the Dry season.

Note: 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 http://www.environment.gov.au/epbc/guidelines-policies.html. There also standard survey methods for the crested shrike-tit available on the NRETAS website and should be followed: http://www.nt.gov.au/nreta/wildlife/animals/threatened/specieslist.html.

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 during the public exhibition phase. Where possible, specific management practices and procedures should 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 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 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 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.

APPENDIX 1: NT ENVIRONMENTAL IMPACT ASSESSMENT GUIDE GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE[2]

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 1994*.

GUIDANCE

Emissions estimates

Note that the Australian Government is establishing a national greenhouse gas emissions trading system (the proposed Carbon Pollution Reduction Scheme – CPRS), which may have implications for some proponents. More information on the CPRS available at http://www.climatechange.gov.au/emissionstrading/index.html

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

[2] Last updated 2 July 2009.

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 http://www.climatechange.gov.au/workbook/index.html 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 System, or another nationally recognised methodology. For more information see http://www.climatechange.gov.au/ncas/index.html

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

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

To provide an understanding of the broader impact of the proposal, proponents are encouraged to place the estimated greenhouse gas emissions from the proposal into a national and global context. Information on Australia's national emissions profile can be obtained from the Department of Climate Change at http://www.climatechange.gov.au/inventory/2005/index.html. 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.php

Measures to minimise greenhouse gas emissions

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

(a) identifying energy conservation measures, opportunities for improving energy efficiency and ways to reduce fugitive emissions where applicable;

(b) indicating where potential savings in greenhouse gas emissions can be made through the use of renewable energy sources, taking into account fossil fuels used for supplementary power generation; and

(c) whilst recognising the likely commencement of an emissions trading scheme, 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. No Australian standards for offsets currently exist, although the Australian Government is developing a National Carbon Offset Standard (see: http://www.climatechange.gov.au/carbonoffsetting/ncos/ncos.html).

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 is developing a nationally consistent framework for greenhouse and energy reporting by industry. Projects with significant emissions may be required to report their emissions under the *National Greenhouse and Energy Reporting Act 2007*. Data reported through the system will underpin the proposed CPRS. For more information see http://www.climatechange.gov.au/reporting/index.html

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 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 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 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

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_2)	1
Methane (CH_4)	21
Nitrous oxide (N_2O)	310
Perfluorocarbons (CF_x)	6,500 – 9,200
Hydrofluorocarbons (HFCs)	140 - 11,700
Sulphur hexafluoride (SF_6)	23,900

Greenhouse gas emissions expressed in carbon dioxide equivalent (CO_2-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 4th Assessment Report, 2007, see http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Ch02.pdf

Appendix 2: Department of Lands and Planning – PER Guidelines for transport

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

1. Description of transport systems and methods to convey all site traffic (including materials, workers and product) to and from the site (both during construction and operation) including:
   - Type, size and number of vehicles required during all phases of the proposal;
   - The estimated volumes, tonnage, composition, origin and destination of traffic generated by the proposal;
   - Estimated times of travel;
   - Additional road infrastructure works required including site access and signage;

2. Description of transport systems and methods to convey any product to proposed markets;

3. Description of any proposed haul roads, including length, location, land requirements, tenure and acquisition requirements*;

4. Description of construction methods and timeframes for any proposed private and public haul roads*;

5. Consultation undertaken with relevant regulatory agencies; and

6. Necessary approvals required.

Existing Environment

Provide details of the existing transport infrastructure at locations likely to be impacted by the proposal.

Impacts

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

* for mine proposals only

Management

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

- Methods for complying with any relevant road vehicle axis limits;
- Methods for securing loads;
- Measures to reduce any road traffic noise impacts;
- Consultation with local communities affected by transport impacts;
- Traffic management;
- Management of driver fatigue.

Attachment A

Further Information Required –
SILL80 Ilmenite Project
6 March 2012

The following issues are being raised because they are environmentally relevant and have not been adequately addressed in the PER. Information on these environmental issues is necessary to facilitate examination required under the *Environmental Assessment (EA) Act*

Water Management

Leading practice in overall site water management has not been demonstrated in the PER. An updated Water Management Plan is required that complies with the requirements of the Department of Resources Advisory Note *Water Management Plan Guide 2008.* To complete assessment of the Project, the following information is required:

- Surface Water Catchment areas, runoff and relevant watershed information – plans and images showing all contours, drainage lines and significant features, including existing pastoral lease water storage infrastructure;
- Water Management infrastructure – detail the type, numbers, storage capacity and construction details, dimensions and design of water management infrastructure e.g. ponds, tanks, pipes;
- Conceptual water balance taking into account inputs, outputs and interactions between surface and ground water, surface area stores and total catchment surface area per store/pit/dam;
- Water account for proposed operation which include modelled scenarios for periods of high and low rainfall;
- Overview of surface water monitoring program with maps showing locations of statutory and operational monitoring sites and details of site, sample type, parameters measured and frequency;
- Overview of groundwater occurrence locally and location of existing bores and whether groundwater monitoring would be required;
- Overview of biological/aquatic monitoring program and sample monitoring program including maps of monitoring sites and frequency;
- Water quality trigger levels; and
- Commitments to continuous improvement (e.g. maximising water recycling, minimising raw water usage) with defined objectives and completion dates.

Surface Water Extraction

It has not been demonstrated how extraction from the Roper River would not exceed the threshold level of 20% of flow at any time in any part of the river (NT Water Allocation Planning Framework, 2006). The monitoring arrangements described in the PER do not demonstrate that natural flows at, and downstream of the extraction

point are not reduced by more than 20% and take into account the combined effect of all extractions within the catchment. The following information is required to complete assessment of this Project:

- Define annual extraction limits and extraction regime;
- Demonstrate how extraction limits and monitoring will show that natural river flow is not reduced at any time by more than 20% at the extraction site due to the combined effects of all extractions within the catchment;
- Demonstrate how extraction limits and monitoring will show that natural river flow is not reduced at any time by more than 20% at Roper Bar due to the combined effects of all extractions within the catchment
- Detail monitoring programs that would confirm a nominal 20% limit is adequate to prevent unacceptable impact on the downstream aquatic environment and prevent unacceptable impact to the water supply to the downstream community Ngukurr;
- Provide an assessment and report on the impact on salinity downstream from the extraction point caused by increased extraction by the Project; and
- Provide location and details of alternative water sources or additional on-site water storage to minimise potential environmental impacts associated with surface water extraction during low flows.

Note that Water Resources Branch (NRETAS) should be consulted in providing modelling of flow regimes near the extraction site. Contact details are: Ian Smith, ph: 08 8999 3630

Water Quality

In the PER an assumption is made that water quality would not be affected unless greater than 20% of inflows are extracted from the extraction site. Monitoring and auditing provided in the PER focused on extraction rates as a surrogate for quality rather than a surface water quality program. The following information is to be provided to complete assessment of this Project:

- Historical downstream water quality data at Ngukurr to describe existing baseline conditions and natural variations;
- surface water quality monitoring program included in an updated Water Management Plan that is consistent with the Australian Guidelines for Water Quality Monitoring and Reporting (ANZECC/ARMCANZ, 2000b) including sample sites, frequency, parameters;
- identification of alternative water supply for the Ngukurr community in the event water quality deterioration (e.g. increased salinity) is detected.

Water Re-Use

In the PER it was stated that a bulk sample would be performed in March/April 2012 to test the system's capabilities for water consumption and recycling and figures could not be provided until the system was assessed. Details on how raw water consumption will be minimised and re-use maximised, including design and location details on the proposed dewatering screened dams, must be provided. Clarify how the mostly dry waste regolith, after it has been through the screened dams, would remain dry during the wet season or when new waste from the wash trommels are being continually added. Informed quantitative water volume estimates, based on

results of the bulk sample testing, are to be incorporated into the conceptual site water balance.

Erosion and Sediment Control

An Erosion and Sediment Control Plan that complies with Land Resources requirements must be provided to complete assessment of this Project. This includes:

- where clean surface water runoff would be diverted away from disturbed areas;
- interception of runoff from disturbed areas into sediment control structures;
- location, size, capacity and designs required for sediment basins, silt fences, mulch bunds and catchment drains;
- proposed maintenance schedule and management of erosion and sediment controls; and
- proposed erosion and sediment control of haul roads, pipelines and other structures that may change surface water patterns.

The content required for an ESCP can be found on the Department's website: http://www.nretas.nt.gov.au/__data/assets/pdf_file/0018/12924/ErosionandSedimentControl.pdf

The development of the plan should consider the IECA Best Practice Erosion and Sediment Control Guidelines 2008 as a guide to the type of information, detail and data that should be included in an ESCP.

Deposit Geochemistry

It is expected geochemical characterisation has been conducted on representative samples of the ilmenite resource as well as the waste regolith as part of exploration and feasibility studies. While not specifically requested in the PER Guidelines, geochemical characterisation of the regolith must be provided to determine whether certain elements occur at elevated concentrations, solubility of dissolved constituents and how these results may impact water quality and management. This would also inform what elements should be included in site water quality monitoring programs.

Current Land Use

The Mining Lease overlaps an existing Perpetual Pastoral Lease 1161, which is sub-leased from Traditional Owners through the Namul Namul Aboriginal Corporation. There was little discussion in the PER on how mining activities may impact the current pastoral land use. The homestead is one kilometre north east of the processing site and stock yards, one kilometre north west of the processing site and these should be provided on a general project plan (e.g. included in Figure 5-1, PER). The Numul Numul property has been sub-leased since 2001 and significant infrastructure and property improvement has been invested during that time. Information is required detailing how pastoral infrastructure will not be disturbed by the proposed mining activity and access is maintained to enable an operating pastoral business. The following information should be provided:

- Conduct a risk assessment on potential social, environmental and economic impacts to the current land use and provide mitigation measures to reduce those risks;
- Provide a general plan of the project infrastructure with key pastoral activity areas (including homestead, holistic management improved paddocks and stock yards);
- Provide detail on how the commitments made in the Social Cultural Aspects Report (Appendix D, PER) have been implemented to date and in the future. This includes how disruption to landowners and third parties would be minimised and communication to ensure access and pastoral business is maintained;
- Provide details of the social management plan that would be developed for the SILL80 Project to ensure strategies are in place to address social impacts (as mentioned in section 6.4.3.2, PER);
- Formal agreement of maintaining access to existing infrastructure required to operate a pastoral lease and compensation of disturbance need to be addressed between all relevant stakeholders; and
- Provide details on how Project activities will be managed so that the existing pastoral land use is not compromised e.g. development of road access usage protocols to ensure cattle mustering and access to stockyards is not disrupted.

References

Australian and New Zealand Environment and Conservation Council (ANZECC), 2006, *Australian Guidelines for Water Quality Monitoring and Reporting (2000)* National Water Quality Management Strategy http://www.mincos.gov.au/publications/australian_guidelines_for_water_quality_monitoring_and_reporting

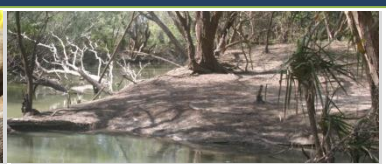
Department of Resources (2008) *Water Management Plan* Advisory Note http://www.nt.gov.au/d/Minerals_Energy/Content/File/Forms_Guidelines/AA7-023_Water_Management_Plan_Guide.pdf

NRETAS, 2006 *Erosion and Sediment Control Content* Fact Sheet http://www.nretas.nt.gov.au/__data/assets/pdf_file/0018/12924/ErosionandSedimentControl.pdf

Appendix B - Flora and Fauna Report

Australian Ilmenite Resources Pty Ltd

SILL80 Project


2012

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Document Control Record

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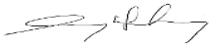
Signed:	
Date:	August 2012

Approved by:	Jeff Richardson
Position:	Senior Environmental Scientist
Signed:	
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Revision No.	Description of Revision	Date	Approved
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EZ12004-A	Submit to NTG	29/08/2012	Jeff Richardson

Recipients are responsible for eliminating all superseded documents in their possession.

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Executive Summary

Australian Ilmenite Resources is planning to develop its ilmenite deposits east of Mataranka. As part of the Public Environmental Report (PER) process an understanding of the species and ecological communities within and nearby to the development envelope, and the impact the development will have on these species and ecological communities, is required. This document reports on a desktop and field biological survey specifically aimed at that question with an emphasis on conservation significant species. Another equivalent report with a focus on aquatic species was also done for the PER process.

For the purposes of this report conservation significant species are those species that are considered threatened under Northern Territory (Territory Parks and Wildlife Conservation Act, [TWPC Act]) or Commonwealth legislation (Environment Protection and Biodiversity Conservation Act [EPBC Act]); species listed as migratory under the EPBC Act; or vegetation communities listed as rare or of high conservation value under the *NT Planning Scheme and NT Land Clearing Guidelines*.

The desktop surveyed collated data from existing Commonwealth and Territory databases and by literature review.

The field survey methods were consistent with those described by the NT Government and outlined in the Guidelines *for the Terrestrial Biodiversity Component of Environmental Impact Assessment*. The field survey occurred in May 2011.

The fauna survey recorded two species which are considered threatened under the TPWC Act: the Australian Bustard (*Ardeotis australis*) and Mertens' Water Monitor (*Varanus mertensi*). Four introduced species were recorded: Cane Toad (*Rhinella marinus*), Cattle (*Bos indicus*), Feral Pig (*Sus scrofa*) and the House Mouse (*Mus musculus*).

The flora survey results indicated low regional plant diversity with a large number of introduced plants. No conservation significant species were recorded. Three main vegetation communities were identified: Low *Eucalyptus pruinosa* open woodland over tall closed tussock grass; Medium height *Corymbia terminalis, Eucalyptus tectifica* open woodland, over tall mid-dense tussock grass; and Low *Corymbia terminalis, Eucalyptus tectifica* Woodland over medium height / mid-dense closed tussock grass.

The desktop survey and field survey were combined resulting in a total of 14 threatened species (listed under NT or Commonwealth legislation) being listed as possibly occurring in the development envelope. This consists of 10 birds, one reptile, and three mammals. A further 12 species are listed as migratory (11 birds and one reptile) under EPBC legislation.

It is concluded that no threatened or migratory species will be affected by this development for several reasons. Firstly, there is no critical habitat affected by this development. The flora and vegetation mapping showed that none of the vegetation communities (habitats) are special or of restricted distribution. Secondly, all these species are wide ranging to the extent that the range of each of these species is much wider than the development impact. Thirdly, many of the species have other threats affecting them; for instance Merten's Water Monitor is now a threatened species due to the Cane Toad.

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1 Preface

Australian Ilmenite Resources (AIR) Pty Ltd proposes to develop its SILL80 Ilmenite Mine Project (herein referred to as “the Project”) within Mining Lease (ML)27422, located in the Roper River Region of the Northern Territory. The Northern Territory Minister for Natural Resources, Environment and Heritage (the Minister) has determined this proposal requires formal assessment, under the NT Environmental Assessment Act 1982 (EA Act), at the level of a Public Environmental Report (PER).

This flora and fauna study is one of a number of complimentary studies supporting the overall PER for the Project. It aims to identify the potential impacts of the Project on important flora and fauna species and vegetation communities, and thereby provide a component of the information requested in the Guidelines for the Preparation of a PER issued for the Project by the Minister in April 2011. Flora and fauna studies include desktop studies and a detailed field survey conducted in May 2011.

2 Introduction

2.1 Project Description and Location

Australian Ilmenite Resources (AIR) Pty Ltd proposes to develop its SILL80 Ilmenite Mine Project within Mining Lease Application (ML)27422, in the Roper River region of the Northern Territory (Figure 1). The proposed mine site is approximately 105km east of Mataranka Township (population approximately 600), and 10 and 8 kilometres south of the Roper River and Roper Highway respectively. The Kewulyi Aboriginal Community Outstation (Old Roper Valley Homestead), situated immediately northwest of the ML, is the nearest community. Also, the O'Brien family, who manage Numul Numul Station, (the pastoral property encompassing ML27422) live in a homestead located immediately northeast of the proposed mine site.

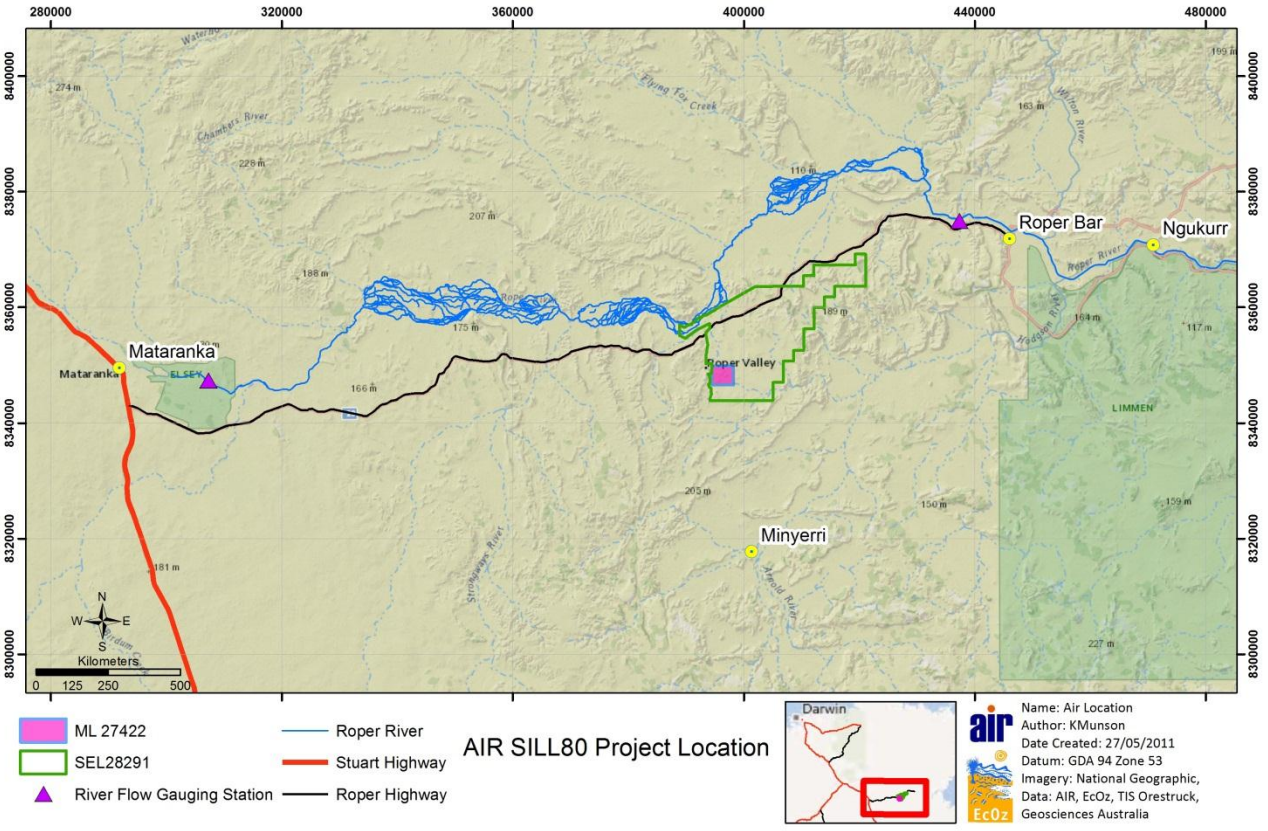

Figure 1: Location of ML27422 within the Roper River region.

ML27422 contains an estimated resource of 120 million tonnes at 10% to 25% ilmenite ($FeTiO_3$), and is expected to produce up to 300,000 tonnes of concentrate per annum. Based on this, the life of the mine is expected to be in excess of 20 years and will involve strip mining of between 13 and 33 hectares per year (up to 800ha over 20 years).

The ilmenite mineralisation results from the weathering of dolerite rock within the top 3m of the ground surface. As such, ilmenite recovery will require strip mining using excavators to remove the top layer of weathered rock and soil to a maximum depth of 4m. Excavations will progress along 200 x 300m strips, and allow for successive rehabilitation of mined areas, which are backfilled with the residual material following extraction of the ilmenite.

Ore is processed using gravity and water to separate the ilmenite from the extracted material. Water will be pumped and piped from the Roper River for this purpose.

2.2 Objectives and Scope of Flora and Fauna Studies

The Northern Territory Department of Natural Resources, Environment, The Arts and Sport (NRETAS) has, as part of the assessment process, provided *Guidelines for the Preparation of a PER* (hereafter referred to as the Guidelines) that it expects the proponent to address as part of the PER. Part of these Guidelines relate specifically to flora, fauna and vegetation communities. This study aims to address the Guideline's requirements in regards to impacts to fauna and flora. As specified in the Guidelines this study must include:

- Results of formal flora and fauna surveys conducted on the lease and at the river-side water extraction point. It is preferable that the survey be undertaken during the 'Build Down' (late Wet season/early Dry season);
- Details on any listed threatened species identified through flora and fauna surveys and measures proposed to mitigate impacts of disturbance;
- Identification of any significant vegetation communities, fauna aggregations or colonies and measures to mitigate impact of disturbance on these; and
- An assessment of potential impacts to aquatic vertebrate species that may be impacted by decreased water flows during the Dry season.

This information is required in order to allow the Minister to make an informed decision in accordance with the *NT Environmental Assessment Act 1982*.

To fulfil the Guideline's requirements flora and fauna studies in this report include:

- A desktop review collating existing environmental information including land systems and vegetation, as well as regional threatened and migratory species;
- A biological survey undertaken in the early dry season (May 2011) to augment local species information and ground-truth existing vegetation mapping; and
- Detailed discussion of potential impacts of the project on threatened flora and fauna species and important vegetation communities known or likely to occur within the development area.

This work primarily aimed to determine the potential presence of threatened flora and fauna species and significant vegetation communities within the Mineral Lease area and the possible impacts on these if the project was to proceed. Information gained through these studies will also provide baseline information for assessing any changes to flora and fauna assemblages following commencement of mining and for informing future rehabilitation efforts.

This report presents the detail of the flora and fauna studies performed within ML27422 and provides detail requested for the Public Environmental Report. It is also summarised in Section 6.3.3 of the PER. Field survey work for this study was not performed in areas excluded from mining operations due to requests from traditional owners; see Figure 2 below and Section 3.2.6 of the PER.

Note however that this report is limited to the Mineral Lease area and does not include the results of an aquatic vertebrates and riparian vegetation survey that was undertaken along the Roper River around the proposed water extraction point. That aquatic survey is reported separately in Appendix C of the PER. In addition, this report does not attempt to specify mitigation methods for reducing identified potential impacts on flora and fauna in and around the project area. This is covered in 6.3.3 of the PER.

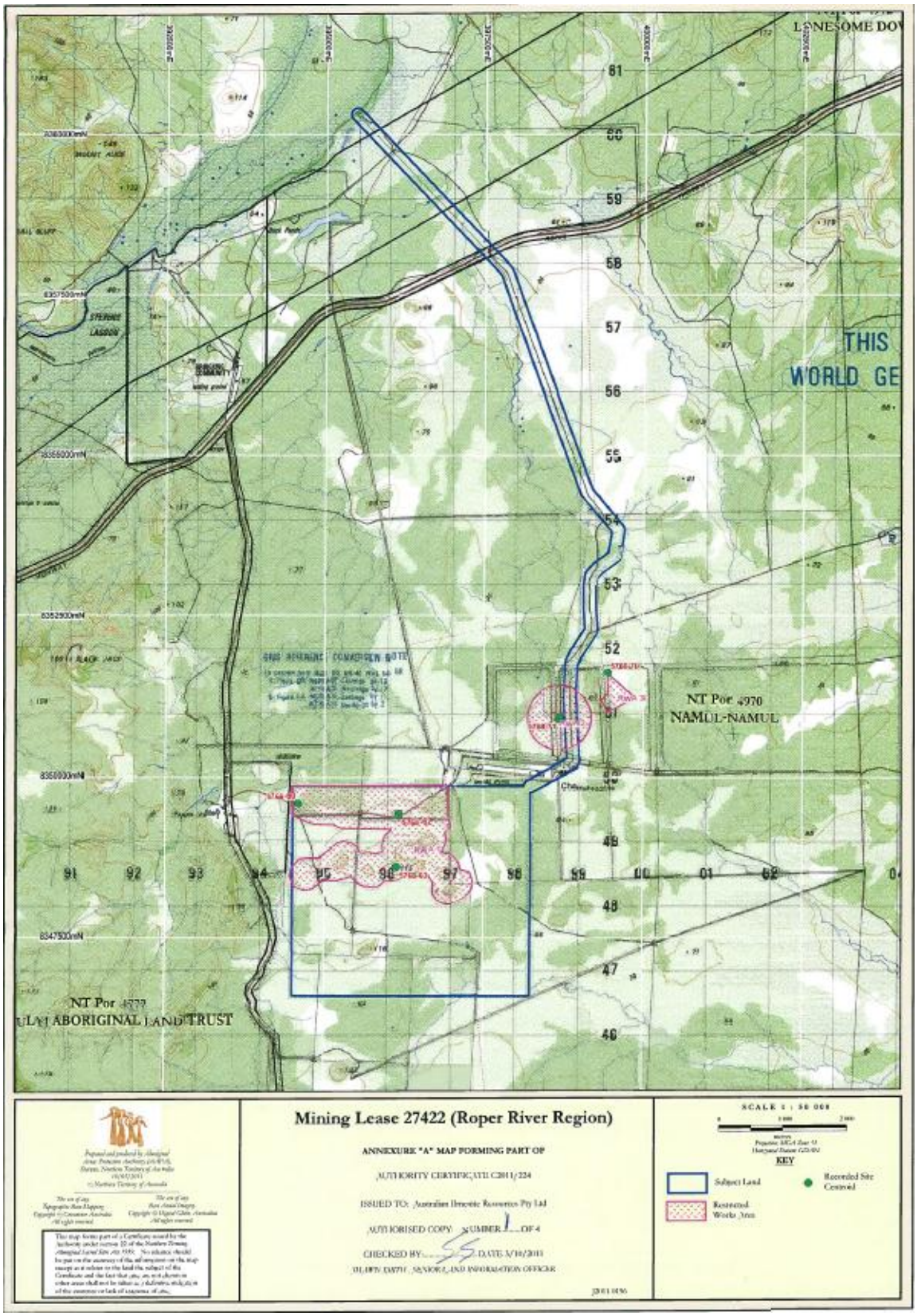

Figure 2: ML27422 and Restricted Work Areas.

3 Methods

3.1 Desktop Review

This desktop review aimed to collate all existing information relevant to identifying the flora and fauna and significant vegetation communities within the region of the proposed mine. Results of the review were also subsequently used to inform the design of flora and fauna field surveys, particularly in selecting field survey sites representing the different habitats impacted by the project. Each of the data sources is briefly reviewed below.

3.1.1 Commonwealth Protected Matters Search Tool

The Commonwealth's Protected Matters Search Tool is maintained by the Federal Government Department of Sustainability, Environment, Water, Population and Communities (SEWPAC). It provides information on matters of national environmental significance (NES) and other matters protected by the EPBC Act. The search tool reports on mapped locations of World Heritage properties, Ramsar wetlands, threatened species, migratory species, marine species, threatened ecological communities and protected areas within the area of interest. It is used to determine whether developments are likely to affect a matter of NES and consequently require referral for assessment and approval under the EPBC Act. Whether or not an action will trigger assessment under the EPBC Act depends on the particular location, scope, timing and other circumstances of the proposed action.

3.1.2 Northern Territory NRM Infonet Online Database Search

The NT NRM Infonet provides users with online access to information about threatened species, weeds, pest animals, fire history and various other outputs of interest in natural resource management, within a specified area.

3.1.3 Northern Territory Flora and Fauna Atlas Databases

The NT Flora and Fauna Atlas Databases are maintained by the NT government. They contain point locations of flora and fauna species identified from formal biological surveys conducted in the Northern Territory, and also validated incidental observations and voucher specimens. Information from the Atlas was retrieved for the Project area and surrounding region in order to identify which species have been previously recorded. These records were mapped and are used to ensure that all regionally occurring threatened species are considered.

3.1.4 Northern Territory Museum and Northern Territory Herbarium Databases

The Museum and Art Gallery of the NT (MAGNT) maintains a database of fauna specimen collections, and the NT Herbarium maintains a similar database (Holtze Database) for flora specimens. Both databases contain point locations of fauna or flora species, respectively, collected across the Northern Territory. This information was used in addition to the NT Atlas database to identify which species have been previously recorded in the region. All species records were compared against threatened species classifications under the TPWC Act and EPBC Act.

3.1.5 Previous Studies in the Project Area

The most relevant studies incorporating the project area are the:

- Vegetation Survey of the Northern Territory (Wilson *et al.*1990);
- Land Systems of the Roper River Catchment (Aldrick & Wilson 1992);
- Lost from Our Landscape – Threatened Species of the Northern Territory (Woinarski *et al*. 2007);
- Northern Territory Parks & Conservation Masterplan - Northern Territory Bioregions - assessment of key biodiversity values and threats (NRETAS 2005);
- Gulf Water Study – Water Resources of the Roper River Region (Zaar 2009); and
- Melaleuca Survey of the Northern Territory (Brocklehurst & Van Kerckhof 1994).

These studies were used to further identify any important flora and fauna species and vegetation communities potentially impacted by the Project and to determine the regional conservation significance of these flora and fauna species and vegetation communities.

3.2 Field Survey

This section reports on a terrestrial field survey of the area. The survey was undertaken in the early dry season between the 16th and 21st of May 2011 by ecologists Kate Bauer, Emma Murray and Casey Hawkey.

An aquatic vertebrate and riparian vegetation survey of the Roper River water extraction point was conducted on the 19th May. The methods used and results of this work are outlined in a separate report in Appendix C of the PER.

Fauna survey methods followed the *Guidelines for the Terrestrial Biodiversity Component of Environmental Impact Assessment* (PWCNT 2006), developed by the Northern Territory Government. Vegetation survey and description methods followed those outlined in the *Vegetation* chapter of the *Australian Soil and Land Survey Field Handbook* (Hnatiuk *et al*. 2009).

3.2.1 Survey Site Selection

Site selection aimed to incorporate the full range of habitat types potentially impacted by the proposed mine development. Two processes were used to determine survey site location: The Land system classification from Aldrick and Wilson (1992) and aerial photographs for differentiation of habitats.

Land system classification and mapping (1:250,000 scale) of the project area and surrounds is reported by Aldrick and Wilson (1992). Table 1 describes each of the four land systems in the project area; Figure 3 shows their location.

Table 1: Land Systems Summary

Code	Land System	Description	% of Project Area
Ibc	Cliffdale	Gently undulating to undulating rises with abundant, often linear rocky outcrops and shallow sandy soils. Lithosols, minor siliceous and earthy sands. Mid-high open woodland of *Eucalyptus miniata*, *Eucalyptus tetrodonta*, *E. ferruginea*, with *E. dichromophloia*.	~56%
Als	Seigal	Gently undulating to hilly terrain on basalt, dolerite, agglomerate and other volcanic and sometimes non-volcanic rocks. Lithosols with rock outcrop, euchrozems, red and black earths and red clays. Highly erodible, especially the sloping red soils. Mid-high open woodland	~1%

		of *E. tectifica* and *Erythrophleum chlorostachys*.	
Tam	McArthur	Broad or narrow fluvial corridors conducting regional drainage across various land systems towards the coast. Grey and brown clays, red and yellow earths and siliceous sands. Mid-high open woodland of *E. microtheca* with some *E. papuana* and *E. polycarpa*. Tall fringing riparian vegetation often includes *Melaleuca* spp.	~0.5%
Ibn	Nutwood	Plains and low rises on basalt and associated basic igneous rocks. Brown, grey and red clays, euchrozems and brown and red earths. Mid-high open woodland of *Lysiphyllum cunninghamii* and *Eucalyptus terminalis* with some *Eucalyptus patellaris*.	~42.5%

The SILL80 Ilmenite Project is situated on a relatively flat to low lying area surrounded by cattle grazing paddocks. The entire area appears to have been subject to relatively heavy grazing pressure.

Technical Report No. 52 of the Conservation Commission of the Northern Territory (Aldrick and Wilson 1992) nominate most of the area as the Cliffdale land system of gently undulating to hilly terrain on basalt, dolerite, agglomerate and other volcanic and sometimes non-volcanic rocks. Lithosols with rock outcrop, euchrozems, red and black earths and red clays; highly erodible, especially the sloping red soils. The Mineral Lease also contains the Nutwood Land System with a generalized description of "Plains and low rises on basalt and associated igneous rocks. Brown, grey and red clays, euchrozems, and brown and red earths. Medium High Open Woodland of *Lysiphyllum cunninghamii* and *Eucalyptus terminalis* with some *Eucalyptus patellaris*.".

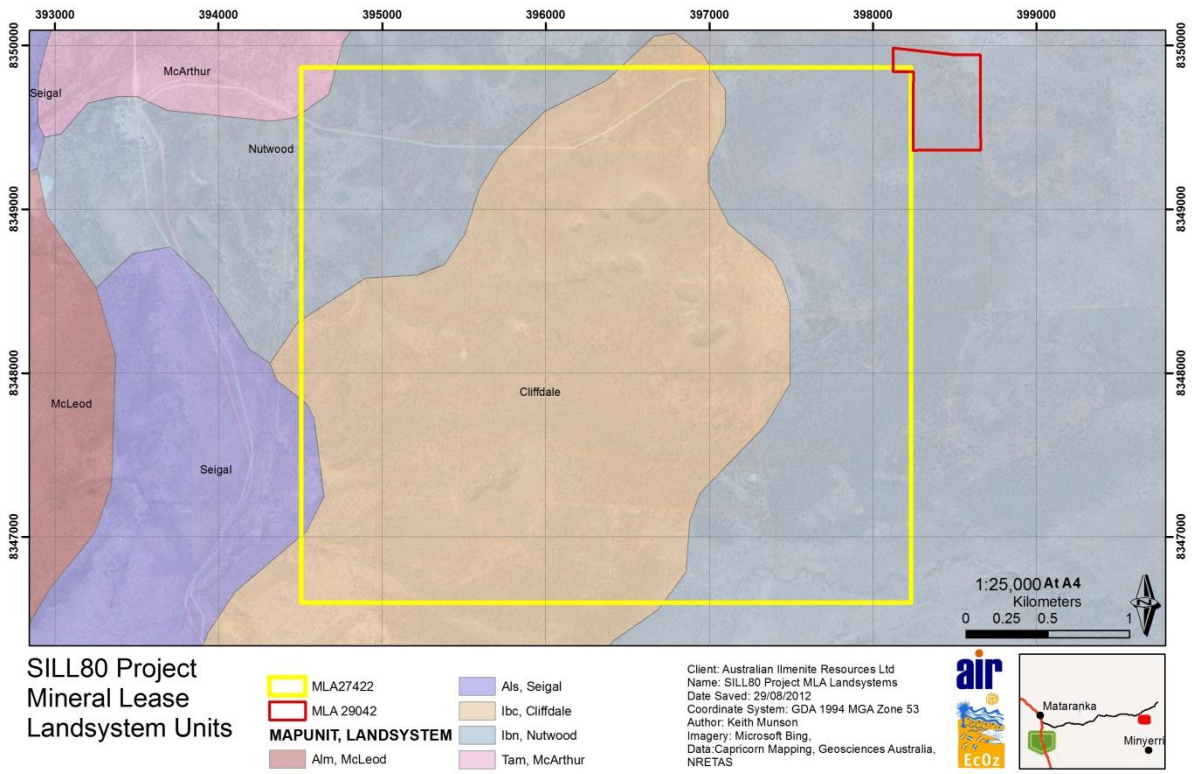

Figure 3: Land Systems within and around the Project Area

Six sites (QA, QB, QC, QD, QE, and QF) were selected within ML27422 for flora and fauna surveys. Site selection aimed to incorporate the full range of habitat types potentially impacted by the proposed mine development and also specifically target any identified preferred habitat of threatened species that potentially occur in the region. **Error! Reference source not found.** describes the six survey sites and their environmental attributes; Figure 4 shows their spatial arrangement, Appendix B1 gives site habitat descriptions.

Two survey sites (QA and QB) were located within the Cliffdale Land System. These two sites were flat to slightly inclined and situated on the lower slopes of a small rocky sandstone ridge. The sites were rocky in places, in contrast to the other four sites, which were on the lower plains and devoid of rocks.

Note that no survey sites were permitted in the sacred site exclusion areas (Figure 2) and as such habitat types only existing within these exclusion zones could not be included.

Cattle were present during the survey, so quadrats had to be located in areas where stock were excluded, to prevent trampling of traps and minimise disturbance to sites.

Site Name	GDA94 Zone 53L		General Location	Land system	Veg from NVIS 2005	Soil Type (from 1:2,000,000 map)	Soils (from this survey)	Underlying Geology	Other features
	Easting	Northing							
QA	395454	8347224	Southwest quarter of ML27422	Cliffdale	*Eucalyptus* mid woodland \ *Flueggea* mid sparse shrubland \ *Sehima* mid tussock grassland	Kandosols, Massive Earths	Brown Clay Loam	Upper Roper Group – mudstone / shale / sandstone	On lower slopes below a small rocky sandstone ridge; quite rocky in some parts of the quadrat; weeds along the vehicle track
QB	395286	8347223	Southwest quarter of ML27422	Cliffdale	*Eucalyptus* mid woodland \ *Flueggea* mid sparse shrubland \ *Sehima* mid tussock grassland	Kandosols, Massive Earths	Red Clay Loam	Upper Roper Group – mudstone / shale / sandstone	On lower slopes below a small rocky sandstone ridge; weeds along the vehicle track
QC	396996	8349675	Northeast quarter of ML27422	Nutwood	*Eucalyptus* mid woodland \ *Flueggea* mid sparse shrubland \ *Sehima* mid tussock grassland	Kandosols, Massive Earths	Reddish Brown Clay Loam	Derim Derim Dolerite	Some large patches of sheet erosion and soil compaction and damage from cattle; lots of weeds
QD	396361	8346370	Central along southern boundary of ML27422	Nutwood	*Eucalyptus* mid woodland \ *Flueggea* mid sparse shrubland \ *Sehima* mid tussock grassland	Kandosols, Massive Earths	Red Clay Loam	Derim Derim Dolerite	Adjacent to black soil plain located just outside southern Mineral Lease boundary
QE	397112	8349204	Northeast	Nutwood	*Eucalyptus* mid	Kandosols,	Reddish	Derim	Derim Some large patches

			quarter of ML27422		woodland \ *Flueggea* mid sparse shrubland \ *Sehima* mid tussock grassland	Massive Earths	Brown Clay Loam	Dolerite		of sheet erosion and soil compaction and damage from cattle
QF	397368	8347077	Southeast quarter of ML27422	Nutwood	*Eucalyptus* mid woodland \ *Flueggea* mid sparse shrubland \ *Sehima* mid tussock grassland	Kandosols, Massive Earths	Red Clay Loam	Derim Dolerite	Derim	Some large patches of sheet erosion and soil compaction and damage from cattle; lots of weeds

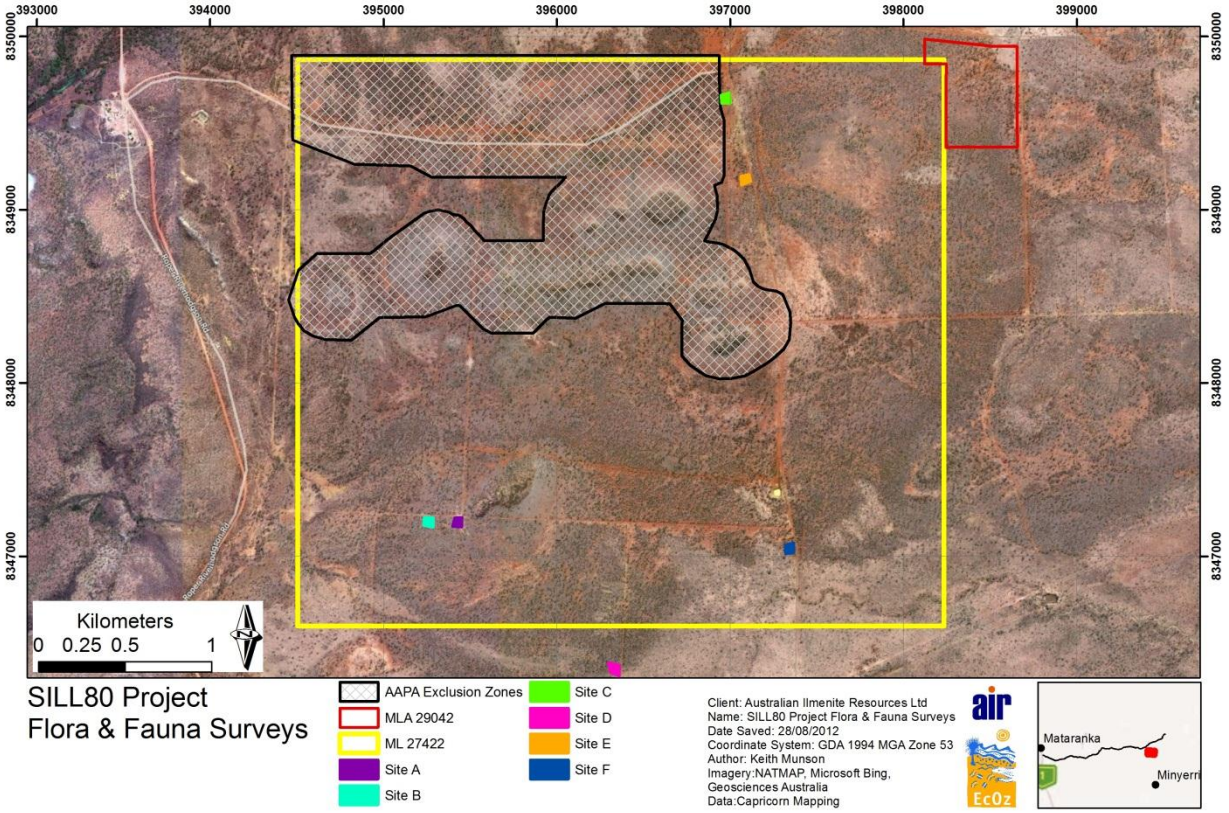

Figure 4: Survey site Locations within ML27422

3.2.2 Fauna Trap Survey Design

The layout of fauna traps at each survey site (Figure 5) was based on the standard and accepted NT fauna survey guidelines (PWCNT 2006). This involves laying out a 50 x 50m quadrat comprising:

- 20 Elliott traps around the perimeter – 5 on each side approximately 8 m apart;
- Cage traps, one at each corner of the quadrat;
- Pitfall traps, with 10m of drift fence; and
- 4 Funnel traps set against pitfall drift fences.

Each pitfall trap comprised a 20L white plastic bucket dug to ground level and set with 10m of drift-fence (5m on either side). Funnel traps were set up against these same drift fences. Where possible, these trap set-ups were located to encompass different microhabitats within the quadrat. The pit and funnel traps were opened for 3 nights and 3 days and checked early each morning and again at midday.

The Elliott traps and cage traps were rebaited each afternoon, opened overnight and closed for the duration of the day. The bait consisted of a mixture of oats, peanut butter, honey, and fish oil. Trapped animals were identified and released near the capture point. There was no need to mark captured animals because the purpose of this survey was to determine species diversity (presence/absence) rather than population size.

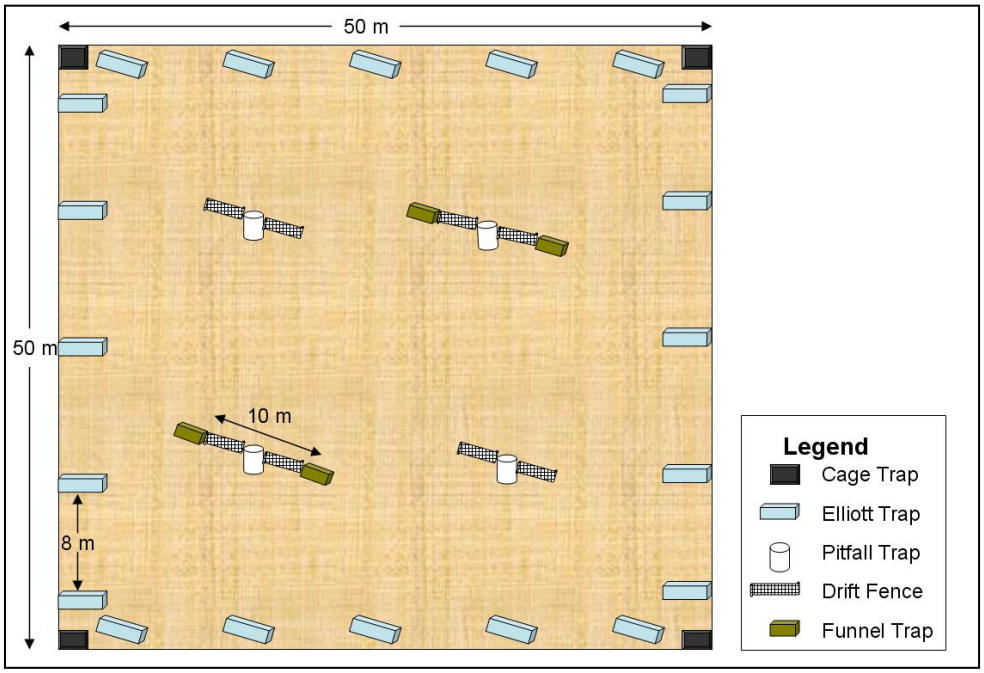

Figure 5: General layout of a standard fauna survey quadrat

3.2.3 Bird Census

Bird species were counted within a 25m extended boundary around each quadrat, resulting in a 100m^2 area. Each quadrat was surveyed on six occasions during daylight hours. Bird counts mainly occurred during early morning and late afternoon (coinciding with times of higher bird activity), with additional counts during the day. Each count was considered an instantaneous count of all the birds within the quadrat, and involved viewing the quadrat for five minutes. Birds that were seen outside of the time of the bird count, or outside the quadrats, were noted as incidentals. Only birds using the quadrat were counted – birds merely flying across or overhead were not included. Raptors were included if they were hunting overhead. One nocturnal bird count occurred within each survey quadrat. Bird species diversity, not abundance, was surveyed.

3.2.4 Active Searching

Survey sites were actively searched five times for reptiles and mammals, including searches for scats and other signs. Three daytime searches (morning, midday, and late afternoon) and two nocturnal searches were conducted.

Active searches lasted for 20 minutes and involved:

- Turning rocks and logs, raking through leaf litter and grass, looking under bark, in crevices, etc.;
- Recording the number of individuals of each species; and
- Recording scats, bones and other signs where they could be confidently attributed to species.

Opportunistic observations made while travelling within the survey area were also recorded.

3.2.5 Bat Survey

Bats were surveyed using an Anabat II Bat Detector, which was set up to record overnight at a central location within the project survey area. Specific surveys for each quadrat could not be completed in the time frame of the survey. Bat species were also actively searched for during nocturnal searches and in crevices during the day. As the Anabat results can provide a reasonable indication of species presence, physical trapping of bats was not necessary for this survey.

3.2.6 Incidental Fauna Observations

Fauna observed outside of survey sites, but within the AIR project area, were recorded as incidentals. These records are included in total species lists and discussions.

3.2.7 Vegetation and Habitat Survey

Vegetation type and habitat information was recorded for each survey quadrat in accordance with the attributes and methods outlined in the Vegetation chapter of the latest edition of the *Australian soil and land survey field handbook* (Hnatiuk *et al*. 2009). Information was collected using standard vegetation and habitat description datasheets based on Hnatiuk (2009). These include an assessment of floristic structure and composition, and soil and landscape features. Datasheets included the following information (at minimum):

- GPS Coordinates (GDA94, Zone 53L, UTM);
- Landscape features, such as slope, aspect and drainage;
- Soil type and depth, rock type (if present), and percentage of ground cover (litter, gravel, rock, outcrop, bare soil, vegetation etc.);
- Disturbance information including feral animal disturbance, weed species and extent, and erosion;
- Detailed vegetation description including structure, cover, and species;
- Fire evidence and impact; and
- Habitat values such as tree hollows, fallen logs, flowering plants etc.

The flora component of this survey aimed to identify as many species as possible within each survey quadrat to get an indication of composition, habitat condition and floristic diversity. A code was applied to each species to describe its presence at the time of survey; 1 – abundant, 2 – common, 3 – scattered and 4 – rare. This survey does not attempt to be comprehensive in identifying all species present within ML27422 (Refer to Field Survey Limitations Section 3.2.10 below). Unidentified flora species were sampled and preserved for later identification at the NT Herbarium.

3.2.8 Nomenclature

Current scientific and common names for fauna species during this survey have been identified from Schedule 1 of the TPWC Act, any updated taxonomy that differs from this list has been listed and the former name noted in brackets. Flora species names have been taken from the Checklist of NT Vascular Plant Species (Kerrigan & Albrecht 2007) provided by the Northern Territory Herbarium.

The following resources were used for species identification:

- **Amphibians** – Field Guide to Frogs of Australia (Tyler & Knight 2009); Frogs of the Northern Territory (Tyler & Davies 1986); and Reptiles and Amphibians of Australia (Cogger 2000).
- **Reptiles** – A Complete Guide to Reptiles of Australia (Wilson & Swan 2003); and Skinks of the Northern Territory (Horner 1991).
- **Birds** – Field Guide to Australian Birds (Morcombe 2004); The Field Guide to the Birds of Australia (Pizzey & Knight 2007); and The New Atlas of Australian Birds (Barrett *et al.* 2003).
- **Mammals** – The Mammals of Australia (Menkhorst & Knight 2001); and Field Guide to the Rodents and Dasyurids of the Northern Territory (Cole & Woinarski 2002).
- **Flora** – A Field Guide to Plants of the Barkly Region, Northern Territory (Purdie *et al.* 2008); Eucalypts, Volume 3, Northern Australia (Brooker & Kleinig 2004); Native Plants of Northern Australia (Brock 1993); Flora of the Darwin Region, Volume 2 (Dunlop *et al.* 1995); Plants of the

Kimberley Region of Western Australia (Petheram & Kok 2003); and Plants of Northern Territory Monsoon Vine Forests (Wightman & Andrews 1989).

3.2.9 Determination of Conservation Significance

The conservation significance of flora and fauna species and also vegetation communities recorded within and surrounding ML27422 was assessed with reference to:

- Species classified as threatened nationally with the EPBC Act;
- Species classified as migratory in accordance with the EPBC Act;
- Species classified as threatened in the Northern Territory in accordance with the TPWC Act; and
- Vegetation communities identified as rare or of high conservation value in the Northern Territory Parks & Conservation Masterplan (NRETAS 2005) or as "sensitive" or "significant" under the NT Planning Scheme and NT Land Clearing Guidelines (NRETAS 2010).

3.2.10 Field Survey Limitations

- The results of flora and fauna surveys are only a snapshot in time (i.e. early dry season conditions), and do not allow for spatial and temporal variations or species migrations;
- The flora inventory compiled from the work of this study should not be considered a complete and comprehensive inventory for the whole ML27422. Flora species were only recorded within the five survey sites and additionally some less dominant or rarely occurring species present within each survey site may not have been recorded.
- Habitats existing on the rocky low hilltops within the sacred site exclusion zones were not surveyed. These habitats may contain different flora and fauna species not present within the six surveyed sites. As such, significant species may be present within these habitats that were not recorded during the field survey. These areas will be excluded from mining and so not directly impacted by mining excavations and ore processing, however, indirect impacts from noise, dust etc. may be possible.
- Scats cannot always be correctly attributed to species, however where they can be confidently identified, they provide an accurate indication of the presence and habitat preferences of certain species (Telfer *et al.* 2006).
- Detection of nocturnal species by spotlight potentially only detects about 25% of the animals present (e.g. Goldingay & Sharpe 2004).
- Moseby and Read (2001) concluded that environmental factors affect the capture rates of small reptiles. Unfortunately, planning logistics for fauna surveys such as this around specific environmental conditions is very difficult. Planning to survey in the dry season allows the best chance of favourable environmental conditions.
- The trap types and trapping methodologies utilised in this study do not necessarily provide an unbiased or complete indication of species diversity within an area (Cunningham *et al*. 2005; Moseby & Read 2001; Thompson *et al*.2005).
- NT Fauna and Flora Atlas records are biased toward previous NT Government survey sites and accessible sites often recognised for their unique biodiversity. Therefore, low biodiversity records can be indicative of limited previous surveys rather than species distribution.

4 Results and Discussion

4.1 Field Survey

4.1.1 Fauna Survey

Fieldwork was conducted between the 16th and 21st May 2011 by a survey team of three ecologists (EcOz), two aquatic ecologists and one traditional owner (NLC Katherine). Survey sites were selected within the proposed ML27422 in areas identified as having differing habitat.

A total of 526 trap nights resulted in 52 captures of 13 species. This constitutes a trap success rate of 9.9%. The captures occurred in Pitfall, Elliott and Funnel traps. Trapping information collected from the survey is provided below in Table 2. A total of eight species of reptile, one species of mammal (excluding bats), six species of amphibians and 27 species of bird was recorded by trapping or bird census. An additional 16 birds, five mammals, one frog, four snakes and one goanna were recorded as incidentals. Incidental observations are dispersed over, and representative of, the whole project area (covering multiple habitat types and extended survey time). Two of these species are considered threatened under the TPWC Act: the Australian Bustard (*Ardeotis australis*) and Mertens' Water Monitor (*Varanus mertensi*), the latter outside but near to ML27422; these species are discussed in Section 4.2. Appendix B2 gives all the results for the fauna survey.

Mammals

One mammal species was captured during the survey. Two House Mice (*Mus musculus)* were caught within the Eucalyptus open woodlands, within ML27422. This is an introduced species and is considered a pest.

No bat species were recorded during the survey using acoustic recordings from Anabat detector and nocturnal searches at any of the six survey sites. The Anabat detector was set for an entire evening on two occasions at two separate sites – one being close to the Numul Numul homestead and the second near the "Twin Dams" dam-site.

Birds

Forty-three bird species were recorded during the survey. The Australian Bustard *Ardeotis australis* was the only threatened bird recorded during the survey. The Australian Bustard is considered vulnerable under the TPWC Act and were observed in open woodlands in the proposed ML27422. This species is highly mobile across a range of habitats, thus a management plan for this species has not been developed for ML27422.

Reptiles and Amphibians

A total of 16 reptile species and ten species of amphibian were either captured or observed during the survey. A Mertens Water Monitor *Varanus mertensi* was the only reptile species, recorded during the survey, which is listed as threatened under Northern Territory or Commonwealth criteria. The Mertens Water Monitor is considered vulnerable under the TPWC Act and was observed at a creek crossing adjacent to ML27422. No creeks or areas or permanent water (aside from stock dams) exist within ML27422, thus a management plan for this species has not been developed.

Introduced Fauna

Four introduced fauna species were recorded during the survey including:

- Cane Toad (Rhinella marinus);

- Cattle (Bos indicus);
- Feral Pig (Sus scrofa); and
- House Mouse (Mus musculus).

Cane Toads were observed throughout the survey area, however, higher numbers were typically encountered in areas of permanent water such as dams constructed for stock water. Cane Toads are currently nominated for listing as a 'key threatening processes' under the EPBC Act as they have the ability to out-compete, prey upon and poison many native fauna species within Australia (EPBC Act website). Their current distribution covers most of Queensland, northern New South Wales and tropical Northern Territory. Currently, no broad scale control method is available in Australia.

As the property, within which the project area is located, is currently managed as a cattle station, the impact of livestock and feral animals is pronounced. The condition of riparian zones (and swamps) is generally declining because of damage associated with livestock and feral pigs. Feral pigs were observed during nocturnal searches near sites of permanent water. Animals were observed root ripping and ring barking small trees and shrubs.

Two house mice were captured in Elliot traps during the survey. This species are considered a pest species due to the extent of their distribution globally.

Feral cats *Felis catus* were reported to occur within the area (C O'Brien 2011, pers. comm., 20 May), however none were observed during the survey.

Table 2: Fauna Trapping Results.

Family	Scientific Name	Common Name	Quadrat					
			QA	QB	QC	QD	QE	QF
AMPHIBIANS								
Limnodynastidae	*Limnodynastes convexiusculus*	Marbled Frog	2	5	4	3	4	1
Limnodynastidae	*Opisthodon ornatus*	Ornate Burrowing Frog					1	
Myobatrachidae	*Crinia deserticola*	Desert Froglet					1	
Bufonidae	*Rhinella marinus*	Cane Toad				2		1
REPTILES								
Gekkonidae	*Heteronotia binoei*	Bynoe's Gecko		1				1
Pygopodidae	*Lialis burtonis*	Burton's Legless Lizard					1	
Scincidae	*Carlia munda*	Striped Rainbow Skink			1	3		1

Scincidae	*Ctenotus borealis*	Northern Ctenotus					2
Scincidae	*Ctenotus spaldingi*	Spalding's Ctenotus	2			2	
Agamidae	*Diporiphora lalliae*					1	
Agamidae	*Diporiphora magna*	Yellow-sided Two-lined Dragon	2	2	6		
Varanidae	*Varanus acanthurus*	Ridge-tailed Monitor	1				
MAMMALS							
Muridae	*Mus musculus*	House Mouse				2	

New Fauna Records for the Project Area

Forty-seven fauna species identified during the survey, including 15 reptiles, 10 amphibians, 15 birds and seven mammals (Table 3), have not been previously recorded within 10km of ML27422 according to the NT Fauna Atlas database. The large number of new records reflects the general paucity of biological surveys conducted across the habitat occurring within the area. Many fauna species listed in the NT Fauna Atlas were not recorded during the May 2011 survey. The fact that these species were not recorded in recent surveys most likely indicates that the survey timing was not ideal for detecting these species rather than the fact they are no longer present in the area. The preferred habitat for many of the species recorded previously continues to exist within the project area. All species records generated from this survey will be provided to the Northern Territory Parks and Wildlife Service such that new species records for the area can be included in the NT Fauna Atlas Database.

Table 3: Fauna species additions to the NT Fauna Database within a 10 km radius of ML27422

Name	Common Name	Name	Common Name
REPTILES		**BIRDS**	
Varanus acanthurus	Ridge-tailed Monitor	*Podargus strigoides*	Tawny Frogmouth
Ctenotus borealis	Northern Ctenotus	*Hamirostra melanosternon*	Black-breasted Buzzard
Ctenotus spaldingi	Spalding's Ctenotus	*Accipiter fasciatus*	Brown Goshawk
Carlia munda	Striped Rainbow Skink	*Circus approximans*	Swamp Harrier
Heteronotia binoei	Bynoe's Gecko	*Falco berigora*	Brown Falcon
Diporiphora magna		*Burhinus grallarius*	Bush Stone-curlew
Diporiphora lalliae		*Calyptorhynchus banksii*	Red-tailed Black-

Name	Common Name	Name	Common Name
		macrorhynchus	Cockatoo
Lialis burtonis	Burton's Legless Lizard	*Ninox novaeseelandiae*	Southern Boobook
Tiliqua scincoides	Common Blue-Tongued Lizard	*Smicrornis brevirostris*	Weebill
Antaresia childreni	Children's Python	*Gerygone albogularis*	White-throated Gerygone
Aspidites melanocephalus	Black-headed Python	*Melithreptus albogularis*	White-throated Honeyeater
Boiga irregularis	Brown Tree Snake	*Daphoenositta chrysoptera*	Varied Sittella
Cryptophis pallidiceps	Northern Small-eyed Snake	*Turnix* sp.	Button-quail
Demansia vestigiata	Black Whip Snake	*Cisticola exilis*	Golden-headed Cisticola
Varanus mertensi	Mertens' Water Monitor	*Dicaeum hirundinaceum*	Mistletoebird
		Lonchura castaneothorax	Chestnut-breasted Mannikin
AMPHIBIANS		**MAMMALS**	
Limnodynastes convexiusculus	Marbled Frog	*Macropus agilis*	Agile Wallaby
Opisthodon ornatus	Ornate Burrowing Frog	*Macropus robustus*	Common Wallaroo
Crinia deserticola	Desert Froglet	*Pteropus scapulatus*	Little Red Flying-fox
Litoria caerulea	Green Tree-frog	*Mus musculus*	House Mouse
Litoria inermis	Peters' Frog	*Canis lupus*	Dingo
Litoria pallid	Pale Frog	*Sus scrofa*	Pig
Litoria rothii	Roth's Tree-frog		
Litoria rubella	Red Tree-frog		
Litoria wotjulumensis	Wotjulum Frog		

4.1.2 Flora Survey

The six survey quadrat locations within the project area are mapped over aerial imagery in Figure 4. All six survey sites were over 1 km away from permanent water.

NT Herbarium records searched over the greater area, including the project area, held 461 different flora species, and the NT Atlas data held 248. A total of 92 species were recorded in May 2011 from the six 50 x 50m survey quadrats (for which locations were restricted to the close vicinity of the project area). The survey therefore identified a surprisingly high proportion (37%) of the total recorded diversity in the greater area. This result could indicate that the survey quadrats were located in floristically diverse locations or more likely, that the greater area around the project area supports a limited variety of vegetation communities. Indeed,

the latter explanation is more fitting because, relative to surveys conducted in other locations across the NT, the number of species recorded in each survey quadrat was not high.

Significant flora species, including those listed under either NT or Commonwealth legislation, were not found during the survey.

The flora species lists can be found in Appendix B3.

A large number of introduced flora species or weed species were recorded during the survey, including:

- *Hyptis suaveolens* (Classed B/C weed in the NT);
- *Sida acuta* (Classed B/C weed in the NT);
- *Crotalaria goreensis;*
- *Stylosanthes scabra;*
- *Stylosanthes hamata;*
- *Pennisetum pedicellatum;*
- *Urochloa mosambicensis;*
- *Hibiscus sabdariffa;* and
- *Senna obtusifolia.*

Vegetation Communities

The vegetation of the Project region is mapped at 1:1 000 000 scale by Wilson *et al*. (1990; Figure 6). The mining lease application area is wholly within mapping unit 16 which comprises *Eucalyptus tectifica* (Northern Box), *Eucalyptus terminalis* (Bloodwood) woodland with *Sehima nervosum* (White Grass), *Chrysopogon fallax* (Golden Beard Grass) grassland understory. This vegetation community is widespread occurring extensively in the Gulf and Victoria River regions, it is generally found on flat to undulating plains with mainly loam to clay loam soils (Wilson *et al*. 1990).

During exploration fieldwork it has been observed that the presence and dominance of *Heteropogon contortus* (Black Spear Grass) and *Triodia bitextura* (Soft spinifex) perpetuates early, low intensity fires. Pastoral activities also include an annual burn-off during the dry season to reduce any large scale fire risk and promote active pasture regrowth during the Wet. The area does contain weed species typical of the region in areas subject to cattle grazing.

No threatened flora species have been recorded in the area of ML27422 and a 10 km wide surrounding buffer (based on reports generated using the NT NRM Infonet database search tool (http://www.infonet.cdu.edu.au/nrm/) and the EPBC Act Protected Matters Search Tool (http://www.environment.gov.au/erin/ert/epbc/index.html).

The broader NVIS vegetation mapping described the ML27422 project area as Eucalyptus Woodland, whereas the slightly finer scale land system mapping identified two specific vegetation types. The Cliffdale land system vegetation type was described as open woodland dominated by *Eucalyptus miniata, E. tetrodonta, E. ferruginea* and *E. dichromophloia*. The Nutwood land system vegetation type was described as open woodland dominated by *Lysiphyllum cunninghamii*, *Eucalyptus terminalis,* and *E. patellaris.*

The intact vegetation communities within ML27422 were all of woodland or open woodland structure. Three main woodland communities were classified, based on structure or dominant species present. The six survey quadrats were located in order to represent the greatest variety of available habitats, although quadrat locations were restricted to paddocks that did not contain cattle at that time. Note that rocky hillsides, which may have contained different vegetation communities, were not surveyed for cultural reasons. Small patches of *Lysiphyllum cunninghamii* woodland were also noted in the far central north of

ML27422, but were not surveyed. The general lack of diversity in vegetation communities may be a reflection of the predominantly flat landscape within which the project area is located.

The main vegetation communities identified during the 2011 survey are as follows:

- Low *Eucalyptus pruinosa* open woodland, with or without *Corymbia terminalis*, over tall closed tussock grass (Quadrats A and B);
- Medium height *Corymbia terminalis, Eucalyptus tectifica* open woodland, with or without *Corymbia Confertiflora*, over tall mid-dense tussock grass (Quadrats C and E); and
- Low *Corymbia terminalis, Eucalyptus tectifica* Woodland, with or without *Corymbia Confertiflora* over medium height / mid-dense closed tussock grass (Quadrats D and F).

These broad vegetation communities identified in the field differ to the land system descriptions however this could be expected considering the broader scale mapping units used for the land system mapping. Soils across the selected survey sites area were all clay loam and moderately well drained (experiencing occasional seasonal waterlogging).

The project area has been managed as a pastoral lease by the current leaseholder for approximately ten years. Continued grazing pressures are likely to have resulted in changes to the original vegetation structure. At the time of the survey, cattle impacts such as bare trampled areas, erosion, and weed spread were evident.

Throughout the selected survey quadrats, estimated cattle impact levels varied from moderate to significant. Sheet erosion was evident at several of the survey quadrats, especially Quadrat C which displayed significant cattle impacts. Similarly, this quadrat displayed a significant number of weed species, although nearby vehicle tracks may have contributed to weed dispersal and abundance.

Pictures of each of the quadrats as well as their species lists can be found in Appendix B3.

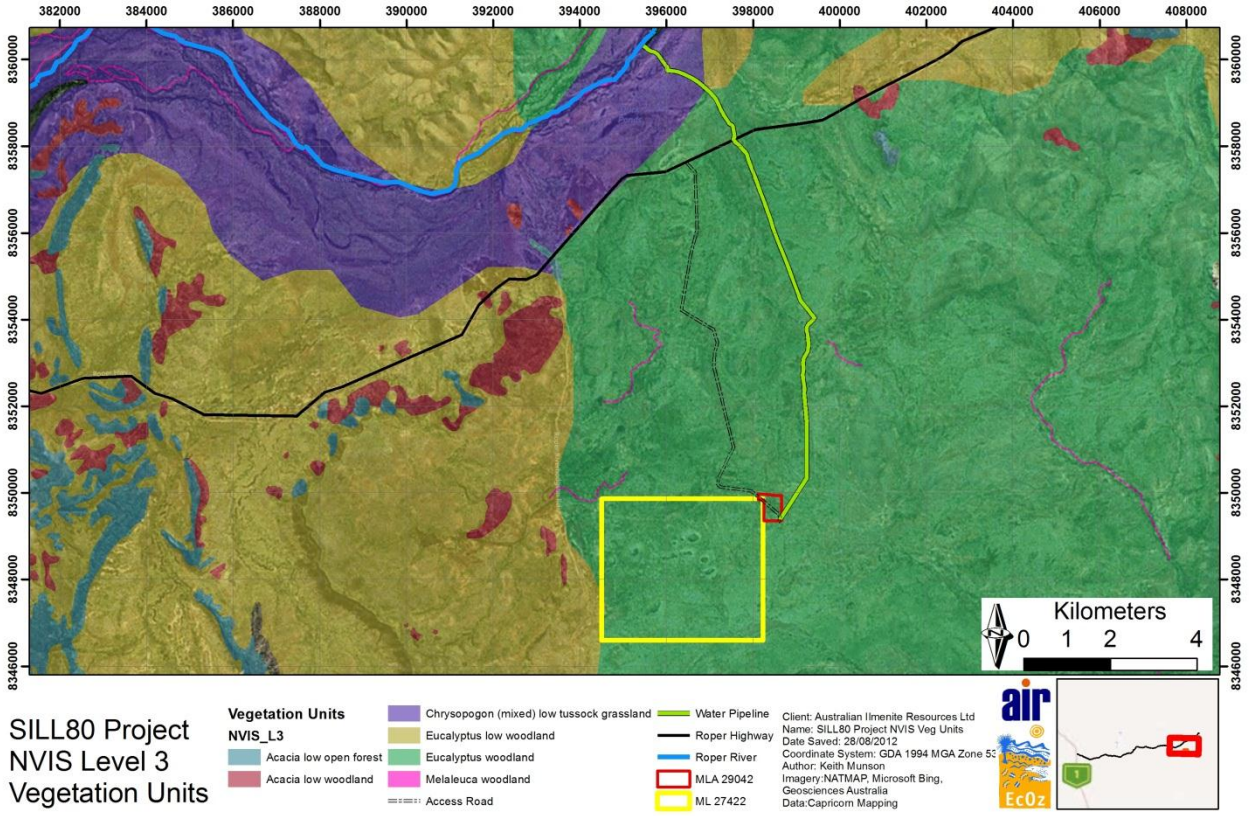

Figure 6: Vegetation Units in the area of ML27422 (from Wilson *et al.* 1990).

Quadrat A

Broad Floristic Formation: Low *Eucalyptus pruinosa* open woodland over tall closed tussock grass.

Site Location: South western corner of the project area (53, 0395454, 8347224).

Landform: Located on a very gently inclined footslope below a sandstone/siltstone stony ridge, this quadrat was moderately well drained. The soil is a brown clay loam with sandstone/siltstone cobble in some areas (7%), and gravel (1%).

Vegetation: A total of 34 flora species were recorded across the three stratum at this quadrat (representing the second-lowest overall flora species richness in comparison to the other five quadrats). However, Quadrat A had the highest number of upper stratum species in comparison to the others.

Features: Quadrat A had scattered fallen logs, flowering plants, and tree hollows. Tower termite mounds were common. This quadrat had experienced moderate damage from cattle through soil compaction, although erosion was not evident. A fire had passed through the area, estimated over 2 years ago, and causing minimal impacts to the vegetation. Introduced plant species *Hyptis suaveolens* (listed weed species in the NT) and *Crotalaria goreensis* were common.

Table 4: Quadrat A – Stratum Breakdown

Upper Stratum	Mid Stratum	Ground Stratum
<10% Crown Cover	<5% Crown Cover	
Height range 2–5m, 4m average	Height range 1–2m, 1.5m average	>80% Crown Cover
6 species	10 species	Height range 0–1m, 0.8m average
Dominated by *Eucalyptus pruinosa*	No dominant species	16 species
		Dominated by *Sehima nervosum* and *Heteropogon contortus*

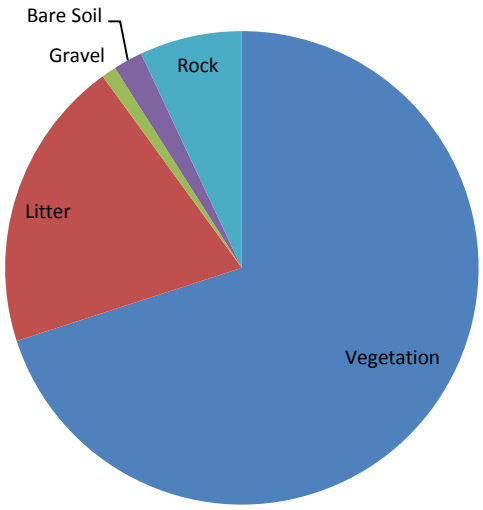

Figure 7: Quadrat A Groundcover Percentages

Habitat Summary: The open woodland on this gentle foot slope supported a diverse upper stratum dominated by low, very sparse *Eucalyptus pruinosa* over isolated mixed species shrubs and tall closed *Sehima nervosum* and *Heteropogon contortus* grasses. The brown clay loam was predominantly covered by ground stratum vegetation (70%), leaf litter (20%), and sandstone/siltstone cobbled rocks (7%) and gravel (1%) (see Figure 7). The site experienced moderate cattle damage, was infested with weeds, and had the second-lowest flora species richness in comparison to the other five quadrats. Scattered fallen logs, flowering plants and tree hollows provided food and refuge for some fauna species, and tower termite mounds were common within this quadrat.

Figure 8: Quadrat A

Quadrat B

Broad Floristic Formation: Low *Eucalyptus pruinosa, Corymbia terminalis* open woodland over tall closed tussock grass.

Site Location: South western corner of the project area (53, 0395286, 8347223).

Landform: Located on a very gently inclined footslope below a sandstone/ siltstone stony ridge, this quadrat was moderately well drained. The soil is a red clay loam with sandstone / siltstone stones in some areas (2%), and gravel (1%).

Vegetation: A total of 32 flora species were recorded across the three stratum at this quadrat (representing the lowest overall flora species richness in comparison to the other five quadrats).

Table 5: Quadrat B – Stratum Breakdown

Upper Stratum	Mid Stratum	Ground Stratum
<10% Crown Cover Height range 2–5m, 4m average 2 species Dominated by *Eucalyptus pruinosa* with *Corymbia terminalis common*	<5% Crown Cover Ht range 1–2m, 1.5m average 11 species No dominant species	>80% Crown Cover Height range 0–1m, 0.8m average 19 species Dominated by *Chrysopogon fallax* and *Sorghum plumosum*

Features: Quadrat B had scattered fallen logs, tree hollows and flowering plants. Tower termite mounds were common. This quadrat had experienced moderate damage from cattle through soil compaction, although erosion was not evident. Introduced plant species *Hyptis suaveolens* (listed weed species in the NT), *Crotalaria goreensis*, *Stylosanthes scabra* and *S. hamata* were scattered, concentrated around a nearby vehicle track.

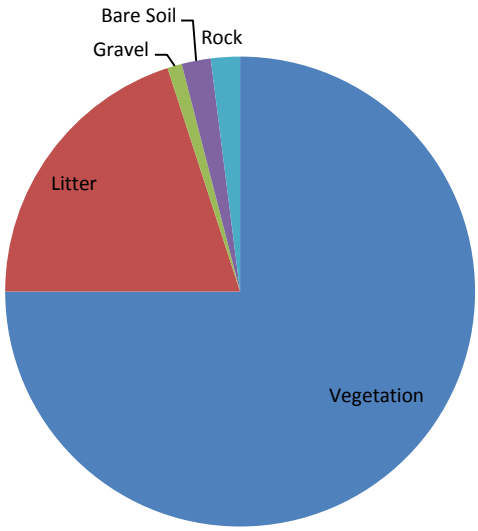

Figure 9: Quadrat B Groundcover Percentages

Habitat Summary: This gentle foot slope supported low, very sparse *Eucalyptus pruinosa* and *Corymbia terminalis* over isolated mixed species shrubs and tall closed *Sehima nervosum* and *Heteropogon contortus* tussock grasses. The red clay loam was predominantly covered by ground stratum vegetation (75%), leaf litter (20%), sandstone/siltstone cobbled rocks (2%) and gravel (1%) (see Figure 9). The site experienced moderate cattle damage, scattered weeds, and had the lowest flora species richness in comparison to the other five quadrats. Scattered fallen logs, tree hollows and flowering plants provided food and refuge for some fauna species, and tower termite mounds were common within this quadrat.

Figure 10: Quadrat B

Quadrat C

Broad Floristic Formation: Medium height *Corymbia terminalis*, *Corymbia confertiflora*, *Eucalyptus tectifica* open woodland over tall mid-dense tussock grass.

Site Location: North eastern area of the project area (53, 0396996, 8349675).

Landform: Located on flat terrain, this quadrat is moderately well drained. The soil is a reddish-brown clay loam without rock or gravel cover.

Vegetation: A total of 39 flora species were recorded across the three strata at this quadrat.

Table 6: Quadrat C – Stratum Breakdown

Upper Stratum	Mid Stratum	Ground Stratum
<10% Crown Cover Height range 3–8m, 6m average 6 species Dominated by *Eucalyptus pruinosa* with *Corymbia terminalis common*	<5% Crown Cover Height range 1–2 m, 1.5m average 10 species No dominant species	>80% Crown Cover Height range 0–1m, 0.8m average 23 species Dominated by *Chrysopogon fallax* and *Sorghum plumosum*

Features: Quadrat C held scattered tree hollows, fallen logs and flowering plants. Tower termite mounds were common. This quadrat had experienced significant damage from cattle through soil compaction and vegetation removal, and active sheet erosion was evident in areas of bare soil. Abundant across the quadrat were introduced plant species *Hyptis suaveolens* (listed weed species in the NT), *Pennisetum pedicellatum, Urochloa mosambicensis*, *Stylosanthes scabra* and *S. hamata*.

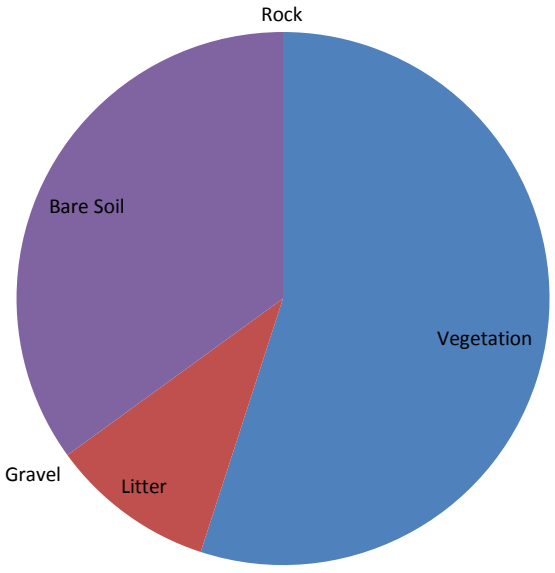

Figure 11: Quadrat C Groundcover Percentages

Habitat Summary: The open woodland on this flat area supported a diverse upper stratum dominated by medium height, very sparse *Corymbia terminalis*, *Corymbia confertiflora*, *Eucalyptus tectifica* over isolated mixed species shrubs and tall, mid-dense tussock grasses of mixed species. 35% of the reddish-brown clay loam within this quadrat was bare, the remainder covered by ground stratum vegetation (55%) and leaf litter (10%). The site experienced significant cattle damage, sheet erosion, and was weed infested. Scattered fallen logs, tree hollows and flowering plants provided food and refuge for some fauna species, and tower termite mounds were common within this quadrat.

Figure 12: Quadrat C

Quadrat D

Broad Floristic Formation: Low *Corymbia terminalis*, *Eucalyptus tectifica* woodland over medium height closed tussock grass

Site Location: Just outside the central southern boundary of the project area (53, 0396361, 8346370)

Landform: Located on flat terrain, this quadrat is moderately well drained. The soil here is a red clay loam without rock or gravel cover.

Vegetation: A total of 38 flora species were recorded across the three stratum at this quadrat.

Table 7: Quadrat D – Stratum Breakdown

Upper Stratum	Mid Stratum	Ground Stratum
20% Crown Cover Height range 3–8m, 4.5m average 5 species Dominated by *Eucalyptus tectifica* and *Corymbia terminalis*	<5% Crown Cover Height range 1–2 m, 1.5m average 9 species No dominant species	>80% Crown Cover Height range 0–1m, 0.5m average 24 species Dominated by *Chrysopogon fallax*

Features: Quadrat D held scattered tree hollows, mistletoe, fallen logs and flowering plants. Tower termite mounds were common. This quadrat had experienced moderate damage from cattle through soil compaction, although erosion was not evident. Scattered across the quadrat, concentrated around a nearby vehicle track, were introduced plant species *Hyptis suaveolens* (listed weed species in the NT), *Hibiscus sabdariffa*, *Stylosanthes hamata* and *Crotalaria goreensis*.

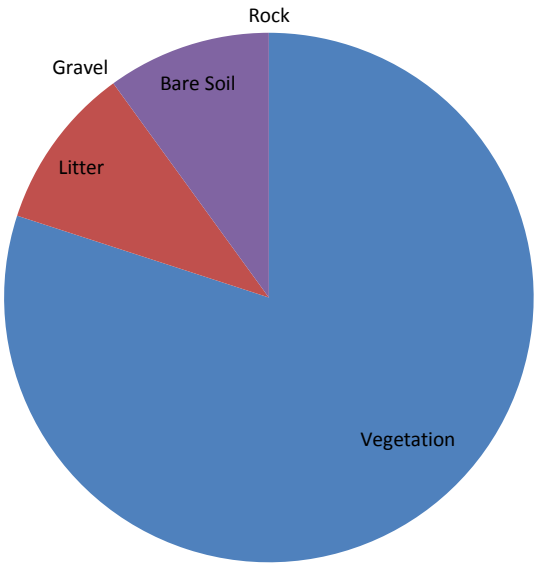

Figure 13: Quadrat D Groundcover Percentages

Habitat Summary: The open woodland on flat terrain supported a diverse upper stratum dominated by low, sparse *Corymbia terminalis* and *Eucalyptus tectifica* over isolated mixed species shrubs and medium height closed *Chrysopogon fallax* and other tussock grasses. The red clay loam was predominantly covered by ground stratum vegetation (80%) with some leaf litter cover (10%). The vegetative groundcover coverage and diversity was greater at this quadrat in comparison to the other survey quadrats. The site had experienced moderate cattle damage and weed species were scattered throughout. Scattered fallen logs, tree hollows, flowering plants and mistletoe provided food and refuge for some fauna species, and tower termite mounds were common within this quadrat.

Figure 14: Quadrat D

Quadrat E

Broad Floristic Formation: Medium height *Corymbia terminalis*, *Eucalyptus tectifica* woodland over tall mid-dense tussock grass

Site Location: North eastern area of the project area (53, 0396361, 8346370)

Landform: Located on flat terrain, this quadrat is moderately well drained. The soil here is a reddish-brown clay loam without rock or gravel cover.

Vegetation: A total of 35 flora species were recorded across the three stratum at this quadrat.

Table 8: Quadrat E – Stratum Breakdown

Upper Stratum	Mid Stratum	Ground Stratum
20% Crown Cover	<5% Crown Cover	60% Crown Cover
Height range 4–9m, 7m average	Height range 1–2 m, 1.5m average	Height range 0–1m, 0.8m average
2 species	10 species	23 species
Dominated by *Corymbia terminalis* and *Eucalyptus tectifica*	No dominant species	Dominated by *Sehima nervosum* and *Heteropogon contortus*

Features: Quadrat E held scattered tree hollows, fallen logs and flowering plants. Tower termite mounds were common. This quadrat had experienced moderate damage from cattle through soil compaction, and active sheet erosion was evident in areas of bare soil. Scattered across the quadrat, predominantly around a nearby vehicle track were introduced plant species *Hyptis suaveolens* (listed weed species in the NT), *Hibiscus sabdariffa*, *Crotalaria goreensis*, *Stylosanthes scabra* and *S. hamata*.

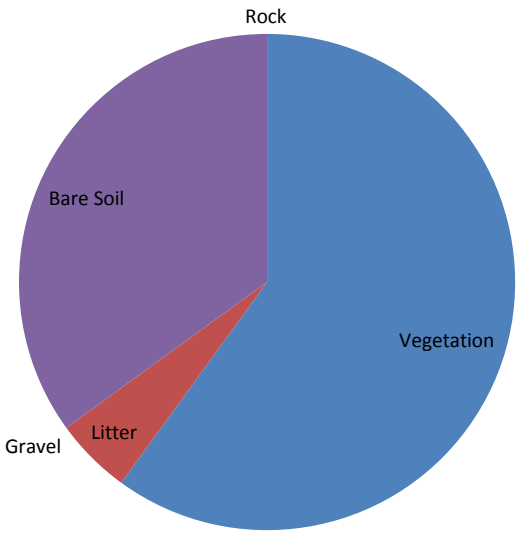

Figure 15: Quadrat E Groundcover Percentages

Habitat Summary: The woodland on this flat terrain supported a medium height, sparse *Corymbia terminalis* and *Eucalyptus tectifica* upper stratum over isolated mixed species shrubs and tall, mid-dense *Sehima nervosum* and *Heteropogon contortus* tussock grasses. 35% of the reddish-brown clay loam within this quadrat was bare, the remainder covered by ground stratum vegetation (60%), and some leaf litter (5%). The site experienced moderate cattle damage, sheet erosion, and scattered weeds. Scattered fallen logs, tree hollows and flowering plants provided food and refuge for some fauna species, and tower termite mounds were common within this quadrat.

Figure 16: Quadrat E

Quadrat F

Broad Floristic Formation: Low *Corymbia terminalis*, *Corymbia confertiflora*, *Eucalyptus tectifica* woodland over medium height mid-dense tussock grass

Site Location: The south-eastern corner of the project area (53, 0397368, 8347077)

Landform: Located on flat terrain, this quadrat is moderately well drained. The soil here is a red clay loam without rock or gravel cover.

Vegetation: A total of 34 flora species were recorded across the three stratum at this quadrat.

Table 9: Quadrat F – Stratum Breakdown

Upper Stratum	Mid Stratum	Ground Stratum
20% Crown Cover	<5% Crown Cover	50% Crown Cover
Height range 3.5–7m, 4.5m average	Height range 1–2 m, 1.5m average	Height range 0–1m, 0.5m average
4 species	6 species	24 species
Dominated by *Eucalyptus tectifica* and *Corymbia terminalis*	Dominated by *Hyptis suaveolens* weed species	Dominated by *Heteropogon contortus, Dichanthium sericeum* and *Polymeria ambigua*

Features: Quadrat F held scattered tree hollows, fallen logs and flowering plants. Tower termite mounds were common. This quadrat had experienced moderate damage from cattle through soil compaction, and active sheet erosion was evident in areas of bare soil. Abundant across the quadrat were introduced plant species *Hyptis suaveolens*, *Sida acuta* (both listed weed species in the NT), *Stylosanthes hamata, Hibiscus sabdariffa*, *Senna obtusifolia* and *Crotalaria goreensis*.

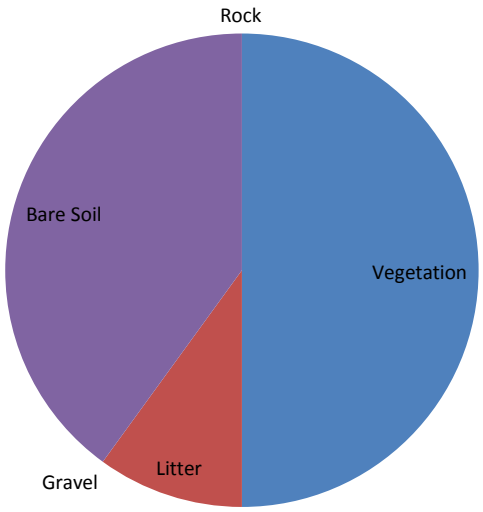

Figure 17: Quadrat F Groundcover Percentages

Habitat Summary: The woodland on this flat terrain supports a diverse upper stratum dominated by low, sparse *Corymbia terminalis* and *Eucalyptus tectifica* over a mid-stratum of isolated *Hyptis suaveolens* and medium height mid-dense *Heteropogon contortus* and *Dichanthium sericeum* tussock grasses. 40% of the red clay loam within this quadrat was bare, the remainder covered by ground stratum vegetation (50%), and some leaf litter (10%). The site had experienced moderate cattle damage and weed species were abundant within the quadrat. Scattered fallen logs, tree hollows and flowering plants provided food and refuge for some fauna species. Tower termite mounds were common within this quadrat.

Figure 18: Quadrat F

4.2 Conservation Significant Species and Communities

Section 3.2.9 identified what qualifies as conservation significance; this is any species considered:

- Threatened within NT (TPWC Act) or Commonwealth legislation (EPBC Act);
- Any species identified as migratory by any of the Migratory Bird Agreements; and
- Any vegetation community listed as threatened (EPBC Act) or identified in the Northern Territory Parks & Conservation Masterplan (NRETAS 2005) as rare or high conservation value, or identified as “sensitive” or “significant” under the NT Planning Scheme and NT Land Clearing Guidelines (NRETAS 2010).

The previous section (section 4.1) described the results of the field survey. This section integrates those results for conservation significant species and vegetation communities with the desktop work. Output from the desktop survey can be found in Appendices B4 - Protected Matters Search and Appendix B5 - Infonet search. Aquatic species such as the Gulf Snapping turtle (*Elseya lavarackorum*) and the Freshwater Sawfish (*Pristis microdon*) are discussed in the Aquatic Fauna report (Appendix C of the PER), however this report will talk about waders that may be present at the pump site.

Table 10 shows the integration of all the threatened species (NT and Commonwealth) that do, or may, live within the development envelope. Similarly, Table 11 shows the results of migratory species listed under the migratory species conventions and protected under the EPBC Act. Combined, these tables identify the 20 birds, three mammals and three reptile species that are either migratory and/or threatened.

The nature of impact of this development on terrestrial and wading conservation significant species is considered very small for two reasons. Firstly, for those species that may use the river from where water is being extracted , there is very little chance that these species will be affected as the volume of water extracted is comparatively small and the Water Management Plan (Appendix G of the PER) precludes any extraction beyond the sustainable limit of 20% of inflows. For all other species the footprint of the development is relatively small compared to the distribution and habitat requirements of these species. However, it is noted that noise and dust may extend beyond the cleared area, but is not considered to be significant. It is therefore concluded that this development poses no substantial threat to any of these species.

Table 10: Threatened species that could occur within ML27422

Common & Scientific Names	National / N.T. Status		Habitat and Known Distribution	Likelihood of Occurrence	Possible impacts on species from the project if present
	EPBC	TPWC			
BIRDS					
Emu *Dromaius novaehollandiae*	Not listed	VU	Widespread across mainland Australia. Inhabits most of NT but generally scarce in most Top End woodlands.	**Moderate**. May inhabit the region due to availability of habitat and their ability to travel large distances.	Limited, small development footprint some noise and dust
Australian Bustard *Ardeotis australis*	Not listed	VU	Open country, preferring grasslands and low shrublands. Widespread though generally scarce in the NT.	**Known to occur**	Limited, small development footprint some noise and dust
Australian Painted Snipe *Rostratula australis*	VU	VU	Shallow inland freshwater or brackish, permanent or temporary wetlands	**Possible:** Preferred habitat not found within ML27422 but could be at the pump site.	None.
Red Goshawk *Erythrotriorchis radiates*	VU	VU	Coastal, sub-coastal forests, tropical woodlands.	**Moderate**. May inhabit the region. Sparsely distributed across a range of habitats.	Limited, small development footprint some noise and dust
Gouldian Finch *Erythrura gouldiae*	EN	EN	Open tropical woodland that has a grassy understorey, often in hilly areas.	**Moderate**. May inhabit the region due to availability of habitat.	Limited, small development footprint some noise and dust
Partridge Pigeon *Geophaps smithii*	VU	VU	Open tropical woodlands, often on sandy, stony ground with short and sparse grass	**Moderate**. May inhabit the region due to availability of habitat.	Limited, small development footprint some noise and dust
Masked Owl *Tyto novaehollandiae*	EN/ VU	EN/ VU	Roosts and nests in heavy forests; hunts over open woodlands, farmlands.	**Moderate**. May inhabit the region due to availability of habitat.	Limited, small development footprint some noise and dust
Masked Owl [Northern Mainland] *Tyto*	VU	VU	Roosts and nests in heavy forests; hunts over open woodlands, farmlands.	**Moderate**. May inhabit the region due to availability of habitat.	Limited, small development footprint some noise and dust

novaehollandiae kimberli					
Crested Shrike-tit *Falcunculus frontatus whitei*	VU	VU	Open forests, woodlands, mallee, riverside and watercourse trees, stands of cypress pines, banksias woodlands.	**Moderate**. May inhabit the region due to availability of habitat.	Limited, small development footprint some noise and dust
Hooded Robin *Melanodryas cucullata*	EN/	EN/	Drier and arid regions in open woodland of eucalypt, casuarinas, pine, mallee, mulga; open banksias heathland of inland and drier parts of the coast; semi cleared farmland.	**Uncertain**: May inhabit the region due to availability of habitat. However, ML27422 is outside known distribution area.	Limited, small development footprint some noise and dust
REPTILES					
Merten's Water Monitor *Varanus mertensi*	Not listed	VU	Coastal and inland waters of far northern Australia, from far north-western Australia to central Qld and the western side of Cape York Peninsula.	**High at extraction point, moderate where suitable habitat occurs elsewhere**. Species have wide distribution across Northern Australia, have been greatly impacted by Cane Toad populations, may be found at the water extraction point.	None; due to limited and controlled water extraction.
MAMMALS					
Northern Quoll *Dasyurus hallucatus*	CR	EN	Rocky escarpment, open forest and open woodland.	**Uncertain**. Presence of Cane Toads in these areas reduces likelihood that quoll populations have survived.	Limited, small development footprint some noise and dust
Golden Bandicoot *Isoodon auratus*	EN	VU	Sand dune and sandplain country in the arid zone, *Acacia* and *Eucalyptus* woodland in tropical semi-arid zone.	**Unlikely**: Distribution limited to Barrow and Middle Island populations, NW Kimberley and Arnhem Land Coast.	Limited, small development footprint some noise and dust
Brush-tailed Rabbit-rat *Conilurus penicillatus*	VU	VU	Mixed eucalypt open forest and woodland or on dunes with *Casuarina*.	**Uncertain**: Distribution limited to Coburg Peninsula and one highly restricted area of Kakadu National Park.	Limited, small development footprint some noise and dust

CR – Critically Endangered; EN – Endangered; VU – Vulnerable;

EN/VU – one subspecies Endangered, one subspecies Vulnerable; EN/ - one or more subspecies Endangered;

Table 11: EPBC Migratory and Marine species that could occur within ML27422

Common & Scientific Names	EPBC Act Listing	Habitat and Known Distribution	Likelihood of Occurrence	Possible Impacts (if present)
Australian Painted Snipe *Rostratula australis*	**Migratory Wetland Species / VU**	Shallow inland freshwater or brackish, permanent or temporary wetlands	Possible (though unlikely): Preferred habitat not found within ML27422 but could be at or near water extraction site.	None, due to limited and controlled water extraction.
Gouldian Finch *Erythrura gouldiae*	**Migratory Terrestrial Species / EN**	Open tropical woodland that has a grassy understorey, often in hilly areas.	Moderate. May inhabit the region due to availability of habitat.	Limited, small development footprint some noise and dust
Fork-tailed Swift *Apus pacificus*	**Migratory Marine Birds**	Over open country from coasts to semi-deserts.	Not Likely: Preferred habitat not within or adjacent to ML27422	Limited, small development footprint some noise and dust
Great Egret *Ardea alba*	**Migratory Marine Birds/Migratory Wetland Species**	Estuaries, tidal mudflats, shallow of rivers, fresh water wetlands, irrigation areas and large dams.	Moderate. May inhabit or pass through the region; has been recorded within 10km of the development; may be at pump site.	None, due to limited and controlled water extraction.
Cattle Egret *Ardea ibis*	**Migratory Marine Birds/Migratory Wetland Species**	Wetlands, tidal mudflats, drains, stock paddocks and croplands.	Moderate. May inhabit or pass through the region; may be at or near water extraction site	None, due to limited and controlled water extraction.
White-bellied Sea-Eagle *Haliaeetus leucogaster*	**Migratory Terrestrial Species**	Coasts, islands, estuaries, rivers and lakes.	Moderate. May well inhabit or pass through the region, has been recorded within 10km of the development.	None, due to limited and controlled water extraction.
Oriental Plover *Charadrius*	**Migratory Wetland Species**	Open plains, bare rolling country often far from water, muddy or sandy areas	Low. Summer migrant. Preferred habitat does not occur within or adjacent to	None

Common & Scientific Names	EPBC Act Listing	Habitat and Known Distribution	Likelihood of Occurrence	Possible Impacts (if present)
veredus		near swamps or tidal mudflats and the margins of coastal marshes.	ML27422.	
Oriental Pratincole *Glareola maldivarum*	**Migratory Wetland Species**	Plains, edges of open wetlands, tidal mudflats and beaches.	Low. Summer migrant. Preferred habitat does not occur within or adjacent to ML27422.	None
Rainbow Bee-eater *Merops ornatus*	**Migratory Terrestrial Species**	Open woodlands with sandy soil, sand ridges, riverbanks, beaches, mangroves and rainforests	High. Habitat and distribution of this species falls within ML27422; has been recorded within 10km of the development, may forage over water extraction site.	Limited, small development footprint some noise and dust; no impact from water extraction expected.
Derby White-browed Robin *Poecilodryas superciliosa cerviniventris*	**Migratory Terrestrial Species**	Rainforest, vine forest, riparian vegetation, coastal scrub and nearby Eucalypt woodland.	Not Likely: Preferred habitat not found within ML27422	None
Rufous Fantail *Rhipidura rufifrons*	**Migratory Terrestrial Species**	Undergrowth in rainforest, wet eucalypt forest, monsoon forest, coastal scrubs and watercourse.	Not Likely. Lack of suitable habitat within ML27422 makes presence unlikely, could be at the pump site.	Limited, small development footprint some noise and dust; no impact from water extraction expected
Salt-water Crocodile *Crocodylus porosus*	**Migratory/Listed Marine Reptiles**	Coastal rivers and swamps, extending inland along major drainage systems; open sea.	Not Likely: Preferred habitat not within ML27422 – lack of permanent water reduces likelihood of occurrence.	None

EN – Endangered; VU – Vulnerable

5 Summary

The flora and fauna surveys conducted in May 2011 confirmed the presence of two vulnerable species as listed by the TPWC Act; the Australian Bustard and Merten's Water Monitor. Several species of conservation significance, while not recorded during the 2011 survey, have the potential to occur within the project area, or have previously been recorded in the area. Single standard flora and fauna survey lists are not comprehensive; therefore, a conservative approach of assuming all previously recorded threatened species may reasonably occur within the project area has been adopted. Taking this approach it was determined that no conservation significant species would be affected by this development due to the development area being comparatively small compared to the distribution and habitat requirements of these species and, where the species may be affected by water extraction, the Water Management Plan (Appendix G of the PER) precludes any unsustainable extraction. Consequently, it is concluded that this development poses no substantial threat to any of these species.

The survey throughout ML27422 did not discover any areas deemed to be significant flora or fauna refuges that will be affected by the development of an ilmenite mine. The area has evidence of cattle disturbance throughout due to the current land practices. The large exclusion zone, as requested by the traditional owners throughout the mining lease area, will result in protection of habitat immediately adjacent to the mining operations.

6 Definitions

EPBC Act	*Environment Protection and Biodiversity Conservation Act*
IUCN	International Union for the Conservation of Nature
NRETAS	NT Department of Natural Resources, Environment, The Arts and Sport
NT	Northern Territory
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities
SOCS	Site of Conservation Significance
TPWC Act	*Territory Parks and Wildlife Conservation Act*
WONS	Weeds of National Significance (National Status)

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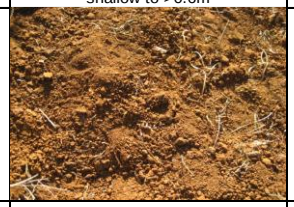
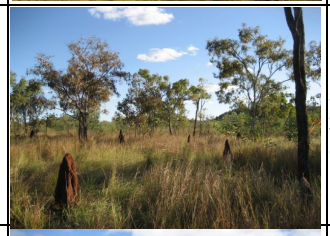
Appendix B1 – Site Habitat Descriptions

Site habitat descriptions for each of the sampling sites

Site	Thumbnail Photo	Broad Floristic Formation: Level 3 or higher from Hnatiuk *et al* (2009)*	Coordinates of NE Corner of Quadrat GDA94 Zone 53L		Landform, slope & aspect	Drainage	Erosion Type & Extent	Weeds density	Fire Impact 1=low, 5=high	Soil Photo	Rock Cover including bedrock and unconsolidated rocky substrate	Feral Animal Damage and Other Disturbances 1=low, 5=high	Distance to Permanent Water (m)	Tree Hollows	Flowering Plants	Termite Density	Ground Cover	Vegetation Structure: Level 2 of Hnatiuk et al (2009)*
			Easting	Northing					Approx. last fire	Soil Colour, Texture, Depth (m)	Rock Cover (%)			Fallen Logs	Mistletoe	Termite Type	Veg, Litter, Gravel, Soil, Rock (%)	
QA		Low *Eucalyptus pruinosa* Open Woodland over Tall Closed Tussock Grass	395454	8347224	Very gently inclined, lower slope; footslope below sandstone / siltstone stony ridge	Moderately well drained (occasional seasonal waterlogging)	Absent	Common, especially alongside vehicle track - see species list for species	1		Very cobbly to stony in areas, lithology is sandstone/ siltstone - same as nearby sandstone/siltst one stony ridges, no bedrock outcrop within quadrat	3 - moderate damage from cattle, including soil compaction	>1000	Scattered	Scattered	Common	Veg: 70 Litter: 20 Gravel: 1 Soil: 2 Rock: 7	Low very sparse trees over isolated shrubs and tall closed tussock grass
									2+ yrs	Brown, Clay Loam, Depth ranges from shallow to >0.6m	20-50%			Scattered	Absent	Tower		
QB		Low *Eucalyptus pruinosa, Corymbia terminalis* Open Woodland over Tall Closed Tussock Grass	395286	8347223	Very gently inclined, lower slope; footslope below sandstone / siltstone stony ridge	Moderately well drained (occasional seasonal waterlogging)	Absent	Scattered mainly only alongside vehicle track - see species list for species	0		stony in some areas, lithology is sandstone/ siltstone - same as nearby sandstone/siltst one stony ridges, no bedrock outcrop within quadrat	3 - moderate damage from cattle, including soil compaction	>1000	Scattered	Scattered	Common	Veg: 75 Litter: 20 Gravel: 1 Soil: 2 Rock: 2	Low very sparse trees over isolated shrubs and tall closed tussock grass
									Unburnt	Red, Clay Loam, Depth ranges from shallow to >0.6m	20-50%			Scattered	Absent	Tower		
QC		Medium Height *Corymbia terminalis, Corymbia Confertiflora, Eucalyptus tectifica* Open Woodland over Tall Mid-dense Tussock Grass	396996	8349675	Flat	Moderately well drained (occasional seasonal waterlogging)	Active Sheet Erosion, several bare soil areas	Abundant - see species list for species	0		no rocks	4 - significant damage from cattle, including soil compaction and vegetation removal	>1000	Scattered	Scattered	Common	Veg: 55 Litter: 10 Gravel: 0 Soil: 35 Rock: 0	Medium height very sparse trees over isolated shrubs and tall mid-dense tussock grass
									Unburnt	Reddish brown, Clay Loam, Depth >0.6m	0%			Scattered	Absent	Tower		

Site	Thumbnail Photo	Broad Floristic Formation: Level 3 or higher from Hnatiuk *et al* (2009)*	Coordinates of NE Corner of Quadrat GDA94 Zone 53L		Landform, slope & aspect	Drainage	Erosion Type & Extent	Weeds density	Fire Impact 1=low, 5=high	Soil Photo	Rock Cover including bedrock and unconsolidated rocky substrate	Feral Animal Damage and Other Disturbances 1=low, 5=high	Distance to Permanent Water (m)	Tree Hollows	Flowering Plants	Termite Density	Ground Cover	Vegetation Structure: Level 2 of Hnatiuk et al (2009)*
			Easting	Northing					Approx. last fire	Soil Colour, Texture, Depth (m)	Rock Cover (%)			Fallen Logs	Mistletoe	Termite Type	Veg, Litter, Gravel, Soil, Rock (%)	
QD		Low Corymbia terminalis, Eucalyptus tectifica Woodland over Medium Height Closed Tussock Grass	396361	8346370	Flat	Moderately well drained (occasional seasonal waterlogging)	Absent	Scattered mainly only alongside vehicle track - see species list for species	0		no rocks	3 - moderate damage from cattle, including soil compaction	>1000	Scattered	Scattered	Common	Veg: 80 Litter: 10 Gravel: 0 Soil: 10 Rock: 0	Low sparse trees over isolated shrubs and medium height closed tussock grass
									Unburnt	Red, Clay Loam, Depth >0.6m	0%			Scattered	Scattered	Tower		
QE		Medium Height *Corymbia terminalis, Eucalyptus tectifica* Woodland over Tall Mid-dense Tussock Grass	397112	8349204	Flat	Moderately well drained (occasional seasonal waterlogging)	Active Sheet Erosion, several bare soil areas	Scattered mainly only alongside vehicle track - see species list for species	0		no rocks	3 - moderate damage from cattle, including soil compaction	>1000	Scattered	Scattered	Common	Veg: 60 Litter: 5 Gravel: 0 Soil: 35 Rock: 0	Medium height sparse trees over isolated shrubs and tall mid-dense tussock grass
									Unburnt	Reddish brown, Clay Loam, Depth >0.6m	0%			Scattered	Absent	Tower		
QF		Low *Corymbia terminalis, Corymbia Confertiflora, Eucalyptus tectifica* Woodland over Medium Height Mid-dense Tussock Grass	397368	8347077	Flat	Moderately well drained (occasional seasonal waterlogging)	Active Sheet Erosion, several bare soil areas	Abundant - see species list for species	0		no rocks	3 - moderate damage from cattle, including soil compaction	>1000	Scattered	Scattered	Abundant	Veg: 50 Litter: 10 Gravel: 0 Soil: 40 Rock: 0	Low sparse trees over isolated shrubs and medium height mid-dense tussock grass
									Unburnt	Red, Clay Loam, Depth >0.6m	0%			Scattered	Absent	Tower		
Roper River Water Extract Point		Medium to Tall Closed *Excoecaria parvifolia, Cathormion umbellatum, Melaleuca leucadendra, Casuarina cunninghamiana, Antidesma ghesaembilla* Forest	395471	8360319	Permanant river, steep banks	Moderately well drained (however seasonally inundated due to proximity to river)	Active Streambank Erosion, riverbanks bare of ground vegetation	Absent	0		no rocks	3 - moderate damage from cattle and vehicle access, including soil compaction	0	Common	Absent	Absent	Veg: <5 Litter: 10 Gravel: 0 Soil: 90 Rock: 0	Medium to tall closed forest
									Unburnt	Brown, Clay Loam, Very Deep	0%			Common	Absent	Absent		

Appendix B2 - Fauna Survey Results

Table 1 Reptile and Amphibian Survey Results

Family	Scientific Name	Common Name	Quadrat A		Quadrat B		Quadrat C		Quadrat D		Quadrat E		Quadrat F		Incidentals
			Traps	Search	Traps	Search	Traps	Search	Traps	Search	Traps	Incidental	Traps	Incidental	
AMPHIBIANS															
Limnodynastidae	*Limnodynastes convexiusculus*	Marbled Frog	2		5		4		3		4		1		
Limnodynastidae	*Opisthodon ornatus*	Ornate Burrowing Frog									1				X
Myobatrachidae	*Crinia deserticola*	Desert Froglet									1				
Hylidae	*Litoria caerulea*	Green Tree-frog		X											
Hylidae	*Litoria inermis*	Peters' Frog													X
Hylidae	*Litoria pallida*	Pale Frog								1					X
Hylidae	*Litoria rothii*	Roth's Tree-frog													X
Hylidae	*Litoria rubella*	Red Tree-frog													X
Hylidae	*Litoria wotjulumensis*	Wotjulum Frog													X
Hylidae	*Chaunus marinus*	Cane Toad							2				1		X
REPTILES															
Gekkonidae	*Heteronotia binoei*	Bynoe's Gecko			1								1		X
Pygopodidae	*Lialis burtonis*	Burton's Legless Lizard									1				
Pygopodidae	*Carlia munda*	Striped Rainbow Skink					1		3				1		
Scincidae	*Ctenotus borealis*	Northern Ctenotus											2		
Scincidae	*Ctenotus spaldingi*	Spalding's Ctenotus	2								2				
Scincidae	*Tiliqua scincoides*	Common Blue-Tongued Lizard													X
Agamidae	*Diporiphora lalliae*										1				

Family	Scientific Name	Common Name	Quadrat A		Quadrat B		Quadrat C		Quadrat D		Quadrat E		Quadrat F		Incidentals
			Traps	Search	Traps	Search	Traps	Search	Traps	Search	Traps	Incidental	Traps	Incidental	
Agamidae	*Diporiphora sp.*													1	
Agamidae	*Diporiphora magna*		2		2				6						
Typhlopidae	*Antaresia childreni*	Children's Python													X
Typhlopidae	*Aspidites melanocephalus*	Black-headed Python													X
Pythonidae	*Boiga irregularis*	Brown Tree Snake													X
Elapidae	*Cryptophis pallidiceps*	Northern Small-eyed Snake		X											
Elapidae	*Demansia vestigiata*	Black Whip Snake													X
Varanidae	*Varanus mertensi*	Mertens' Water Monitor													X
Varanidae	*Varanus acanthurus*	Ridge-tailed Monitor	1												

Table 2 Bird Survey Results

Family	Scientific Name	Common Name	QA	QB	QC	QD	QE	QF	Incidentals
Columbidae	*Ocyphaps lophotes*	Crested Pigeon							X
Columbidae	*Geopelia striata*	Peaceful Dove		X	X	X		X	
Columbidae	*Geopelia humeralis*	Bar-shouldered Dove		X	X	X	X		
Columbidae	*Podargus strigoides*	Tawny Frogmouth							X
Columbidae	*Eurostopodus argus*	Spotted Nightjar							X
Threskiornithidae	*Hamirostra melanosternon*	Black-breasted Buzzard							X
Accipitridae	*Accipiter fasciatus*	Brown Goshawk				X			
Accipitridae	*Accipiter cirrhocephalus*	Collared Sparrowhawk					X		
Accipitridae	*Circus approximans*	Swamp Harrier							X
Accipitridae	*Falco berigora*	Brown Falcon							X
Rallidae	*Ardeotis australis*	Australian Bustard							X
Rallidae	*Burhinus grallarius*	Bush Stone-curlew							X
Laridae	*Calyptorhynchus banksii macrorhynchus*	Red-tailed Black-cockatoo							X
Laridae	*Eulophus roseicapilla*	Galah						X	X
Cacatuidae	*Cacatua galerita*	Sulphur-crested Cockatoo							X
Cacatuidae	*Trichoglossus haematodus*	Rainbow Lorikeet					X	X	
Cacatuidae	*Aprosmictus erythropterus*	Red-winged Parrot	X	X	X		X	X	X
Psittacidae	*Centropus phasianinus*	Pheasant Coucal							X
Cuculidae	*Ninox novaeseelandiae*	Southern Boobook							X
Tytonidae	*Dacelo leachii*	Blue-winged Kookaburra	X	X					
Ptilonorhynchidae	*Malurus melanocephalus*	Red-backed Fairy-wren		X		X		X	X
Maluridae	*Smicrornis brevirostris*	Weebill			X	X	X		
Acanthizidae	*Gerygone albogularis*	White-throated Gerygone			X	X		X	
Meliphagidae	*Cissomela pectoralis*	Banded Honeyeater	X	X	X	X	X	X	

Family	Scientific Name	Common Name	QA	QB	QC	QD	QE	QF	Incidentals
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater	X	X	X	X		X	
Meliphagidae	*Melithreptus albogularis*	White-throated Honeyeater		X	X			X	
Meliphagidae	*Philemon argenticeps*	Silver-crowned Friarbird			X				
Meliphagidae	*Philemon citreogularis*	Little Friarbird		X		X	X	X	
Meliphagidae	*Pomatostomus temporalis*	Grey-crowned Babbler					X	X	
Pomatostomidae	*Daphoenositta chrysoptera*	Varied Sittella	X						
Cinclosomatidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike						X	
Cinclosomatidae	*Coracina papuensis*	White-bellied Cuckoo-shrike				X			
Cinclosomatidae	*Lalage sueurii*	White-winged Triller	X	X					
Turnicidae	*Turnix sp.*	Button-quail		X					
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird		X					
Rhipiduridae	*Corvus orru*	Torresian Crow						X	
Corvidae	*Myiagra inquieta*	Restless Flycatcher			X				
Corvidae	*Grallina cyanoleuca*	Magpie-lark							X
Monarchidae	*Struthidea cinerea*	Apostlebird							X
Petroicidae	*Cisticola exilis*	Golden-headed Cisticola							X
Hirundinidae	*Dicaeum hirundinaceum*	Mistletoebird	X				X		
Hirundinidae	*Poephila acuticauda*	Long-tailed Finch			X				
Estrildidae	*Lonchura castaneothorax*	Chestnut-breasted Mannikin							X

Table 3 Mammal Survey Results

Family	Scientific Name	Common Name	QA	QB	QC	QD	QE	QF	Incidentals
Phalangeridae	*Macropus agilis*	Agile Wallaby							X
Macropodidae	*Macropus robustus*	Common Wallaroo							X
Macropodidae	*Pteropus scapulatus*	Little Red Flying-fox							X
Muridae	*Mus musculus*	House Mouse					2		
Muridae	*Canis lupus*	Dingo							X
Canidae	*Sus scrofa*	Pig							X

Appendix B3 - Flora Lists

Vegetation descriptions of the quadrats used for the terrestrial biological survey. Names in red refer to introduced species; numbers in parentheses after species names are the relative abundance of the species within the sampled quadrat, the lower the number the higher the relative abundance.

Site Number:	**QA**	
General Site Location	In southwest quarter of MLA in "Bos" Paddock	
Map Grid Coordinates (GDA94, Zone 53L):	395454	8347224
*Broad Floristic Formation; Level 3 or higher from Hnatiuk et al. (2009)**	**Low *Eucalyptus pruinosa* Open Woodland over Tall Closed Tussock Grass**	
Upper Storey	Mid Storey	Ground Cover
Eucalyptus pruinosa (1) *Corymbia terminalis (3)* *Vachellia pachyphloia (3)* *Cochlospermum sp. (3)* *Maytenus cunninghamii (4)* *Brachychiton paradoxus (megaphyllus?) (4)*	*Acacia holosericea (3)* *Hibiscus leptocladus (3)* *Carissa lanceolata (3)* *Cochlospermum sp. (3)* *Hibiscus panduriformis (3)* *Cullen pustulatum (3)* *Sesbania cannabina (3)* *Maytenus cunninghamii (4)* *Brachychiton paradoxus (megaphyllus?) (4)* *Flueggea virosa (4)*	*Mixed tussock grass species, forbs, and vines including:* *Heteropogon contortus (1)* *Sehima nervosum (1)* *Chrysopogon fallax (2)* *Dichanthium sericeum (2)* *Hyptis suaveolens (2)* *Hibiscus panduriformis (2)* *Crotalaria goreensis (2)* *Themeda triandra (3)* *Sesbania cannabina (3)* *Hibiscus leptocladus (3)* *Abutilon hannii subsp. prostrate (4)* *Polycarpaea breviflora (4)* *Trichodesma zeylanicum (4)* *Cucumis melo (4)* *Brachychiton paradoxus (megaphyllus?) (4)* *Grewia retusifolia (4)*



Site Number:	QB		
General Site Location	In southwest quarter of MLA in "Bos" Paddock		
Map Grid Coordinates (GDA94, Zone 53L):	395286	8347223	
*Broad Floristic Formation; Level 3 or higher from Hnatiuk et al. (2009)**	**Low *Eucalyptus pruinosa, Corymbia terminalis* Open Woodland over Tall Closed Tussock Grass**		
Upper Storey	Mid Storey	Ground Cover	
Eucalyptus pruinosa (1) *Corymbia terminalis (2)*	*Eucalyptus pruinosa (3)* *Acacia holosericea (3)* *Flueggea virosa (4)* *Maytenus cunninghamii (4)* *Corymbia terminalis (4)* *Acacia thomsonii (4)* *Cochlospermum sp. (4)* *Atalaya hemiglauca (4)* *Stylosanthes scabra (4)* *Ficus aculeata var. aculeata (4)* *Carissa lanceolata (4)*	*Mixed tussock grass species, forbs, and vines including:* *Chrysopogon fallax (1)* *Sorghum plumosum (1)* *Heteropogon contortus (2)* *Themeda triandra (2)* *Stylosanthes hamata (2)* *Sehima nervosum (3)* *Brachychiton paradoxus (megaphyllus?) (3)* *Hyptis suaveolens (3)* *Corymbia terminalis (3)* *Dunbaria rotundifolia (3)* *Cymbopogon procerus / bombycinus (3)* *Eucalyptus pruinosa (3)* *Corymbia confertiflora (4)* *Vigna lanceolata var. lanceolata (4)* *Stylosanthes scabra (4)* *Polymeria ambigua (4)* *Crotalaria goreensis (4)* *Dodonaea oxyptera (4)* *Vachellia pachyphloia (4)*	



Site Number:	QC	
General Site Location	In northeast quarter of MLA in the "Laneway" Paddock	
Map Grid Coordinates (GDA94, Zone 53L):	396996	8349675

*Broad Floristic Formation; Level 3 or higher from Hnatiuk et al. (2009)**	**Medium Height *Corymbia terminalis, Corymbia Confertiflora, Eucalyptus tectifica Open Woodland* over Tall Mid-dense Tussock Grass**	
Upper Storey	Mid Storey	Ground Cover
Corymbia terminalis (2)	*Carissa lanceolata (3)*	*Mixed tussock grass species, annual grasses, forbs, and vines including:*
Corymbia confertiflora (2)	*Acacia holosericea (3)*	*Heteropogon contortus (2)*
Eucalyptus tectifica (2)	*Brachychiton paradoxus (megaphyllus?) (3)*	*Pennisetum pedicellatum (2)*
Brachychiton diversifolius (4)	*Cullen pustulatum (3)*	*Polymeria ambigua (2)*
Cochlospermum sp. (4)	*Corymbia confertiflora (3)*	*Hyptis suaveolens (2)*
Terminalia canescens (4)	*Dichrostachys spicata (3)*	*Sorghum plumosum (3)*
	Acacia thomsonii (4)	*Sehima nervosum (3)*
	Terminalia canescens (4)	*Chrysopogon fallax (3)*
	Flueggea virosa (4)	*Hibiscus panduriformis (3)*
	Bauhinia cunninghamii (4)	*Cullen pustulatum (3)*
		Hibiscus leptocladus (3)
		Polycarpaea breviflora (3)
		Grewia retusifolia (3)
		Stylosanthes scabra (3)
		Stylosanthes hamata (3)
		Indigofera linifolia (3)
		Sporobolus australasicus (3)
		Urochloa mosambicensis (3)
		Aristida inaequiglumis (3)
		Spermacoce sp. (3)
		Senna obtusifolia (3)
		Iseilema vaginiflorum (3)
		Goodenia hispida (4)
		Melhania oblongifolia (4)
		Abutilon hannii subsp. prostrate (4)
		Sesbania cannabina (4)

Site Number:	QD	
General Site Location	On the southern boundary of MLA in "Bos" Paddock	
Map Grid Coordinates (GDA94, Zone 53L):	396361	8346370
*Broad Floristic Formation; Level 3 or higher from Hnatiuk et al. (2009)**	**Low *Corymbia terminalis, Eucalyptus tectifica* Woodland over Medium Height Closed Tussock Grass**	

Upper Storey	Mid Storey	Ground Cover
Corymbia terminalis (2)	*Acacia dimidiata (3)*	*Mixed tussock grass species, forbs, and vines including:*
Eucalyptus tectifica (2)	*Erythrina vespertilio (3)*	*Chrysopogon fallax (1)*
Corymbia confertiflora (3)	*Brachychiton paradoxus (megaphyllus?) (4)*	*Heteropogon contortus (2)*
Vachellia pachyphloia (4)	*Vachellia pachyphloia (4)*	*Sehima nervosum (2)*
Erythrina vespertilio (4)	*Flueggea virosa (4)*	*Sorghum plumosum (2)*
	Acacia holosericea (4)	*Cajanus marmoratus (2)*
	Cassytha candida (4)	*Dichanthium sericeum (3)*
	Carissa lanceolata (4)	*Dichanthium fecundum (3)*
	Brachychiton diversifolius (4)	*Iseilema vaginiflorum (3)*
		Hyptis suaveolens (3)
		Erythrina vespertilio (3)
		Vigna radiata (3)
		Pterocaulon serrulatum (4)
		Crotalaria goreensis (4)
		Grewia retusifolia (4)
		Atalaya hemiglauca (4)
		Stylosanthes hamata (4)
		Cullen pustulatum (4)
		Uraria lagopodioides (4)
		Polymeria ambigua (4)
		Dunbaria rotundifolia (4)
		Commelina agrostophylla (4)
		Brachychiton diversifolius (4)
		Hibiscus sabdariffa (4)
		Trichodesma zeylanicum (4)

Site Number:	QE		
General Site Location	In northeast quarter of MLA in the "Laneway" Paddock		
Map Grid Coordinates (GDA94, Zone 53L):	397112	8349204	
*Broad Floristic Formation; Level 3 or higher from Hnatiuk et al. (2009)**	**Medium Height *Corymbia terminalis, Eucalyptus tectifica* Woodland over Tall Mid-dense Tussock Grass**		
Upper Storey	Mid Storey	Ground Cover	
Corymbia terminalis (2)	*Acacia holosericea (3)*	*Mixed tussock grass species, annual grasses, forbs, and vines including:*	
Eucalyptus tectifica (2)	*Brachychiton paradoxus (megaphyllus?) (3)*	*Sehima nervosum (1)*	
	Vachellia pachyphloia (3)	*Heteropogon contortus (1)*	*Hibiscus leptocladus (3)*
	Acacia thomsonii (3)	*Sorghum plumosum (2)*	*Brachychiton paradoxus (3)*
	Corymbia terminalis (3)	*Chrysopogon fallax (2)*	*Spermacoce sp. (3)*
	Eucalyptus tectifica (3)	*Iseilema vaginiflorum (3)*	*Hyptis suaveolens (3)*
	Helicteres isora (4)	*Crotalaria goreensis (3)*	*Grewia retusifolia (3)*
	Cullen pustulatum (4)	*Dunbaria rotundifolia (3)*	*Sesbania cannabina (4)*
	Dichrostachys spicata (4)	*Polycarpaea breviflora (3)*	*Dichanthium sericeum (4)*
	Carissa lanceolata (4)	*Polymeria ambigua (3)*	*Hibiscus sabdariffa (4)*
		Stylosanthes hamata (3)	*Vigna radiata (4)*
		Stylosanthes scabra (3)	*Themeda triandra (4)*
		Sporobolus australasicus (3)	
		Cajanus marmoratus (3)	



Site Number:	QF	
General Site Location	In southeast quarter of MLA in "Bull" Paddock	
Map Grid Coordinates (GDA94, Zone 53L):	397368	8347077
*Broad Floristic Formation; Level 3 or higher from Hnatiuk et al. (2009)**	**Low *Corymbia terminalis, Eucalyptus tectifica* Woodland over Medium Height Mid-dense Tussock Grass**	
Upper Storey	Mid Storey	Ground Cover
Corymbia terminalis (2) *Eucalyptus tectifica (2)* *Corymbia confertiflora (3)* *Brachychiton diversifolius (3)*	*Hyptis suaveolens (1)* *Acacia holosericea (2)* *Brachychiton paradoxus (megaphyllus?) (3)* *Cullen pustulatum (3)* *Carissa lanceolata (4)* *Corymbia confertiflora (4)*	*Mixed tussock grass species, annual grasses, forbs, and vines including:* *Heteropogon contortus (2)* *Dichanthium sericeum (2)* *Polymeria ambigua (2)* *Themeda triandra (3)* *Iseilema vaginiflorum (3)* *Sida acuta (3)* *Acacia holosericea (3)* *Aristida inaequiglumis (3)* *Polycarpaea breviflora (3)* *Vigna radiata (3)* *Cajanus marmoratus (3)* *Dunbaria rotundifolia (3)* *Pseudopogonatherum contortum (3)* *Stylosanthes hamata (3)* *Sesbania cannabina (3)* *Senna obtusifolia (4)* *Hibiscus sabdariffa (4)* *Corymbia confertiflora (4)* *Flueggea virosa (4)* *Abutilon hannii subsp. prostrate (4)* *Crotalaria goreensis (4)* *Indigofera linifolia (4)* *Hibiscus leptocladus (4)* *Spermacoce sp. (4)*




Site Number:	Roper River Water Extraction Point	
General Site Location	On Roper River; 12km north of MLA; Current location of Flying Fox station water pump	
Map Grid Coordinates (GDA94, Zone 53L):	395471	8360319
*Broad Floristic Formation; Level 3 or higher from Hnatiuk et al. (2009)**	**Medium to Tall Closed *Excoecaria parvifolia, Cathormion umbellatum, Melaleuca leucadendra, Casuarina cunninghamiana, Antidesma ghesaembilla* Forest**	
Upper Storey	Mid Storey	Ground Cover
Excoecaria parvifolia (1) *Cathormion umbellatum (2)* *Pandanus aquaticus (2)* *Melaleuca leucadendra (2)* *Casuarina cunninghamiana (2)* *Flagellaria indica (2)* *Antidesma ghesaembilla (2)*		*Grasses and forbs located on landward side of riverbank levee not under forest canopy:* *Enteropogon minutus (3)* *Paspalidium distans (3)* *Chrysopogon fallax (3)* *Alternanthera nodiflora (3)* *Hygrophila angustifolia (3)* *Ammannia baccifera (3)* *Indigofera linnaei (4)* *Sporobolus australasicus (4)*




Appendix B4 - EPBC Act Protected Matters Search

Australian Government
Department of Sustainability, Environment, Water, Population and Communities

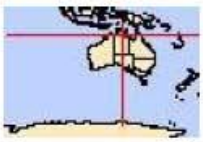
EPBC Act Protected Matters Report: Coordinates

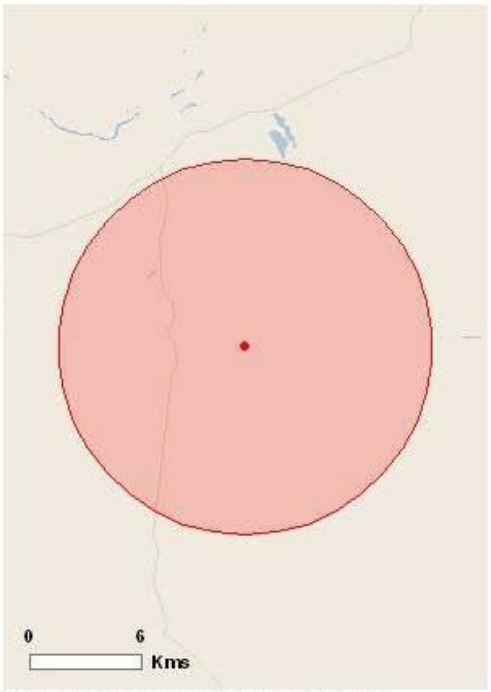
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information about the EPBC Act including significance guidelines, forms and application process details can be found at http://www.environment.gov.au/epbc/assessmentsapprovals/index.html

Report created: 19/09/11 15:40:10





Coordinates
Buffer: 10.0Km

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Significance (Ramsar Wetlands):	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communitites:	None
Threatened Species:	6
Migratory Species:	14

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage/index.html

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at http://www.environment.gov.au/epbc/permits/index.html.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	12
Whales and Other Cetaceans:	None

Critical Habitats:	None
Commonwealth Reserves:	None

Report Summary for Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

Place on the RNE:	None
State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	6
Nationally Important Wetlands:	None

Details

Matters of National Environmental Significance

Threatened Species		[Resource Information]
Name	Status	Type of Presence
BIRDS		
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Vulnerable	Species or species habitat may occur within area
MAMMALS		
Dasyurus hallucatus Northern Quoll [331]	Endangered	Species or species habitat likely to occur within area
REPTILES		
Elseya lavarackorum Gulf Snapping Turtle [67197]	Endangered	Species or species habitat may occur within area
SHARKS		
Pristis microdon Freshwater Sawfish [66182]	Vulnerable	Species or species habitat likely to occur within area

Migratory Species		[Resource Information]
Name	Status	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		

Cattle Egret [59542]		Species or species habitat may occur within area
Migratory Marine Species		
Crocodylus porosus		
Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Erythrura gouldiae		
Gouldian Finch [413]	Endangered	Species or species habitat likely to occur within area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Poecilodryas superciliosa cerviniventris		
Derby White-browed Robin [26190]		Species or species habitat likely to occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat may occur within area
Rostratula benghalensis s. lat.		
Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		**[Resource Information]**
Name	Status	Type of Presence
Birds		
Anseranas semipalmata		
Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat may occur within area

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:
- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:
- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:
- non-threatened seabirds which have only been mapped for recorded breeding sites;
- seals which have only been mapped for breeding sites near the Australian continent.

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-14.96054 134.05055

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Department of Environment, Climate Change and Water, New South Wales
-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia

-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-Other groups and individuals

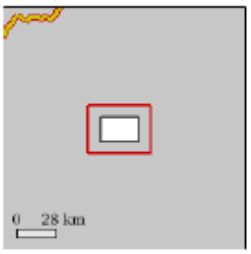
The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

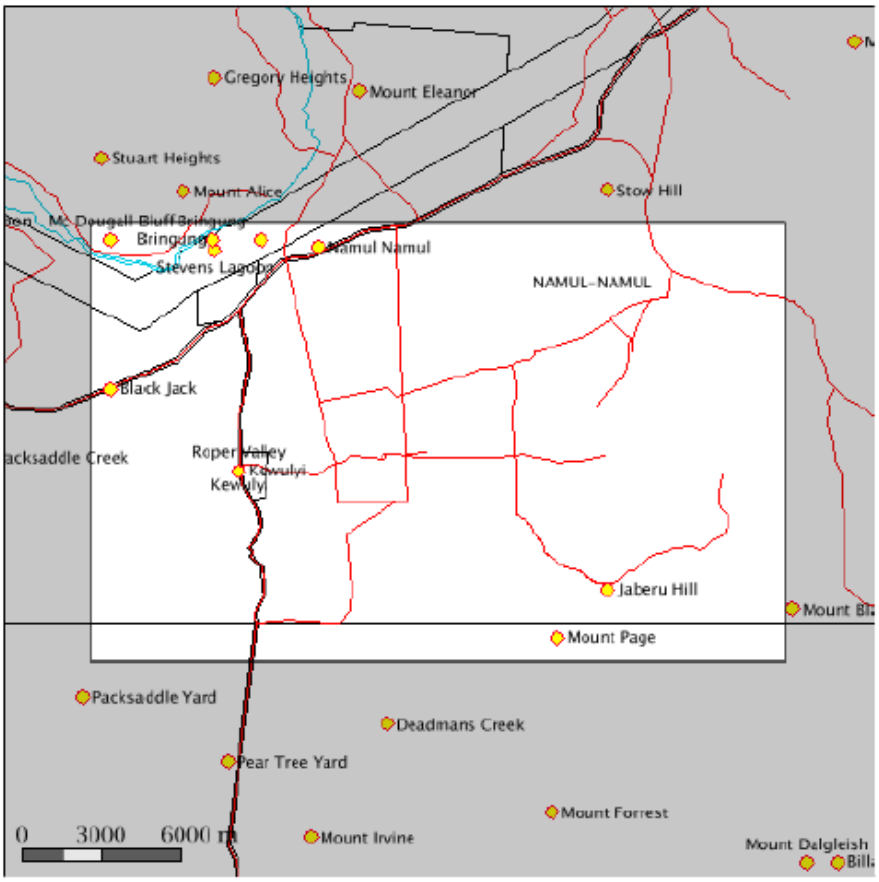
Appendix B5 - InfoNet Results

AIR_for_PER

AIR_for_PER encompasses an area of 408.85 sq km extending from 14 deg 50.0 min to 14 deg 59.0 min S and 133 deg 57.0 min to 134 deg 11.0 min E.
AIR_for_PER is located in the Gulf Fall and Uplands, bioregion(s)

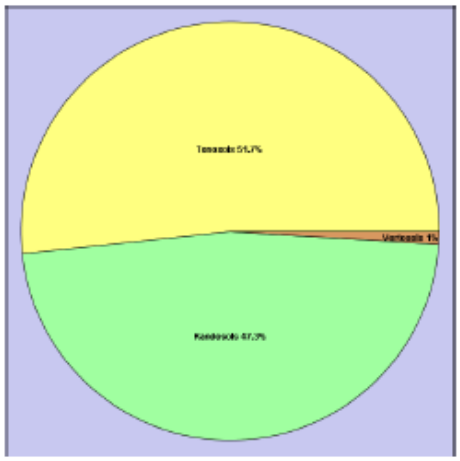


Location of AIR_for_PER



AIR_for_PER Soils

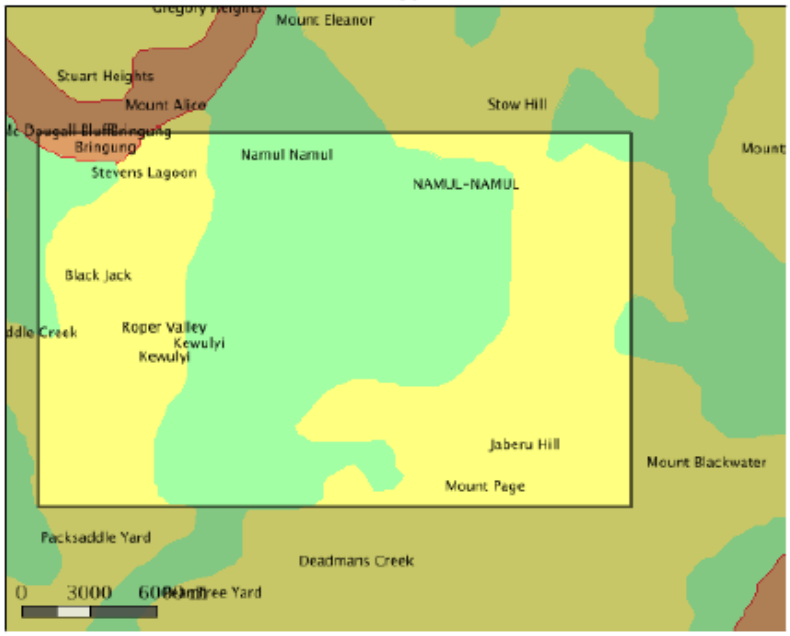
Soil Types



Area of soil types (Northcote Factual Key)

Category	Area sq km	Area%
Tenosols	211.47	51.72
Kandosols	193.21	47.26
Vertosols	4.17	1.02

Soil Types

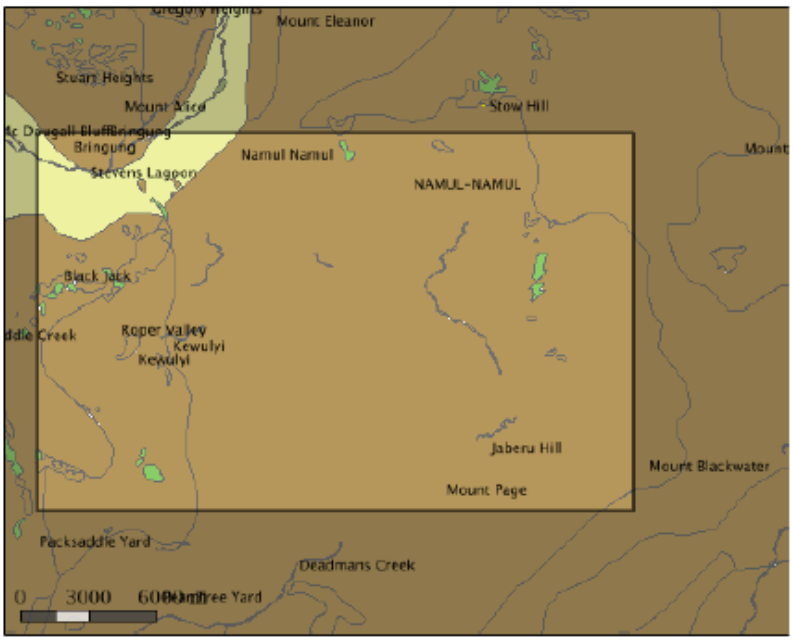


Soils 1:2M Layer is a copy of the NT portion (1:2,000,000 scale dataset) of the CSIRO Atlas of Australian Soils - K.H. Northcote et al. Data scale: 1:2,000,000 ANZLIC Identifier: 2DBCB771205D06B6E040CD9B0F274EFE
More details: Go to www.nt.gov.au/nreta/nretamaps/ and enter the ANZLIC Identifier in the Spatial Data Search

AIR_for_PER Vegetation

Vegetation Communities	Area of vegetation communities

Vegetation Communities



The NVIS 2005 Layer is compiled from a number of vegetation and land unit survey maps that were recoded and re-attributed for the National Vegetation Information System (NVIS)
Data scale variable depending on location. ANZLIC Identifier:2DBCB771207006B6E040CD9B0F274EFE
More details:Go to www.nt.gov.au/nreta/nretamaps/ and enter the ANZLIC identifier in the Spatial Data Search

AIR_for_PER Threatened Species

Threatened species recorded in the grid cell(s) in which AIR_for_PER occurs

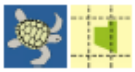
Group	Common Name	Scientific Name	NT Status	National Status	ID
Fish	Freshwater Sawfish	*Pristis microdon*	VU	VU	176261
Reptiles	Mertens' Water Monitor	*Varanus mertensi*	VU	.	347295
Birds	Emu	*Dromaius novaehollandiae*	VU	.	176363
Birds	Partridge Pigeon	*Geophaps smithii*	VU	VU	176384
Birds	Red Goshawk	*Erythrotriorchis radiatus*	VU	VU	176391
Birds	Australian Bustard	*Ardeotis australis*	VU	.	176354
Birds	Masked Owl	*Tyto novaehollandiae*	EN/ VU	EN/VU	177895
Birds	Masked Owl (northern mainland)	*Tyto novaehollandiae kimberli*	VU	VU	594609
Birds	Crested Shrike-tit	*Falcunculus frontatus whitei*	VU	VU	176377
Birds	Hooded Robin	*Melanodryas cucullata*	EN/-	EN/-	597046
Birds	Gouldian Finch	*Erythrura gouldiae*	EN	EN	176370
Mammals	Northern Quoll	*Dasyurus hallucatus*	CR	EN	176443
Mammals	Golden Bandicoot	*Isoodon auratus*	EN	VU	176421
Mammals	Brush-tailed Rabbit-rat	*Conilurus penicillatus*	VU	VU	176414

EX = Extinct EW = Extinct in the Wild ER= Extinct in the NT EN = Endangered
EN/VU = One Endangered subspecies/One Vulnerable subspecies
VU=Vulnerable
VU/- = One or more subspecies vulnerable EN/- = One or more subspecies endangered

More species info: Go to www.landmanager.org.au/view/index.aspx?id=#### where #### is the ID number from the tables above for the species of interest.

Species listed in the table above were recorded from all the grid cells shown below (red/blue line) that overlap AIR_for_PER

AIR_for_PER Native Species



Native species that have been recorded in the grid cell(s) in which AIR_for_PER occurs

Group	Common Name	Scientific Name	NT Status	National Status	ID
Fern Allies	Staghorn Club Moss	*Lycopodiella cernua*	.	.	.
Fern Allies	Quillwort	*Isoetes coromandelina subsp. macrotuberculata*	.	.	.
Ferns	Large Adder's Tongue	*Ophioglossum costatum*	.	.	.
Ferns	Hay Rake Fern	*Dicranopteris linearis var. linearis*	.	.	.
Ferns	Dragon Fern	*Lygodium flexuosum*	.	.	.
Ferns	Climbing Maidenhair Fern	*Lygodium microphyllum*	.	.	.
Ferns	Branched Comb Fern	*Schizaea dichotoma*	.	.	.
Ferns	Nadoo	*Marsilea crenata*	.	.	.
Ferns	Short-fruit Nardoo	*Marsilea hirsuta*	.	.	.
Ferns	Common Wedgefern	*Lindsaea ensifolia*	.	.	.
Ferns	Mangrove Fern	*Acrostichum speciosum*	.	.	.
Ferns	Maidenhair	*Adiantum philippense*	.	.	.
Ferns	Water Fern	*Ceratopteris thalictroides*	.	.	.
Ferns	Northern Rock-fern	*Cheilanthes brownii*	.	.	.
Ferns	Fern	*Cheilanthes caudata*	.	.	.
Ferns	Fern	*Cheilanthes contigua*	.	.	.
Ferns	Fern	*Cheilanthes nitida*	.	.	.
Ferns	Fern	*Cheilanthes nudiuscula*	.	.	.
Ferns	Fern	*Cheilanthes praetermissa*	.	.	.
Ferns	Rock Fern	*Cheilanthes tenuifolia*	.	.	.
Ferns	Fern	*Paraceterach muelleri*	.	.	.
Ferns	Fern	*Paraceterach reynoldsii*	.	.	.
Ferns	Braid Fern	*Platyzoma microphyllum*	.	.	.
Ferns	Protracting Fern	*Ampelopteris prolifera*	.	.	.
Ferns	Creeping Swamp Fern	*Cyclosorus interruptus*	.	.	.
Ferns	Northern Swamp Fern	*Blechnum orientale*	.	.	.
Ferns	Climbing Swamp Fern	*Stenochlaena palustris*	.	.	.
Ferns	Fishbone Fern	*Nephrolepis hirsutula*	DD	.	.
Conifers	Northern Cypress Pine	*Callitris intratropica*	.	.	.
Flowering Plants	Waterlily	*Nymphaea hastifolia*	.	.	.
Flowering Plants	Waterlily	*Nymphaea macrosperma*	.	.	.
Flowering Plants	Blue Waterlily	*Nymphaea violacea*	.	.	.
Flowering Plants	Dodder Laurel	*Cassytha candida*	.	.	.
Flowering Plants	Snotty Gobble	*Cassytha capillaris*	.	.	.
Flowering Plants	Hairy Dodder-laurel	*Cassytha filiformis*	.	.	.
Flowering Plants	Soft Bollygum	*Litsea glutinosa*	.	.	.
Flowering Plants	Stinkwood	*Gyrocarpus americanus*	.	.	.
Flowering Plants	Large Duckweed	*Spirodela polyrhiza*	.	.	292894
Flowering Plants	Typhonium	*Typhonium liliifolium*	DD	.	.
Flowering Plants	Caldesia	*Caldesia oligococca var. oligococca*	.	.	.
Flowering Plants	Water Thyme	*Hydrilla verticillata*	.	.	.
Flowering Plants	Water Nymph	*Najas graminea*	.	.	.
Flowering Plants	Swamp Lily	*Ottelia alismoides*	.	.	.
Flowering Plants	Swamp Lily	*Ottelia ovalifolia*	.	.	.
Flowering Plants	Eel Grass	*Vallisneria annua*	.	.	.
Flowering Plants	Eel Grass	*Vallisneria nana*	.	.	.
Flowering Plants	Eel Grass	*Vallisneria rubra*	.	.	.
Flowering Plants	Goyder River Lace Plant	*Aponogeton tofus*	.	.	.
Flowering Plants	Northern Territory Lace Plant	*Aponogeton vanbruggenii*	.	.	.
Flowering Plants	Small Water Ribbons	*Triglochin dubia*	.	.	.
Flowering Plants	Native Arrowroot	*Tacca leontopetaloides*	.	.	.
Flowering Plants	Water Yam	*Dioscorea bulbifera*	.	.	.
Flowering Plants	Long Yam	*Dioscorea transversa*	.	.	.
Flowering Plants	River Pandanus	*Pandanus aquaticus*	.	.	.
Flowering Plants	Screw Palm	*Pandanus spiralis*	.	.	.
Flowering Plants	Black Orchid	*Cymbidium canaliculatum*	.	.	.
Flowering Plants	Ground Orchid	*Geodorum neocaledonicum*	.	.	.
Flowering Plants	Crinium Lily	*Crinum angustifolium*	.	.	.
Flowering Plants	Lily	*Crinum uniflorum*	.	.	.

Group	Common Name	Scientific Name	NT Status	National Status	ID
Flowering Plants	Lily	*Chlorophytum laxum*	.	.	.
Flowering Plants	Mat-Rush	*Lomandra tropica*	.	.	.
Flowering Plants	Native Asparagus Fern	*Protasparagus racemosus*	.	.	.
Flowering Plants	Fringe-Lily	*Thysanotus chinensis*	.	.	.
Flowering Plants	Mataranka Fan Palm	*Livistona mariae subsp. rigida*	.	.	.
Flowering Plants	Cumbungi	*Typha domingensis*	.	.	.
Flowering Plants	Bulrush	*Typha orientalis*	DD	.	.
Flowering Plants	Hatpins	*Eriocaulon cinereum*	.	.	.
Flowering Plants	Hatpins	*Eriocaulon pusillum*	.	.	.
Flowering Plants	Hatpins	*Eriocaulon spectabile*	.	.	.
Flowering Plants	Sedge	*Arthrostylis aphylla*	.	.	.
Flowering Plants	Short-leaved Rush	*Bulbostylis barbata*	.	.	.
Flowering Plants	Leafy Twig-rush	*Cladium mariscus*	DD	.	.
Flowering Plants	Crosslandia	*Crosslandia setifolia*	.	.	.
Flowering Plants	Flat-head Rush	*Cyperus aquatilis*	.	.	.
Flowering Plants	Sedge	*Cyperus astartodes*	.	.	.
Flowering Plants	Downs Nutgrass	*Cyperus bifax*	.	.	.
Flowering Plants	Sedge	*Cyperus breviculmis*	.	.	.
Flowering Plants	Sedge	*Cyperus carinatus*	.	.	.
Flowering Plants	Sedge	*Cyperus castaneus*	.	.	.
Flowering Plants	Sedge	*Cyperus compactus*	DD	.	.
Flowering Plants	Cone Umbrella Rush	*Cyperus conicus*	.	.	.
Flowering Plants	Sedge	*Cyperus cunninghamii subsp. cunninghamii*	.	.	.
Flowering Plants	Sedge	*Cyperus cuspidatus*	.	.	.
Flowering Plants	Dirty Dora	*Cyperus difformis*	.	.	.
Flowering Plants	Sedge	*Cyperus eleusinoides*	.	.	.
Flowering Plants	Small Umbrella Rush	*Cyperus haspan*	.	.	.
Flowering Plants	Umbrella Rush	*Cyperus holoschoenus*	.	.	.
Flowering Plants	Sedge	*Cyperus javanicus subsp. armstrongii*	.	.	.
Flowering Plants	Tick Grass	*Cyperus macrostachyos*	.	.	.
Flowering Plants	Sedge	*Cyperus microcephalus*	.	.	.
Flowering Plants	Sedge	*Cyperus microcephalus subsp. microcephalus*	.	.	.
Flowering Plants	Sedge	*Cyperus microcephalus subsp. saxicola*	.	.	.
Flowering Plants	Sedge	*Cyperus orgadophilus*	.	.	.
Flowering Plants	Bunchy Sedge	*Cyperus polystachyos*	.	.	.
Flowering Plants	Sedge	*Cyperus portae-tartari*	.	.	.
Flowering Plants	Sedge	*Cyperus procerus*	.	.	.
Flowering Plants	White Button Sedge	*Cyperus pulchellus*	.	.	.
Flowering Plants	Dwarf Sedge	*Cyperus pygmaeus*	.	.	.
Flowering Plants	Sedge	*Cyperus scariosus*	.	.	.
Flowering Plants	Sedge	*Cyperus sexflorus*	.	.	.
Flowering Plants	Bearded Flatsedge	*Cyperus squarrosus*	.	.	.
Flowering Plants	Pink-root Sedge	*Cyperus tenuispica*	.	.	.
Flowering Plants	Spike-Rush	*Eleocharis atropurpurea*	.	.	.
Flowering Plants	Spike-Rush	*Eleocharis caespitosissima*	.	.	.
Flowering Plants	Chinese Water Chestnut	*Eleocharis dulcis*	.	.	.
Flowering Plants	Spike-Rush	*Eleocharis geniculata*	.	.	.
Flowering Plants	Spike-Rush	*Eleocharis nuda*	.	.	.
Flowering Plants	Spike-Rush	*Eleocharis setifolia*	.	.	.
Flowering Plants	Spike-Rush	*Eleocharis sp. affin. acutangula*	.	.	.
Flowering Plants	Tall Spikerush	*Eleocharis sphacelata*	.	.	.
Flowering Plants	Spike-Rush	*Eleocharis spiralis*	.	.	.
Flowering Plants	Spike-Rush	*Eleocharis sundaica*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis acicularis*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis bisumbellata*	DD	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis caespitosa*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis cardiocarpa*	.	.	.
Flowering Plants	Fairy Fringe-Rush	*Fimbristylis cinnamometorum*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis composita*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis costiglumis*	.	.	.
Flowering Plants	Dainty Fringe-Rush	*Fimbristylis cymosa*	.	.	.
Flowering Plants	Angle Head	*Fimbristylis densa*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis denudata*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis depauperata*	.	.	.
Flowering Plants	Eight Day Grass	*Fimbristylis dichotoma*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis dolera*	DD	.	.

Group	Common Name	Scientific Name	NT Status	National Status	ID
Flowering Plants	Fringe-Rush	*Fimbristylis ferruginea*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis furva*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis laxiglumis*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis leucocolea*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis littoralis var. littoralis*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis macassarensis*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis macrantha*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis microcarya*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis miliacea*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis nuda*	.	.	.
Flowering Plants	Long-head Fringe-Rush	*Fimbristylis nutans*	.	.	.
Flowering Plants	Iukarrara	*Fimbristylis oxystachya*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis pachyptera*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis pauciflora*	.	.	.
Flowering Plants	Water Grass	*Fimbristylis phaeoleuca*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis pterygosperma*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis punctata*	.	.	.
Flowering Plants	Salt Fringe-rush	*Fimbristylis rara*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis recta*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis rupestris*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis schoenoides*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis schultzii*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis signata*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis simplex*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis simulans*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis solidifolia*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis sp. Latz sp.B*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis sphaerocephala*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis squarrulosa*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis tetragona*	.	.	.
Flowering Plants	Fringe-Rush	*Fimbristylis trigastrocarya*	.	.	.
Flowering Plants	Small Club Rush	*Fuirena ciliaris*	.	.	.
Flowering Plants	Club-Rush	*Isolepis humillima*	.	.	.
Flowering Plants	Button Rush	*Lipocarpha microcephala*	.	.	.
Flowering Plants	Star Sedge	*Rhynchospora exserta*	.	.	.
Flowering Plants	Star Sedge	*Rhynchospora heterochaeta*	.	.	.
Flowering Plants	Tick Grass	*Rhynchospora longisetis*	.	.	.
Flowering Plants	Star Sedge	*Rhynchospora pterochaeta*	.	.	.
Flowering Plants	Star Sedge	*Rhynchospora subtenuifolia*	.	.	.
Flowering Plants	Club-Rush	*Schoenoplectus laevis*	.	.	.
Flowering Plants	Club-Rush	*Schoenoplectus lateriflorus*	.	.	.
Flowering Plants	River Club-Rush	*Schoenoplectus litoralis*	.	.	.
Flowering Plants	Club-Rush	*Schoenoplectus mucronatus*	.	.	.
Flowering Plants	Club-Rush	*Schoenoplectus praelongatus*	.	.	.
Flowering Plants	Bog-Rush	*Schoenus calostachyus*	.	.	.
Flowering Plants	Bog-Rush	*Schoenus falcatus*	.	.	.
Flowering Plants	Sedge	*Scleria brownii*	.	.	.
Flowering Plants	White-seeded Rush	*Scleria ciliaris*	.	.	.
Flowering Plants	Sedge	*Scleria lingulata*	.	.	.
Flowering Plants	Sedge	*Scleria lithosperma var. lithosperma*	.	.	.
Flowering Plants	Sedge	*Scleria novae-hollandiae*	.	.	.
Flowering Plants	Mildrop Sedge	*Scleria rugosa*	.	.	.
Flowering Plants	Razor Grass	*Scleria sphacelata*	.	.	.
Flowering Plants	Supplejack	*Flagellaria indica*	.	.	.
Flowering Plants	Rush	*Dapsilanthus spathaceus*	.	.	.
Flowering Plants	Cockatoo Grass	*Alloteropsis semialata*	.	.	451013
Flowering Plants	Dark Wiregrass	*Aristida calycina*	.	.	.
Flowering Plants	Bunched Kerosene Grass	*Aristida contorta*	.	.	.
Flowering Plants	Wire Grass	*Aristida exserta*	.	.	.
Flowering Plants	Erect Kerosene Grass	*Aristida holathera*	.	.	.
Flowering Plants	Erect Kerosene Grass	*Aristida holathera var. holathera*	.	.	.
Flowering Plants	Erect Kerosene Grass	*Aristida holathera var. latifolia*	.	.	.
Flowering Plants	Northern Kerosene Grass	*Aristida hygrometrica*	.	.	.
Flowering Plants	Unequal Threeawn	*Aristida inaequiglumis*	.	.	.
Flowering Plants	Wire Grass	*Aristida ingrata*	.	.	.
Flowering Plants	Feathertop Wiregrass	*Aristida latifolia*	.	.	.
Flowering Plants	Gulf Feathertop Wiregrass	*Aristida pruinosa*	.	.	.
Flowering Plants	Wire Grass	*Aristida queenslandica*	.	.	.

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Flowering Plants	Wire Grass	*Aristida schultzii*	.	.	.
Flowering Plants	Reed Grass	*Arundinella nepalensis*	.	.	.
Flowering Plants	Hoop Mitchell Grass	*Astrebla elymoides*	.	.	.
Flowering Plants	Barley Mitchell Grass	*Astrebla pectinata*	.	.	.
Flowering Plants	Bull Mitchell Grass	*Astrebla squarrosa*	.	.	.
Flowering Plants	Forest Bluegrass	*Bothriochloa bladhii subsp. bladhii*	.	.	.
Flowering Plants	Native Couch	*Brachyachne ambigua*	.	.	.
Flowering Plants	Spider Grass	*Brachyachne convergens*	.	.	.
Flowering Plants	Slender Native Couch	*Brachyachne tenella*	.	.	.
Flowering Plants	Scented Top	*Capillipedium parviflorum*	.	.	.
Flowering Plants	Bush Couch	*Chamaeraphis hordeacea*	.	.	.
Flowering Plants	River Grass	*Chionachne cyathopoda*	.	.	.
Flowering Plants	Hairy Ribbon Grass	*Chionachne hubbardiana*	.	.	.
Flowering Plants	Slender Windmill Grass	*Chloris divaricata*	DD	.	.
Flowering Plants	Lobed Chloris	*Chloris lobata*	.	.	.
Flowering Plants	Little Chloris	*Chloris pumilio*	DD	.	.
Flowering Plants	Tall Tamil Grass	*Chrysopogon elongatus*	.	.	.
Flowering Plants	Golden-beard Grass	*Chrysopogon fallax*	.	.	.
Flowering Plants	Broadleaf Ribbon Grass	*Chrysopogon latifolius*	.	.	.
Flowering Plants	Chrysopogon	*Chrysopogon oliganthus*	.	.	.
Flowering Plants	Ribbon Grass	*Chrysopogon pallidus*	.	.	.
Flowering Plants	Silky Oilgrass	*Cymbopogon bombycinus*	.	.	.
Flowering Plants	Scentgrass	*Cymbopogon procerus*	.	.	.
Flowering Plants	Button Grass	*Dactyloctenium radulans*	.	.	.
Flowering Plants	Curly Bluegrass	*Dichanthium fecundum*	.	.	.
Flowering Plants	Queensland Bluegrass	*Dichanthium sericeum*	.	.	.
Flowering Plants	Tassel Bluegrass	*Dichanthium sericeum subsp. polystachyum*	.	.	.
Flowering Plants	Silky Bluegrass	*Dichanthium sericeum subsp. sericeum*	.	.	.
Flowering Plants	Silky Umbrella Grass	*Digitaria ammophila*	.	.	.
Flowering Plants	Cotton Panic Grass	*Digitaria brownii*	.	.	.
Flowering Plants	Comb Finger Grass	*Digitaria ctenantha*	.	.	.
Flowering Plants	Finger Grass	*Digitaria gibbosa*	.	.	.
Flowering Plants	Finger Grass	*Digitaria longiflora*	.	.	.
Flowering Plants	Finger Grass	*Digitaria nematostachya*	.	.	.
Flowering Plants	Finger Grass	*Digitaria papposa*	.	.	.
Flowering Plants	Dimeria	*Dimeria chloridiformis*	.	.	.
Flowering Plants	Elliptic Cokspur Grass	*Echinochloa elliptica*	.	.	.
Flowering Plants	Northern Channel Millet	*Echinochloa turneriana*	.	.	.
Flowering Plants	Haresfoot Grass	*Ectrosia agrostoides*	.	.	.
Flowering Plants	Haresfoot Grass	*Ectrosia confusa*	.	.	.
Flowering Plants	Haresfoot Grass	*Ectrosia danesii*	.	.	.
Flowering Plants	Haresfoot Grass	*Ectrosia laxa*	.	.	.
Flowering Plants	Haresfoot Grass	*Ectrosia leporina*	.	.	.
Flowering Plants	Haresfoot Grass	*Ectrosia scabrida*	.	.	.
Flowering Plants	Haresfoot Grass	*Ectrosia schultzii*	.	.	.
Flowering Plants	Haresfoot Grass	*Ectrosia schultzii var. annua*	.	.	.
Flowering Plants	Spike-grass	*Elytrophorus spicatus*	.	.	.
Flowering Plants	Cleland's Nine-awn	*Enneapogon clelandii*	.	.	.
Flowering Plants	Conetop Nine-awn	*Enneapogon pallidus*	.	.	.
Flowering Plants	Leafy Nine-awn	*Enneapogon polyphyllus*	.	.	.
Flowering Plants	Purple Nineawn	*Enneapogon purpurascens*	.	.	.
Flowering Plants	Windmill Grass	*Enteropogon minutus*	DD	.	.
Flowering Plants	Cuming's Lovegrass	*Eragrostis cumingii*	.	.	.
Flowering Plants	Lovegrass	*Eragrostis exigua*	.	.	.
Flowering Plants	Lovegrass	*Eragrostis fallax*	.	.	.
Flowering Plants	Giant Fairy Grass	*Eragrostis pubescens*	.	.	.
Flowering Plants	Lovegrass	*Eragrostis stagnalis*	.	.	.
Flowering Plants	Delicate Lovegrass	*Eragrostis tenellula*	.	.	.
Flowering Plants	Long-awn Wanderrie	*Eriachne armittii*	.	.	.
Flowering Plants	Wanderrie Grass	*Eriachne avenacea*	.	.	.
Flowering Plants	Wanderrie Grass	*Eriachne burkittii*	.	.	.
Flowering Plants	Wanderrie Grass	*Eriachne capillaris*	.	.	.
Flowering Plants	Slender Wanderrie	*Eriachne ciliata*	.	.	.
Flowering Plants	Pan Wanderrie	*Eriachne glauca*	.	.	.
Flowering Plants	Wanderrie Grass	*Eriachne glauca var. glauca*	.	.	.
Flowering Plants	Northern Wanderrie	*Eriachne obtusa*	.	.	.
Flowering Plants	Short Salt-and-Pepper Grass	*Eriachne squarrosa*	.	.	.
Flowering Plants	Wanderrie Grass	*Eriachne sulcata*	.	.	.
Flowering Plants	Wanderrie Grass	*Eriachne triseta*	.	.	.

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Flowering Plants	Tall Cupgrass	*Eriochloa crebra*	.	.	.
Flowering Plants	Slender Cupgrass	*Eriochloa procera*	.	.	.
Flowering Plants	Silky Browntop	*Eulalia aurea*	.	.	.
Flowering Plants	Heterachne	*Heterachne gulliveri var. gulliveri*	.	.	.
Flowering Plants	Black Speargrass	*Heteropogon contortus*	.	.	.
Flowering Plants	Giant Speargrass	*Heteropogon triticeus*	.	.	.
Flowering Plants	Blady Grass	*Imperata cylindrica*	.	.	.
Flowering Plants	Ischaemum	*Ischaemum australe*	.	.	.
Flowering Plants	Large Bluegrass	*Ischaemum australe var. arundinaceum*	.	.	.
Flowering Plants	Ischaemum	*Ischaemum australe var. villosum*	DD	.	.
Flowering Plants	Flinders Grass	*Iseilema fragile*	.	.	.
Flowering Plants	Bull Flinders Grass	*Iseilema macratherum*	.	.	.
Flowering Plants	Red Flinders Grass	*Iseilema vaginiflorum*	.	.	.
Flowering Plants	Small-flowered Beetle Grass	*Leptochloa fusca subsp. fusca*	.	.	290874
Flowering Plants	Swamp Grass	*Leptochloa neesii*	.	.	.
Flowering Plants	Lepturus	*Lepturus sp. Mataranka*	.	.	.
Flowering Plants	Red Grass	*Mnesithea formosa*	.	.	.
Flowering Plants	Mnesithea	*Mnesithea granularis*	.	.	.
Flowering Plants	Northern Canegrass	*Mnesithea rottboellioides*	.	.	.
Flowering Plants	Canegrass	*Ophiuros exaltatus*	.	.	.
Flowering Plants	Australian Wild Rice	*Oryza australiensis*	.	.	.
Flowering Plants	Wild Rice	*Oryza meridionalis*	.	.	.
Flowering Plants	Australian Millet	*Panicum decompositum*	.	.	.
Flowering Plants	Australian Millet	*Panicum decompositum var. decompositum*	.	.	.
Flowering Plants	Hairy Panic	*Panicum effusum*	.	.	.
Flowering Plants	Pepper Grass	*Panicum laevinode*	.	.	.
Flowering Plants	Panic	*Panicum latzii*	DD	.	.
Flowering Plants	Native Panic	*Panicum mindanaense*	.	.	.
Flowering Plants	Panic	*Panicum seminudum*	.	.	.
Flowering Plants	Whistle Grass	*Panicum trachyrhachis*	.	.	.
Flowering Plants	Jungle Grass	*Panicum trichoides*	.	.	.
Flowering Plants	Shot Grass	*Paspalidium distans*	.	.	.
Flowering Plants	Warrego Summar-Grass	*Paspalidium jubiflorum*	.	.	.
Flowering Plants	Bunch Paspalidium	*Paspalidium rarum*	.	.	.
Flowering Plants	Paspalidium	*Paspalidium retiglume*	.	.	.
Flowering Plants	Paspalum	*Paspalum longifolium*	.	.	.
Flowering Plants	Scrobic	*Paspalum scrobiculatum*	.	.	.
Flowering Plants	Saltwater Couch	*Paspalum vaginatum*	.	.	291744
Flowering Plants	Asbestos Grass	*Pennisetum basedowii*	DD	.	.
Flowering Plants	Comet Grass	*Perotis rara*	.	.	.
Flowering Plants	Cane Grass	*Phragmites karka*	.	.	.
Flowering Plants	Black Top	*Pseudopogonatherum contortum*	.	.	.
Flowering Plants	Spiny Mudgrass	*Pseudoraphis spinescens*	.	.	.
Flowering Plants	Cupscale Grass	*Sacciolepis myosuroides*	.	.	.
Flowering Plants	Fire Grass	*Schizachyrium fragile*	.	.	.
Flowering Plants	White Grass	*Sehima nervosum*	.	.	.
Flowering Plants	Pigeon Grass	*Setaria apiculata*	.	.	.
Flowering Plants	Brown`s Pigeon Grass	*Setaria surgens*	.	.	.
Flowering Plants	Annual Sorghum	*Sorghum intrans*	.	.	.
Flowering Plants	Plume Sorghum	*Sorghum plumosum*	.	.	.
Flowering Plants	Downs Sorghum	*Sorghum timorense*	.	.	.
Flowering Plants	Katoora	*Sporobolus actinocladus*	.	.	.
Flowering Plants	Australian Dropseed	*Sporobolus australasicus*	.	.	.
Flowering Plants	Fairy Grass	*Sporobolus caroli*	.	.	.
Flowering Plants	Sporobolus	*Sporobolus lenticularis*	.	.	.
Flowering Plants	Rat`s Tail Couch	*Sporobolus mitchellii*	.	.	.
Flowering Plants	Sporobolus	*Sporobolus pulchellus*	.	.	.
Flowering Plants	Sand Couch	*Sporobolus virginicus*	.	.	.
Flowering Plants	Thaumastochloa	*Thaumastochloa brassii*	.	.	.
Flowering Plants	Thaumastochloa	*Thaumastochloa major*	.	.	.
Flowering Plants	Thaumastochloa	*Thaumastochloa striata*	.	.	.
Flowering Plants	Kangaroo Grass	*Themeda triandra*	.	.	.
Flowering Plants	Curly Spinifex	*Triodia bitextura*	.	.	.
Flowering Plants	Spinifex	*Triodia bynoei*	.	.	.
Flowering Plants	Spinifex	*Triodia latzii*	.	.	.
Flowering Plants	Sandstone Spinifex	*Triodia melvillei*	.	.	.
Flowering Plants	Spinifex	*Triodia microstachya*	.	.	.

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Flowering Plants	White Tussock	*Triodia procera*	.	.	.
Flowering Plants	Soft Spinifex	*Triodia pungens*	.	.	.
Flowering Plants	Tropical Signal Grass	*Urochloa distachya*	.	.	293254
Flowering Plants	Silkytop Armgrass	*Urochloa holosericea*	.	.	.
Flowering Plants	Silkytop Armgrass	*Urochloa holosericea subsp. holosericea*	.	.	.
Flowering Plants	Hairy Armgrass	*Urochloa piligera*	.	.	.
Flowering Plants	Urochloa	*Urochloa polyphylla*	.	.	.
Flowering Plants	Armgrass Millet	*Urochloa pubigera*	.	.	.
Flowering Plants	Fine Armgrass	*Urochloa reptans*	.	.	.
Flowering Plants	Green Summer Grass	*Urochloa subquadripara*	.	.	293344
Flowering Plants	Creeping Panic	*Whiteochloa airoides*	.	.	.
Flowering Plants	Whiteochloa	*Whiteochloa capillipes*	.	.	.
Flowering Plants	Whiteochloa	*Whiteochloa multiciliata*	DD	.	.
Flowering Plants	Whiteochloa	*Whiteochloa semitonsa*	.	.	.
Flowering Plants	Rice Grass	*Xerochloa imberbis*	.	.	.
Flowering Plants	Desert Flinders Grass	*Yakirra australiensis*	.	.	.
Flowering Plants	Desert Flinders Grass	*Yakirra australiensis var. australiensis*	.	.	.
Flowering Plants	Yakirra	*Yakirra majuscula*	.	.	.
Flowering Plants	Yakirra	*Yakirra muelleri*	DD	.	.
Flowering Plants	Yakirra	*Yakirra nulla*	.	.	.
Flowering Plants	Yakirra	*Yakirra pauciflora*	.	.	.
Flowering Plants	Arda	*Cartonema parviflorum*	.	.	.
Flowering Plants	Cartonema	*Cartonema spicatum*	.	.	.
Flowering Plants	Cartonema	*Cartonema trigonospermum*	.	.	.
Flowering Plants	Commelina	*Commelina agrostophylla*	.	.	.
Flowering Plants	Scurvy Weed	*Commelina ciliata*	.	.	.
Flowering Plants	Wandering Jew	*Commelina ensifolia*	.	.	.
Flowering Plants	Commelina	*Cyanotis axillaris*	.	.	.
Flowering Plants	Murdannia	*Murdannia cryptantha*	.	.	.
Flowering Plants	Pink Swamp Lily	*Murdannia graminea*	.	.	.
Flowering Plants	Day Flower	*Murdannia vaginata*	.	.	291404
Flowering Plants	Monochoria	*Monochoria vaginalis*	.	.	.
Flowering Plants	Scarlet-flowered Bloodroot	*Haemodorum coccineum*	.	.	.
Flowering Plants	Snake Vine	*Tinospora smilacina*	.	.	.
Flowering Plants	Lotus Lily	*Nelumbo nucifera*	.	.	.
Flowering Plants	Northern Banksia	*Banksia dentata*	.	.	.
Flowering Plants	Clothes-peg Tree	*Grevillea decurrens*	.	.	.
Flowering Plants	Caustic Bush	*Grevillea dimidiata*	.	.	.
Flowering Plants	Dryander's Grevillea	*Grevillea dryandri*	.	.	.
Flowering Plants	Dryander's Grevillea	*Grevillea dryandri subsp. dasycarpa*	.	.	.
Flowering Plants	Needle-leaf Grevillea	*Grevillea erythroclada*	.	.	.
Flowering Plants	Rock Grevillea	*Grevillea heliosperma*	.	.	.
Flowering Plants	Grevillea	*Grevillea mimosoides*	.	.	.
Flowering Plants	Silver Grevillea	*Grevillea parallela*	.	.	.
Flowering Plants	Grevillea	*Grevillea polyacida*	.	.	.
Flowering Plants	Grevillea	*Grevillea prasina*	.	.	.
Flowering Plants	Fern-leaved Grevillea	*Grevillea pteridifolia*	.	.	.
Flowering Plants	Flame Grevillea	*Grevillea pungens*	.	.	.
Flowering Plants	Caustic Bush	*Grevillea pyramidalis*	.	.	.
Flowering Plants	Caustic Bush	*Grevillea pyramidalis subsp. longiloba*	DD	.	.
Flowering Plants	Silver-leaved Grevillea	*Grevillea refracta*	.	.	.
Flowering Plants	Silver-leaved Grevillea	*Grevillea refracta subsp. refracta*	.	.	.
Flowering Plants	Western Beefwood	*Grevillea striata*	.	.	.
Flowering Plants	Yellow Hakea	*Hakea arborescens*	.	.	.
Flowering Plants	Northern Corkwood	*Hakea chordophylla*	.	.	.
Flowering Plants	Long-leaf Corkwood	*Hakea lorea*	.	.	.
Flowering Plants	Northern Long-leaf Corkwood	*Hakea lorea subsp. borealis*	.	.	.
Flowering Plants	Southern Long-leaf Corkwood	*Hakea lorea subsp. lorea*	.	.	.
Flowering Plants	Milky Plum	*Persoonia falcata*	.	.	.
Flowering Plants	Stenocarpus	*Stenocarpus acacioides*	.	.	.
Flowering Plants	Beefwood	*Stenocarpus cunninghamii*	.	.	.
Flowering Plants	Guinea Flower	*Hibbertia candicans*	.	.	.
Flowering Plants	Guinea Flower	*Hibbertia haplostemona*	.	.	.
Flowering Plants	Guinea Flower	*Hibbertia juncea*	.	.	.
Flowering Plants	Scaly Guinea Flower	*Hibbertia lepidota*	.	.	.
Flowering Plants	Guinea Flower	*Hibbertia oblongata*	.	.	.

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Flowering Plants	Guinea Flower	*Hibbertia oblongata subsp. oblongata*	.	.	.
Flowering Plants	Guinea Flower	*Hibbertia oblongata var. brevifolia*	.	.	.
Flowering Plants	Guinea Flower	*Hibbertia sp. stellate above*	.	.	.
Flowering Plants	Guinea Flower	*Hibbertia sphenandra*	.	.	.
Flowering Plants	Guinea Flower	*Hibbertia tomentosa*	.	.	.
Flowering Plants	Sundew	*Drosera banksii*	.	.	.
Flowering Plants	Burman's Sundew	*Drosera burmanni*	.	.	.
Flowering Plants	Narrow-leaved Sundew	*Drosera indica*	.	.	.
Flowering Plants	Woolly Sundew	*Drosera petiolaris*	.	.	.
Flowering Plants	Native Plumbago	*Plumbago zeylanica*	.	.	.
Flowering Plants	Smartweed	*Persicaria barbata*	.	.	.
Flowering Plants	Polycarpaea	*Polycarpaea breviflora*	.	.	.
Flowering Plants	Polycarpaea	*Polycarpaea corymbosa*	.	.	.
Flowering Plants	Polycarpaea	*Polycarpaea involucrata*	.	.	.
Flowering Plants	Polycarpaea	*Polycarpaea longiflora*	.	.	.
Flowering Plants	Polycarpaea	*Polycarpaea microceps*	.	.	.
Flowering Plants	Copper Plant	*Polycarpaea spirostylis*	.	.	.
Flowering Plants	Polycarpaea	*Polycarpaea staminodina*	.	.	.
Flowering Plants	Polycarpaea	*Polycarpaea violacea*	.	.	.
Flowering Plants	Prickly Chaff Flower	*Achyranthes aspera*	.	.	.
Flowering Plants	Narrow-leaf Joyweed	*Alternanthera angustifolia*	.	.	.
Flowering Plants	Lesser Joyweed	*Alternanthera denticulata var. denticulata*	.	.	.
Flowering Plants	Common Joyweed	*Alternanthera nodiflora*	.	.	.
Flowering Plants	Native Amaranth	*Amaranthus interruptus*	.	.	.
Flowering Plants	Pale-flowered Amaranth	*Amaranthus pallidiflorus*	.	.	.
Flowering Plants	Amaranth	*Amaranthus undulatus*	.	.	.
Flowering Plants	Gomphrena	*Gomphrena affinis subsp. affinis*	.	.	.
Flowering Plants	Gomphrena	*Gomphrena breviflora*	.	.	.
Flowering Plants	Batchelor's Buttons	*Gomphrena canescens*	.	.	.
Flowering Plants	Batchelor's Buttons	*Gomphrena canescens subsp. canescens*	.	.	.
Flowering Plants	Gomphrena Weed	*Gomphrena flaccida*	.	.	.
Flowering Plants	Gomphrena	*Gomphrena humilis*	DD	.	.
Flowering Plants	Gomphrena	*Gomphrena lanata*	.	.	.
Flowering Plants	Gomphrena	*Gomphrena magentitepala*	.	.	.
Flowering Plants	Gomphrena	*Gomphrena parviflora*	.	.	.
Flowering Plants	Omegandra	*Omegandra kanisii*	.	.	.
Flowering Plants	Red Everlasting	*Ptilotus conicus*	.	.	.
Flowering Plants	Mulla Mulla	*Ptilotus corymbosus*	.	.	.
Flowering Plants	Mulla Mulla	*Ptilotus dissitiflorus*	.	.	.
Flowering Plants	Mulla Mulla	*Ptilotus distans*	.	.	.
Flowering Plants	Pink Mulla Mulla	*Ptilotus exaltatus*	.	.	.
Flowering Plants	Pink Mulla Mulla	*Ptilotus exaltatus var. exaltatus*	.	.	.
Flowering Plants	Skeleton plant	*Ptilotus fusiformis*	.	.	.
Flowering Plants	Long Pussy-tails	*Ptilotus polystachyus*	.	.	.
Flowering Plants	Mulla Mulla	*Ptilotus spicatus*	.	.	.
Flowering Plants	Sweethearts	*Pupalia micrantha*	.	.	367991
Flowering Plants	Rolypoly	*Salsola tragus*	.	.	.
Flowering Plants	Goathead Burr	*Sclerolaena bicornis var. bicornis*	.	.	.
Flowering Plants	Brown-head Glaswort	*Tecticornia indica*	.	.	.
Flowering Plants	Samphire	*Tecticornia indica subsp. indica*	.	.	.
Flowering Plants	Slender Carpet-weed	*Glinus oppositifolius*	.	.	.
Flowering Plants	Parakeelya	*Calandrinia gracilis*	.	.	.
Flowering Plants	Parakeelya	*Calandrinia quadrivalvis*	.	.	.
Flowering Plants	Parakeelya	*Calandrinia uniflora*	.	.	.
Flowering Plants	Pigweed	*Portulaca australis*	.	.	.
Flowering Plants	Heart Plant	*Portulaca bicolor*	.	.	.
Flowering Plants	Slender Pigweed	*Portulaca filifolia*	.	.	.
Flowering Plants	Pigweed	*Portulaca oligosperma*	.	.	.
Flowering Plants	Purslane	*Trianthema compacta*	.	.	.
Flowering Plants	Purslane	*Trianthema pilosa*	.	.	.
Flowering Plants	Purslane	*Trianthema rhynchocalyptra*	.	.	.
Flowering Plants	Red Spinach	*Trianthema triquetra*	.	.	.
Flowering Plants	Scarlet Tar Vine	*Boerhavia coccinea*	.	.	.
Flowering Plants	Tar Vine	*Boerhavia dominii*	.	.	.
Flowering Plants	Tar Vine	*Boerhavia gardneri*	.	.	.

Group	Common Name	Scientific Name	NT Status	National Status	ID
Flowering Plants	Black-soil Tar Vine	*Boerhavia paludosa*	.	.	.
Flowering Plants	Yipa	*Boerhavia schomburgkiana*	.	.	.
Flowering Plants	Club-vine	*Pisonia aculeata*	.	.	.
Flowering Plants	Leafless Olax	*Olax aphylla*	.	.	.
Flowering Plants	Cansjera	*Cansjera leptostachya*	.	.	.
Flowering Plants	Opilia	*Opilia amentacea*	.	.	.
Flowering Plants	Native Cherry	*Exocarpos latifolius*	.	.	.
Flowering Plants	Indian Sandalwood	*Santalum album*	.	.	.
Flowering Plants	Plumbush	*Santalum lanceolatum*	.	.	.
Flowering Plants	Mistletoe	*Amyema benthamii*	.	.	.
Flowering Plants	Twin-fork Mistletoe	*Amyema bifurcata*	.	.	.
Flowering Plants	Mistletoe	*Amyema conspicua*	DD	.	.
Flowering Plants	Mistletoe	*Amyema conspicua subsp. obscurinervis*	DD	.	.
Flowering Plants	Mistletoe	*Amyema herbertiana*	DD	.	.
Flowering Plants	Blood Mistletoe	*Amyema sanguinea*	.	.	.
Flowering Plants	Blood Mistletoe	*Amyema sanguinea var. sanguinea*	.	.	.
Flowering Plants	Mistletoe	*Amyema villiflora*	.	.	.
Flowering Plants	Mistletoe	*Amyema villiflora subsp. villiflora*	.	.	.
Flowering Plants	Mistletoe	*Decaisnina brittenii subsp. speciosa*	.	.	.
Flowering Plants	Mistletoe	*Decaisnina signata*	.	.	.
Flowering Plants	Mistletoe	*Dendrophthoe acacioides subsp. acacioides*	.	.	.
Flowering Plants	Mistletoe	*Dendrophthoe acacioides subsp. longifolia*	.	.	.
Flowering Plants	Orange-Flowered Mistletoe	*Dendrophthoe glabrescens*	.	.	.
Flowering Plants	Hairy Mistletoe	*Dendrophthoe odontocalyx*	.	.	.
Flowering Plants	Mistletoe	*Diplatia furcata*	.	.	.
Flowering Plants	Royal Mistletoe	*Diplatia grandibractea*	.	.	.
Flowering Plants	Flat-leaved Mistletoe	*Lysiana spathulata*	.	.	.
Flowering Plants	Flat-leaved Mistletoe	*Lysiana spathulata subsp. spathulata*	.	.	.
Flowering Plants	Northern Mistletoe	*Lysiana subfalcata*	.	.	.
Flowering Plants	Gonocarpus	*Gonocarpus leptothecus*	.	.	.
Flowering Plants	Water Milfoil	*Myriophyllum filiforme*	.	.	.
Flowering Plants	Red Water-milfoil	*Myriophyllum verrucosum*	.	.	.
Flowering Plants	Wild Grape	*Ampelocissus acetosa*	.	.	.
Flowering Plants	Wild Grape	*Ampelocissus frutescens*	.	.	.
Flowering Plants	Native Grape	*Cayratia maritima*	.	.	.
Flowering Plants	Native Grape	*Cayratia trifolia*	.	.	.
Flowering Plants	Endeavour River Vine	*Cissus adnata*	.	.	.
Flowering Plants	White-flowered Black Mangrove	*Lumnitzera racemosa*	.	.	.
Flowering Plants	Nutwood	*Terminalia arostrata*	.	.	.
Flowering Plants	Bendee	*Terminalia bursarina*	.	.	.
Flowering Plants	Winged Nut Tree	*Terminalia canescens*	.	.	.
Flowering Plants	Wild Peach	*Terminalia carpentariae*	.	.	.
Flowering Plants	Terminalia	*Terminalia erythrocarpa*	.	.	.
Flowering Plants	Billy-goat Plum	*Terminalia ferdinandiana*	.	.	.
Flowering Plants	Nut Tree	*Terminalia grandiflora*	.	.	.
Flowering Plants	Kangaroo Tucker	*Terminalia latipes*	.	.	.
Flowering Plants	Damson	*Terminalia microcarpa*	.	.	.
Flowering Plants	Red Plum	*Terminalia platyphylla*	.	.	.
Flowering Plants	Wing-seed Terminalia	*Terminalia platyptera*	.	.	.
Flowering Plants	Wing-fruited Terminalia	*Terminalia pterocarya*	.	.	.
Flowering Plants	Terminalia	*Terminalia savannicola*	.	.	.
Flowering Plants	Rosewood	*Terminalia volucris*	.	.	.
Flowering Plants	Ammannia	*Ammannia baccifera*	.	.	.
Flowering Plants	Jerry-Jerry	*Ammannia multiflora*	.	.	.
Flowering Plants	Neasea	*Nesaea muelleri*	.	.	.
Flowering Plants	Neasea	*Nesaea striatiflora*	DD	.	.
Flowering Plants	Rotala	*Rotala diandra*	.	.	.
Flowering Plants	Rotala	*Rotala mexicana*	.	.	.
Flowering Plants	Seedbox	*Ludwigia hyssopifolia*	.	.	290974
Flowering Plants	Willow Primrose	*Ludwigia octovalvis*	.	.	.
Flowering Plants	Ludwigia	*Ludwigia perennis*	.	.	.
Flowering Plants	Liniment Tree	*Asteromyrtus symphyocarpa*	.	.	.
Flowering Plants	White Flowered Turkey Bush	*Calytrix achaeta*	.	.	.
Flowering Plants	Fringe-myrtle	*Calytrix arborescens*	.	.	.

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Flowering Plants	Kerosene Bush	*Calytrix brownii*	.	.	.
Flowering Plants	Turkey Bush	*Calytrix exstipulata*	.	.	.
Flowering Plants	Fringe-myrtle	*Calytrix verticillata*	.	.	.
Flowering Plants	Rough-leaved Range Gum	*Corymbia aspera*	.	.	.
Flowering Plants	Ghost Gum	*Corymbia bella*	.	.	.
Flowering Plants	Smooth-stemmed Bloodwood	*Corymbia bleeseri*	.	.	.
Flowering Plants	Roughleaf Cabbage Gum	*Corymbia confertiflora*	.	.	.
Flowering Plants	Bloodwood	*Corymbia curtipes*	.	.	.
Flowering Plants	Variable-barked Bloodwood	*Corymbia dichromophloia*	.	.	.
Flowering Plants	Bloodwood	*Corymbia drysdalensis*	.	.	.
Flowering Plants	Rusty Bloodwood	*Corymbia ferruginea*	.	.	.
Flowering Plants	Rusty Bloodwood	*Corymbia ferruginea subsp. ferruginea*	.	.	.
Flowering Plants	Broad-leaved Bloodwood	*Corymbia foelscheana*	.	.	.
Flowering Plants	Large-leaved Cabbage Gum	*Corymbia grandifolia*	.	.	.
Flowering Plants	Large-leaved Cabbage Gum	*Corymbia grandifolia subsp. grandifolia*	.	.	.
Flowering Plants	Stringybarked Bloodwood	*Corymbia jacobsiana*	.	.	.
Flowering Plants	Scarp Gum	*Corymbia kombolgiensis*	.	.	.
Flowering Plants	Round-leaved Bloodwood	*Corymbia latifolia*	.	.	.
Flowering Plants	Long-fruited Bloodwood	*Corymbia polycarpa*	.	.	.
Flowering Plants	Apple Gum	*Corymbia polysciada*	.	.	.
Flowering Plants	Grey Bloodwood	*Corymbia porrecta*	.	.	.
Flowering Plants	Swamp Bloodwood	*Corymbia ptychocarpa*	.	.	.
Flowering Plants	Swamp Bloodwood	*Corymbia ptychocarpa subsp. aptycha*	.	.	.
Flowering Plants	Swamp Bloodwood	*Corymbia ptychocarpa subsp. ptychocarpa*	.	.	.
Flowering Plants	Rough-leaved Bloodwood	*Corymbia setosa*	.	.	.
Flowering Plants	Northern Bloodwood	*Corymbia terminalis*	.	.	.
Flowering Plants	Rusty Bloodwood	*Corymbia umbonata*	.	.	.
Flowering Plants	White Gum	*Eucalyptus alba var. australasica*	.	.	.
Flowering Plants	Northern Salmon Gum	*Eucalyptus bigalerita*	.	.	.
Flowering Plants	Snappy Gum	*Eucalyptus brevifolia*	.	.	.
Flowering Plants	River Red Gum	*Eucalyptus camaldulensis*	.	.	.
Flowering Plants	Northern River Red Gum	*Eucalyptus camaldulensis var. obtusa*	.	.	.
Flowering Plants	Greenleaf Box	*Eucalyptus chlorophylla subsp. chlorophylla*	.	.	.
Flowering Plants	Box	*Eucalyptus cyanoclada*	.	.	.
Flowering Plants	Katherine Box	*Eucalyptus distans*	.	.	.
Flowering Plants	Yellow-barked Mallee	*Eucalyptus herbertiana*	.	.	.
Flowering Plants	Ironbark	*Eucalyptus jensenii*	.	.	.
Flowering Plants	Snappy Gum	*Eucalyptus leucophloia subsp. euroa*	.	.	.
Flowering Plants	Western Coolibah	*Eucalyptus microtheca*	.	.	.
Flowering Plants	Darwin Woollybutt	*Eucalyptus miniata*	.	.	.
Flowering Plants	Weeping Box	*Eucalyptus patellaris*	.	.	.
Flowering Plants	Scarlet Gum	*Eucalyptus phoenicea*	.	.	.
Flowering Plants	Silver-leaf Box	*Eucalyptus pruinosa*	.	.	.
Flowering Plants	Silver-leaf Box	*Eucalyptus pruinosa subsp. tenuata*	.	.	.
Flowering Plants	McArthur River Box	*Eucalyptus tectifica*	.	.	.
Flowering Plants	Darwin Stringybark	*Eucalyptus tetrodonta*	.	.	.
Flowering Plants	Salmon Gum	*Eucalyptus tintinnans*	.	.	.
Flowering Plants	Umbrawarra Gum	*Eucalyptus umbrawarrensis*	.	.	.
Flowering Plants	Featherflower	*Homalocalyx ericaeus*	.	.	.
Flowering Plants	Lithomyrtus	*Lithomyrtus hypoleuca*	.	.	.
Flowering Plants	Northern Swamp Box	*Lophostemon grandiflorus*	.	.	.
Flowering Plants	Northern Swamp Box	*Lophostemon grandiflorus subsp. riparius*	.	.	.
Flowering Plants	Swampbox	*Lophostemon lactifluus*	.	.	.
Flowering Plants	Coastal Paperbark	*Melaleuca acacioides*	.	.	.
Flowering Plants	Coastal Paperbark	*Melaleuca acacioides subsp. acacioides*	.	.	.
Flowering Plants	Silver-leaved Paperbark	*Melaleuca argentea*	.	.	.
Flowering Plants	Cajuput Tree	*Melaleuca cajuputi*	.	.	.
Flowering Plants	Lemon-scented Paperbark	*Melaleuca citrolens*	.	.	.
Flowering Plants	Blue-leaved Paperbark	*Melaleuca dealbata*	.	.	.
Flowering Plants	Weeping Paperbark	*Melaleuca leucadendra*	.	.	.
Flowering Plants	Yellow-barked Paperbark	*Melaleuca nervosa*	.	.	.

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Flowering Plants	Paperbark	*Melaleuca stenostachya*	.	.	.
Flowering Plants	Broad-leaved Paperbark	*Melaleuca viridiflora*	.	.	.
Flowering Plants	Yarrabah Satinash	*Syzygium angophoroides*	.	.	.
Flowering Plants	White Apple	*Syzygium eucalyptoides*	.	.	.
Flowering Plants	White Apple	*Syzygium eucalyptoides subsp. bleeseri*	.	.	.
Flowering Plants	White Apple	*Syzygium eucalyptoides subsp. eucalyptoides*	.	.	.
Flowering Plants	White Apple	*Syzygium forte subsp. potamophilum*	.	.	.
Flowering Plants	Red Bush Apple	*Syzygium suborbiculare*	.	.	.
Flowering Plants	Cunningham's Feather-flower	*Verticordia cunninghamii*	.	.	.
Flowering Plants	Featherflower	*Verticordia verticillata*	.	.	.
Flowering Plants	Native Lasiandra	*Melastoma malabathricum subsp. malabathricum*	.	.	.
Flowering Plants	Sour Plum	*Memecylon pauciflorum*	.	.	.
Flowering Plants	Tribulopis	*Tribulopis angustifolia*	.	.	.
Flowering Plants	Tribulopis	*Tribulopis bicolor*	.	.	.
Flowering Plants	Tribulopis	*Tribulopis pentandra*	.	.	.
Flowering Plants	Orange Root	*Denhamia obscura*	.	.	.
Flowering Plants	Yellowberry Bush	*Maytenus cunninghamii*	.	.	.
Flowering Plants	Wiry Stackhousia	*Stackhousia intermedia*	.	.	.
Flowering Plants	Bush Cherry	*Flacourtia territorialis*	.	.	.
Flowering Plants	Blue Spade Flower	*Hybanthus enneaspermus subsp. enneaspermus*	.	.	.
Flowering Plants	Lacewing Vine	*Adenia heterophylla subsp. australis*	.	.	.
Flowering Plants	Yellow Tulipwood	*Drypetes deplanchei*	.	.	.
Flowering Plants	Mallee Bitterbush	*Adriana tomentosa var. tomentosa*	DD	.	.
Flowering Plants	Native Croton	*Croton arnhemicus*	.	.	.
Flowering Plants	Croton	*Croton habrophyllus*	.	.	.
Flowering Plants	Euphorbia	*Euphorbia alsiniflora*	.	.	.
Flowering Plants	Euphorbia	*Euphorbia biconvexa*	.	.	.
Flowering Plants	Euphorbia	*Euphorbia comans*	.	.	.
Flowering Plants	Macgillivray's Spurge	*Euphorbia macgillivrayi*	.	.	.
Flowering Plants	Euphorbia	*Euphorbia maconochieana*	.	.	.
Flowering Plants	Native Gypsophila	*Euphorbia mitchelliana*	.	.	.
Flowering Plants	Euphorbia	*Euphorbia schizolepis*	.	.	.
Flowering Plants	Euphorbia	*Euphorbia schultzii*	.	.	.
Flowering Plants	Caustic Bush	*Euphorbia tannensis subsp. eremophila*	.	.	.
Flowering Plants	Euphorbia	*Euphorbia vachellii*	.	.	.
Flowering Plants	Blind Your Eye	*Excoecaria ovalis*	.	.	.
Flowering Plants	Gutta-percha	*Excoecaria parvifolia*	.	.	.
Flowering Plants	Yellow Ball Flower	*Mallotus nesophilus*	.	.	.
Flowering Plants	Striped Seed Plant	*Microstachys chamaelea*	.	.	.
Flowering Plants	Shonia	*Shonia bickertonensis*	.	.	.
Flowering Plants	Black Currant Bush	*Antidesma ghesaembilla*	.	.	.
Flowering Plants	Currant Bush	*Antidesma parvifolium*	.	.	.
Flowering Plants	Breynia	*Breynia cernua*	.	.	.
Flowering Plants	Pop-gun Seed	*Bridelia tomentosa*	.	.	.
Flowering Plants	White Currant	*Flueggea virosa subsp. melanthesoides*	.	.	.
Flowering Plants	Cheese Tree	*Glochidion apodogynum*	.	.	.
Flowering Plants	Cheese Tree	*Glochidion disparipes*	.	.	.
Flowering Plants	Buttonwood	*Glochidion sumatranum*	.	.	.
Flowering Plants	Little Cheeses	*Glochidion xerocarpum*	.	.	.
Flowering Plants	Tracey's Puzzle	*Margaritaria dubium-traceyi*	.	.	.
Flowering Plants	Leptopus	*Notoleptopus decaisnei*	.	.	.
Flowering Plants	Phyllanthus	*Phyllanthus carpentariae*	.	.	.
Flowering Plants	Phyllanthus	*Phyllanthus exilis*	.	.	.
Flowering Plants	Phyllanthus	*Phyllanthus indigoferoides*	.	.	.
Flowering Plants	Phyllanthus	*Phyllanthus lacerosus*	DD	.	.
Flowering Plants	Phyllanthus	*Phyllanthus maderaspatensis var. angustifolius*	.	.	.
Flowering Plants	Phyllanthus	*Phyllanthus minutiflorus*	.	.	.
Flowering Plants	Phyllanthus	*Phyllanthus reticulatus*	.	.	.
Flowering Plants	Phyllanthus	*Phyllanthus sp. Roper River*	.	.	.
Flowering Plants	Phyllanthus	*Phyllanthus sulcatus*	.	.	.
Flowering Plants	Seed-under-leaf	*Phyllanthus virgatus*	.	.	.

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Flowering Plants	Quinine Bush	*Petalostigma banksii*	.	.	.
Flowering Plants	Quinine Tree	*Petalostigma pubescens*	.	.	.
Flowering Plants	Quinine Bush	*Petalostigma quadriloculare*	.	.	.
Flowering Plants	Small St John's Wort	*Hypericum gramineum*	.	.	.
Flowering Plants	Billabong Tree	*Carallia brachiata*	.	.	.
Flowering Plants	Stilt Mangrove	*Rhizophora stylosa*	.	.	.
Flowering Plants	Kerosene Wood	*Erythroxylum ellipticum*	.	.	.
Flowering Plants	Water-fire	*Bergia pedicellaris*	.	.	.
Flowering Plants	Crab's Eye	*Abrus precatorius subsp. precatorius*	.	.	.
Flowering Plants	Wattle	*Acacia acradenia*	.	.	.
Flowering Plants	Needle-leaved Wattle	*Acacia alleniana*	.	.	.
Flowering Plants	Spring Wattle	*Acacia ampliceps*	.	.	.
Flowering Plants	Wattle	*Acacia asperulacea*	.	.	.
Flowering Plants	Wattle	*Acacia conspersa*	.	.	.
Flowering Plants	Halls Creek Wattle	*Acacia cowleana*	.	.	.
Flowering Plants	River Wattle	*Acacia difficilis*	.	.	.
Flowering Plants	Swamp Wattle	*Acacia dimidiata*	.	.	.
Flowering Plants	Wattle	*Acacia drepanocarpa*	.	.	.
Flowering Plants	Wattle	*Acacia galioides*	.	.	.
Flowering Plants	Wattle	*Acacia galioides var. galioides*	.	.	.
Flowering Plants	Wattle	*Acacia galioides var. leioclada*	.	.	.
Flowering Plants	Wattle	*Acacia gonocarpa*	.	.	.
Flowering Plants	Wattle	*Acacia gonoclada*	.	.	.
Flowering Plants	Wattle	*Acacia hammondii*	.	.	.
Flowering Plants	Corkscrew Wattle	*Acacia helicophylla*	.	.	.
Flowering Plants	Club-leaf Wattle	*Acacia hemignosta*	.	.	.
Flowering Plants	Candelabra Wattle	*Acacia holosericea*	.	.	.
Flowering Plants	Cape York Wattle	*Acacia humifusa*	.	.	.
Flowering Plants	Hickory Wattle	*Acacia lamprocarpa*	.	.	.
Flowering Plants	Ball Wattle	*Acacia latescens*	.	.	.
Flowering Plants	Flat Wattle	*Acacia latifolia*	.	.	.
Flowering Plants	Wattle	*Acacia leptocarpa*	.	.	.
Flowering Plants	Wattle	*Acacia limbata*	.	.	.
Flowering Plants	Cypress Wattle	*Acacia lycopodiifolia*	.	.	.
Flowering Plants	Turpentine Bush	*Acacia lysiphloia*	.	.	.
Flowering Plants	Wattle	*Acacia mimula*	.	.	.
Flowering Plants	Hill Turpentine	*Acacia monticola*	.	.	.
Flowering Plants	Small-ball Wattle	*Acacia multisiliqua*	.	.	.
Flowering Plants	Wattle	*Acacia neurocarpa*	.	.	.
Flowering Plants	Wattle	*Acacia nuperrima*	.	.	.
Flowering Plants	Wattle	*Acacia oncinocarpa*	.	.	.
Flowering Plants	Wattle	*Acacia pachycarpa*	DD	.	.
Flowering Plants	Soap Bush	*Acacia pellita*	.	.	.
Flowering Plants	Wattle	*Acacia perryi*	.	.	.
Flowering Plants	Ghost Wattle	*Acacia platycarpa*	.	.	.
Flowering Plants	Wattle	*Acacia plectocarpa*	.	.	.
Flowering Plants	Wattle	*Acacia plectocarpa subsp. plectocarpa*	.	.	.
Flowering Plants	Wattle	*Acacia plectocarpa subsp. tanumbirinensis*	.	.	.
Flowering Plants	Lancewood	*Acacia shirleyi*	.	.	.
Flowering Plants	Wattle	*Acacia sp. El Sharana*	.	.	.
Flowering Plants	Wattle	*Acacia thomsonii*	.	.	.
Flowering Plants	Torulosa Wattle	*Acacia torulosa*	.	.	.
Flowering Plants	Wattle	*Acacia tropica*	.	.	.
Flowering Plants	Pindan Wattle	*Acacia tumida*	.	.	.
Flowering Plants	Wattle	*Acacia umbellata*	.	.	.
Flowering Plants	Victoria Wattle	*Acacia victoriae*	.	.	.
Flowering Plants	Dwarf Wattle	*Acacia yirrkallensis*	.	.	.
Flowering Plants	Budda Pea	*Aeschynomene indica*	.	.	.
Flowering Plants	Sleeping Tree	*Albizia canescens*	.	.	.
Flowering Plants	Forest Siris	*Albizia procera*	.	.	.
Flowering Plants	Rough Chain-pea	*Alysicarpus muelleri*	.	.	.
Flowering Plants	Alyce Clover	*Alysicarpus schomburgkii*	.	.	.
Flowering Plants	Aphyllodium	*Aphyllodium biarticulatum*	.	.	.
Flowering Plants	Butterfly Tree	*Bauhinia binata*	.	.	.
Flowering Plants	Butterfly Tree	*Bauhinia cunninghamii*	.	.	.
Flowering Plants	Holly-leaved Pea-flower	*Bossiaea bossiaeoides*	.	.	.
Flowering Plants	Pigeon-pea	*Cajanus acutifolius*	.	.	.
Flowering Plants	Pigeon-pea	*Cajanus marmoratus*	.	.	.

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Flowering Plants	Yellow Beach Pea	*Cajanus reticulatus*	.	.	.
Flowering Plants	Flat-pod Peaflower	*Cajanus reticulatus var. grandifolius*	.	.	.
Flowering Plants	Wild Jack Bean	*Canavalia papuana*	.	.	.
Flowering Plants	Bean Tree	*Cathormion umbellatum subsp. moniliforme*	.	.	.
Flowering Plants	Hairy Cassia	*Chamaecrista absus*	.	.	289214
Flowering Plants	Five-leafed Cassia	*Chamaecrista mimosoides*	.	.	.
Flowering Plants	Cassia	*Chamaecrista nomame*	.	.	.
Flowering Plants	Cassia	*Chamaecrista nomame var. nomame*	.	.	.
Flowering Plants	Christia	*Christia australasica*	.	.	.
Flowering Plants	Rattlepod	*Crotalaria brevis*	.	.	.
Flowering Plants	Rattlepod	*Crotalaria calycina*	.	.	.
Flowering Plants	Kimberley Horse Poison	*Crotalaria crispata*	.	.	.
Flowering Plants	Trefoil Rattlepod	*Crotalaria medicaginea*	.	.	.
Flowering Plants	Trefoil Rattlepod	*Crotalaria medicaginea var. neglecta*	.	.	.
Flowering Plants	Rattlepod	*Crotalaria montana*	.	.	.
Flowering Plants	Rattlepod	*Crotalaria montana var. angustifolia*	.	.	.
Flowering Plants	New Holland Rattlepod	*Crotalaria novae-hollandiae subsp. lasiophylla*	.	.	.
Flowering Plants	New Holland Rattlepod	*Crotalaria novae-hollandiae subsp. novae-hollandiae*	DD	.	.
Flowering Plants	Rattlepod	*Crotalaria ramosissima*	.	.	.
Flowering Plants	Wedge-leaved Rattlepod	*Crotalaria retusa*	.	.	289704
Flowering Plants	Verbine	*Cullen badocanum*	.	.	.
Flowering Plants	Verbine	*Cullen balsamicum*	.	.	.
Flowering Plants	Scurf-pea	*Cullen plumosum*	.	.	.
Flowering Plants	Scurf-pea	*Cullen pustulatum*	.	.	.
Flowering Plants	Tick-trefoil	*Desmodium brownii*	.	.	.
Flowering Plants	Creeping Tick-trefoil	*Desmodium campylocaulon*	.	.	.
Flowering Plants	Tick-trefoil	*Desmodium filiforme*	.	.	.
Flowering Plants	Tick-trefoil	*Desmodium flagellare*	.	.	.
Flowering Plants	Tick-trefoil	*Desmodium glareosum*	.	.	.
Flowering Plants	Tick-trefoil	*Desmodium muelleri*	.	.	.
Flowering Plants	Tick-trefoil	*Desmodium pycnotrichum*	.	.	.
Flowering Plants	Tick-trefoil	*Desmodium trichostachyum*	.	.	.
Flowering Plants	Single Thorn Prickly Bush	*Dichrostachys spicata*	.	.	.
Flowering Plants	Bat Wing Coral Tree	*Erythrina vespertilio*	.	.	.
Flowering Plants	Northern Ironwood	*Erythrophleum chlorostachys*	.	.	.
Flowering Plants	Flemingia	*Flemingia pauciflora*	.	.	.
Flowering Plants	Mueller's Pea	*Galactia muelleri*	.	.	.
Flowering Plants	Poison Pea	*Galactia tenuiflora*	.	.	.
Flowering Plants	Heartleaf	*Gastrolobium grandiflorum*	.	.	.
Flowering Plants	Rusty Glycine	*Glycine tomentella*	.	.	.
Flowering Plants	Wedge-pea	*Gompholobium subulatum*	.	.	.
Flowering Plants	Small-flower Indigo	*Indigastrum parviflorum*	.	.	.
Flowering Plants	Sticky Indigo	*Indigofera colutea*	.	.	.
Flowering Plants	Indigo	*Indigofera haplophylla*	.	.	.
Flowering Plants	Native Indigo	*Indigofera linifolia*	.	.	.
Flowering Plants	Birdsville Indigo	*Indigofera linnaei*	.	.	.
Flowering Plants	Indigo	*Indigofera trita*	.	.	.
Flowering Plants	Cladode Pea	*Jacksonia dilatata*	.	.	.
Flowering Plants	Jacksonia	*Jacksonia odontoclada*	.	.	.
Flowering Plants	Leptosema	*Leptosema bossiaeoides*	.	.	.
Flowering Plants	Leptosema	*Leptosema villosum*	.	.	.
Flowering Plants	Yellow Broom	*Mirbelia viminalis*	.	.	.
Flowering Plants	Sensitive Plant	*Neptunia dimorphantha*	.	.	.
Flowering Plants	Native Sensitive Plant	*Neptunia gracilis*	.	.	.
Flowering Plants	Sensitive Plant	*Neptunia gracilis f. glandulosa*	.	.	.
Flowering Plants	Sensitive Plant	*Neptunia gracilis f. gracilis*	.	.	.
Flowering Plants	Sensitive Plant	*Neptunia major*	.	.	.
Flowering Plants	One-seeded Sensitive Plant	*Neptunia monosperma*	.	.	.
Flowering Plants	Phyllodium	*Phyllodium pulchellum*	.	.	.
Flowering Plants	Pycnospora	*Pycnospora lutescens*	.	.	.
Flowering Plants	Native Pea	*Rhynchosia minima*	.	.	.
Flowering Plants	Rhynchosia	*Rhynchosia rhomboidea*	.	.	.
Flowering Plants	Rothia	*Rothia indica subsp. australis*	.	.	.

Group	Common Name	Scientific Name	NT Status	National Status	ID
Flowering Plants	Cassia	*Senna costata*	.	.	.
Flowering Plants	Cassia	*Senna leptoclada*	.	.	.
Flowering Plants	Cassia	*Senna oligoclada*	.	.	.
Flowering Plants	Pepper-leaf Senna	*Senna planitiicola*	.	.	.
Flowering Plants	Graceful Cassia	*Senna venusta*	.	.	.
Flowering Plants	Peabush	*Sesbania benthamiana*	.	.	.
Flowering Plants	Yellow Pea-bush	*Sesbania cannabina*	.	.	.
Flowering Plants	Sesbania	*Sesbania simpliciuscula*	.	.	.
Flowering Plants	Templetonia	*Templetonia hookeri*	.	.	.
Flowering Plants	Red Pea-bush	*Tephrosia brachyodon*	.	.	.
Flowering Plants	Red Pea-bush	*Tephrosia brachyodon var. longifolia*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia conspicua*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia crocea*	DD	.	.
Flowering Plants	Tephrosia	*Tephrosia eriocarpa*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia filipes*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia leptoclada*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia oblongata*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia phaeosperma*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia polyzyga*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia remotiflora*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia reticulata*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia simplicifolia*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia sp. Pentecost River*	.	.	.
Flowering Plants	Wild Indigo	*Tephrosia spechtii*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia stuartii*	.	.	.
Flowering Plants	Tephrosia	*Tephrosia subpectinata*	.	.	.
Flowering Plants	Purple Clover-weed	*Uraria lagopodioides*	.	.	.
Flowering Plants	Wattle	*Vachellia douglasica*	.	.	.
Flowering Plants	Sweet Acacia	*Vachellia farnesiana*	.	.	288164
Flowering Plants	Wattle	*Vachellia pachyphloia*	.	.	.
Flowering Plants	Wattle	*Vachellia pallidifolia*	.	.	.
Flowering Plants	Wattle	*Vachellia valida*	.	.	.
Flowering Plants	Maloga Bean	*Vigna lanceolata*	.	.	.
Flowering Plants	Maloga Bean	*Vigna lanceolata var. latifolia*	.	.	.
Flowering Plants	Mung Bean	*Vigna radiata var. sublobata*	.	.	.
Flowering Plants	Medicine Bean	*Vigna vexillata*	.	.	.
Flowering Plants	Medicine Bean	*Vigna vexillata var. angustifolia*	.	.	.
Flowering Plants	Zornia	*Zornia muriculata subsp. angustata*	.	.	.
Flowering Plants	Zornia	*Zornia prostrata*	.	.	.
Flowering Plants	Zornia	*Zornia prostrata var. prostrata*	.	.	.
Flowering Plants	Milkwort	*Polygala eriocephala*	.	.	.
Flowering Plants	Milkwort	*Polygala exsquarrosa*	.	.	.
Flowering Plants	Milkwort	*Polygala longifolia*	.	.	.
Flowering Plants	Milkwort	*Polygala pycnophylla*	.	.	.
Flowering Plants	Milkwort	*Polygala sp. Edith Falls*	.	.	.
Flowering Plants	Milkwort	*Polygala sp. linear*	.	.	.
Flowering Plants	Milkwort	*Polygala sp. Mudginberri*	.	.	.
Flowering Plants	Australian Milkwort	*Polygala sp. narrow sepals var. stenosepala*	.	.	.
Flowering Plants	Milkwort	*Polygala sp. Top End*	.	.	.
Flowering Plants	Milkwort	*Polygala sp. winged fruit*	.	.	.
Flowering Plants	Milkwort	*Polygala tepperi*	.	.	.
Flowering Plants	Milkwort	*Polygala triflora*	.	.	.
Flowering Plants	Red Ash	*Alphitonia excelsa*	.	.	.
Flowering Plants	Alphitonia	*Alphitonia pomaderroides*	.	.	.
Flowering Plants	Supplejack	*Ventilago viminalis*	.	.	.
Flowering Plants	Wine Jujube	*Ziziphus oenopolia*	.	.	.
Flowering Plants	Ziziphus	*Ziziphus quadriloculatis*	.	.	.
Flowering Plants	Celtis	*Celtis philippensis*	.	.	.
Flowering Plants	Peach-leaved Poison-bush	*Trema tomentosa*	.	.	.
Flowering Plants	Peach-leaved Poison-bush	*Trema tomentosa var. aspera*	.	.	.
Flowering Plants	Arzerarzer	*Fatoua villosa*	.	.	.
Flowering Plants	Sandpaper Fig	*Ficus aculeata var. aculeata*	.	.	.
Flowering Plants	Weeping Fig	*Ficus benjamina*	.	.	.
Flowering Plants	Small-leaved Rock Fig	*Ficus brachypoda*	.	.	.
Flowering Plants	Fig	*Ficus carpentariensis*	.	.	.
Flowering Plants	Fig	*Ficus cerasicarpa*	.	.	.

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Flowering Plants	Cluster Fig	*Ficus congesta*	.	.	.
Flowering Plants	Peach-leaf Fig	*Ficus coronulata*	.	.	.
Flowering Plants	White Sandpaper Fig	*Ficus hispida*	.	.	.
Flowering Plants	Rock Fig	*Ficus platypoda*	.	.	.
Flowering Plants	Sandpaper Fig	*Ficus scobina*	.	.	.
Flowering Plants	Fig	*Ficus subpuberula*	.	.	.
Flowering Plants	Banyan	*Ficus virens*	.	.	.
Flowering Plants	Banyan	*Ficus virens var. virens*	.	.	.
Flowering Plants	Head-ache Vine	*Cucumis maderaspatanus*	.	.	.
Flowering Plants	Ulcardo Melon	*Cucumis melo*	.	.	289734
Flowering Plants	Ulcardo Melon	*Cucumis melo subsp. agrestis*	.	.	.
Flowering Plants	Loofah	*Luffa aegyptiaca*	.	.	.
Flowering Plants	Snake Gourd	*Trichosanthes cucumerina*	.	.	.
Flowering Plants	River Oak	*Casuarina cunninghamiana subsp. miodon*	.	.	.
Flowering Plants	Coastal She-Oak	*Casuarina equisetifolia*	.	.	289054
Flowering Plants	Split-arse-jack	*Capparis lasiantha*	.	.	.
Flowering Plants	Native Caper	*Capparis sepiaria*	.	.	.
Flowering Plants	Northern Wild Orange	*Capparis umbonata*	.	.	.
Flowering Plants	Spiderflower	*Cleome cleomoides*	.	.	.
Flowering Plants	Spiderflower	*Cleome microaustralica*	.	.	.
Flowering Plants	Spiderflower	*Cleome tetrandra*	.	.	.
Flowering Plants	Spiderflower	*Cleome tetrandra var. tetrandra*	.	.	.
Flowering Plants	Tickweed	*Cleome viscosa*	.	.	.
Flowering Plants	Kapok Bush	*Cochlospermum fraseri*	.	.	.
Flowering Plants	Kapok Bush	*Cochlospermum fraseri subsp. heteronemum*	.	.	.
Flowering Plants	Kapok Tree	*Cochlospermum gillivraei*	.	.	.
Flowering Plants	Cotton Tree	*Cochlospermum gregorii*	.	.	.
Flowering Plants	Native Rosella	*Abelmoschus ficulneus*	.	.	.
Flowering Plants	Mallow	*Abutilon hannii*	.	.	.
Flowering Plants	Indian Lantern-flower	*Abutilon indicum*	.	.	.
Flowering Plants	Desert Lantern-bush	*Abutilon leucopetalum*	.	.	.
Flowering Plants	Desert Chinese Lantern	*Abutilon otocarpum*	.	.	.
Flowering Plants	Mallow	*Abutilon sp. Mataranka*	.	.	.
Flowering Plants	Northern Kurrajong	*Brachychiton diversifolius subsp. diversifolius*	.	.	.
Flowering Plants	Red-flowered Kurrajong	*Brachychiton megaphyllus*	.	.	.
Flowering Plants	Red-flowering Kurrajong	*Brachychiton paradoxus*	.	.	.
Flowering Plants	Grubweed	*Corchorus aestuans*	.	.	.
Flowering Plants	Grubweed	*Corchorus fascicularis*	.	.	.
Flowering Plants	Grubweed	*Corchorus pumilio*	.	.	.
Flowering Plants	Flannel Weed	*Corchorus sidoides*	.	.	.
Flowering Plants	Flannel Weed	*Corchorus sidoides subsp. sidoides*	.	.	.
Flowering Plants	Grubweed	*Corchorus tridens*	.	.	.
Flowering Plants	Native Cotton	*Gossypium australe*	.	.	.
Flowering Plants	Upland Cotton	*Gossypium hirsutum var. taitense*	.	.	.
Flowering Plants	Coffee Fruit	*Grewia breviflora*	.	.	.
Flowering Plants	Emu Berries	*Grewia retusifolia*	.	.	.
Flowering Plants	Purple Salvia-flowered Plant	*Helicteres cana*	.	.	.
Flowering Plants	Helictres	*Helicteres dentata*	.	.	.
Flowering Plants	Helictres	*Helicteres hirsuta*	.	.	.
Flowering Plants	Spiral Bush	*Helicteres isora*	.	.	.
Flowering Plants	Helictres	*Helicteres sp. elongate*	.	.	.
Flowering Plants	Indian Mallow	*Herissantia crispa*	.	.	.
Flowering Plants	Yellow Hibiscus	*Hibiscus austrinus*	.	.	.
Flowering Plants	Yellow Hibiscus	*Hibiscus austrinus var. austrinus*	.	.	.
Flowering Plants	Native Hibiscus	*Hibiscus fluvialis*	.	.	.
Flowering Plants	Native Hibiscus	*Hibiscus geranioides*	.	.	.
Flowering Plants	Variable-leaf Hibiscus	*Hibiscus leptocladus*	.	.	.
Flowering Plants	Ballerina Hibiscus	*Hibiscus meraukensis*	.	.	.
Flowering Plants	Native Hibiscus	*Hibiscus pentaphyllus*	.	.	.
Flowering Plants	Sturt's Hibiscus	*Hibiscus sturtii*	.	.	.
Flowering Plants	Sturt's Hibiscus	*Hibiscus sturtii var. campylochlamys*	.	.	.
Flowering Plants	Bladder Ketmia	*Hibiscus trionum var. vesicarius*	.	.	.
Flowering Plants	Velvet Hibiscus	*Melhania oblongifolia*	.	.	.

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Flowering Plants	Silver Sida	*Sida fibulifera*	.	.	.
Flowering Plants	Fine Sida	*Sida filiformis*	.	.	.
Flowering Plants	Sida	*Sida laevis*	.	.	.
Flowering Plants	Sida	*Sida macropoda*	.	.	.
Flowering Plants	Lifesaver Burr	*Sida platycalyx*	.	.	.
Flowering Plants	Shrub Sida	*Sida rohlenae subsp. rohlenae*	.	.	.
Flowering Plants	Sida	*Sida sp. Mt Bundey*	.	.	.
Flowering Plants	Sida	*Sida sp. Suplejack Station*	.	.	.
Flowering Plants	Spiny Sida	*Sida spinosa*	.	.	292614
Flowering Plants	Sterculia	*Sterculia holtzei*	.	.	.
Flowering Plants	Peanut Tree	*Sterculia quadrifida*	.	.	.
Flowering Plants	Pacific Rosewood	*Thespesia populneoides*	.	.	.
Flowering Plants	Burbark	*Triumfetta albida*	.	.	.
Flowering Plants	Burbark	*Triumfetta arnhemica*	.	.	.
Flowering Plants	Burbark	*Triumfetta glaucescens*	.	.	.
Flowering Plants	Burbark	*Triumfetta longipedunculata*	.	.	.
Flowering Plants	Burbark	*Triumfetta micracantha*	.	.	.
Flowering Plants	Burbark	*Triumfetta pannosa*	.	.	.
Flowering Plants	Burbark	*Triumfetta parviflora*	.	.	.
Flowering Plants	Burbark	*Triumfetta plumigera*	.	.	.
Flowering Plants	Burbark	*Triumfetta ryeae subsp. ryeae*	DD	.	.
Flowering Plants	Native Burr	*Urena australiensis*	.	.	.
Flowering Plants	Pink-flowered Burr	*Urena lobata*	.	.	293234
Flowering Plants	Waltheria	*Waltheria indica*	.	.	.
Flowering Plants	Red Wax Plant	*Thecanthes punicea*	.	.	.
Flowering Plants	Thecanthes	*Thecanthes sanguinea*	.	.	.
Flowering Plants	Thecanthes	*Thecanthes sp. Donydji*	.	.	.
Flowering Plants	Whitewood	*Atalaya hemiglauca*	.	.	.
Flowering Plants	Wing-leaf Whitewood	*Atalaya variifolia*	.	.	.
Flowering Plants	Slender Balloon Vine	*Cardiospermum halicacabum var. halicacabum*	.	.	.
Flowering Plants	False Hopbush	*Distichostemon hispidulus*	.	.	.
Flowering Plants	Yellow Hop-bush	*Dodonaea lanceolata*	.	.	.
Flowering Plants	Yellow Hop-bush	*Dodonaea lanceolata var. lanceolata*	.	.	.
Flowering Plants	Hop Bush	*Dodonaea oxyptera*	.	.	.
Flowering Plants	Balloon Hopbush	*Dodonaea physocarpa*	.	.	.
Flowering Plants	Hop Bush	*Dodonaea platyptera*	.	.	.
Flowering Plants	Mango Bark	*Canarium australianum*	.	.	.
Flowering Plants	Green Plum	*Buchanania obovata*	.	.	.
Flowering Plants	Emu Apple	*Owenia vernicosa*	.	.	.
Flowering Plants	Boronia	*Boronia lanceolata*	.	.	.
Flowering Plants	Star Boronia	*Boronia lanuginosa*	.	.	.
Flowering Plants	Luvunga	*Luvunga monophylla*	.	.	.
Flowering Plants	Pink Evodia	*Melicope elleryana*	.	.	.
Flowering Plants	Lime Berry	*Micromelum minutum*	.	.	.
Flowering Plants	Freshwater Mangrove	*Barringtonia acutangula subsp. acutangula*	.	.	.
Flowering Plants	Cocky Apple	*Planchonia careya*	.	.	.
Flowering Plants	Small-leaved Ebony	*Diospyros humilis*	.	.	.
Flowering Plants	Iron Tree	*Diospyros rugosula*	.	.	.
Flowering Plants	River Mangrove	*Aegiceras corniculatum*	.	.	.
Flowering Plants	Yellow Boxwood	*Pouteria arnhemica*	.	.	.
Flowering Plants	Wild Prune	*Pouteria sericea*	.	.	.
Flowering Plants	Cordia	*Cordia dichotoma*	.	.	.
Flowering Plants	Coonta	*Ehretia saligna*	.	.	.
Flowering Plants	Heliotrope	*Heliotropium alcyonium*	.	.	.
Flowering Plants	Heliotrope	*Heliotropium brachythrix*	DD	.	.
Flowering Plants	Heliotrope	*Heliotropium bracteatum*	.	.	.
Flowering Plants	Heliotrope	*Heliotropium foliatum*	.	.	.
Flowering Plants	Heliotrope	*Heliotropium geocharis*	DD	.	.
Flowering Plants	Heliotrope	*Heliotropium glabellum*	.	.	.
Flowering Plants	Heliotrope	*Heliotropium ovalifolium*	.	.	.
Flowering Plants	Bushy Heliotrope	*Heliotropium paniculatum*	.	.	.
Flowering Plants	Heliotrope	*Heliotropium plumosum*	.	.	.
Flowering Plants	Heliotrope	*Heliotropium ramulipatens*	.	.	.
Flowering Plants	Heliotrope	*Heliotropium rhadinostachyum*	.	.	.
Flowering Plants	Heliotrope	*Heliotropium skeleton*	.	.	.
Flowering Plants	Heliotrope	*Heliotropium synaimon*	.	.	.

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Flowering Plants	Heliotrope	*Heliotropium tanythrix*	.	.	.
Flowering Plants	Devil¿s Son	*Heliotropium tenuifolium*	.	.	.
Flowering Plants	White Heliotrope	*Heliotropium ventricosum*	.	.	.
Flowering Plants	Cattle Bush	*Trichodesma zeylanicum*	.	.	.
Flowering Plants	Cattle Bush	*Trichodesma zeylanicum var. latisepalum*	.	.	.
Flowering Plants	Cattle Bush	*Trichodesma zeylanicum var. zeylanicum*	.	.	.
Flowering Plants	Archer Cherry	*Aidia racemosa*	.	.	.
Flowering Plants	Cyclophyllum	*Cyclophyllum schultzii*	.	.	.
Flowering Plants	Bedstraw	*Dentella minutissima*	.	.	.
Flowering Plants	Bedstraw	*Dentella repens*	.	.	.
Flowering Plants	Native Gardenia	*Gardenia ewartii*	.	.	.
Flowering Plants	Native Gardenia	*Gardenia ewartii subsp. ewartii*	.	.	.
Flowering Plants	Native Gardenia	*Gardenia fucata*	.	.	.
Flowering Plants	Native Gardenia	*Gardenia megasperma*	.	.	.
Flowering Plants	Native Gardenia	*Gardenia resinosa subsp. resinosa*	.	.	.
Flowering Plants	Native Ixora	*Ixora timorensis*	.	.	.
Flowering Plants	Leichhardt Tree	*Nauclea orientalis*	.	.	.
Flowering Plants	Oldenlandia	*Oldenlandia argillacea*	.	.	.
Flowering Plants	Oldenlandia	*Oldenlandia galioides*	.	.	.
Flowering Plants	Oldenlandia	*Oldenlandia mitrasacmoides*	.	.	.
Flowering Plants	Oldenlandia	*Oldenlandia mitrasacmoides subsp. mitrasacmoides*	.	.	.
Flowering Plants	Oldenlandia	*Oldenlandia sp. minute*	DD	.	.
Flowering Plants	Oldenlandia	*Oldenlandia spermacocoides*	.	.	.
Flowering Plants	Native Ixora	*Pavetta brownii var. brownii*	.	.	.
Flowering Plants	Medicine Bush	*Pogonolobus reticulatus*	.	.	.
Flowering Plants	Canthium	*Psydrax attenuata var. myrmecophila*	.	.	.
Flowering Plants	Canthium	*Psydrax pendulina*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce auriculata*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce breviflora*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce calliantha*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce dolichosperma*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce hillii*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce latimarginata*	.	.	.
Flowering Plants	Silver-blue Buttonweed	*Spermacoce leptoloba*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce omissa*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce platyloba*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce pogostoma*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce redacta*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce rupicola*	.	.	.
Flowering Plants	Blue Buttonweed	*Spermacoce stenophylla*	.	.	.
Flowering Plants	Buttonweed	*Spermacoce tectanthera*	.	.	.
Flowering Plants	Swizzle Bush	*Timonius timon*	.	.	.
Flowering Plants	Canscora	*Canscora diffusa*	.	.	.
Flowering Plants	Exacum	*Exacum tetragonum*	.	.	.
Flowering Plants	Schenkia	*Schenkia australis*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme aggregata*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme ambigua*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme brachystemonea*	DD	.	.
Flowering Plants	Mitre Plant	*Mitrasacme connata*	.	.	.
Flowering Plants	White Reed Plant	*Mitrasacme elata*	.	.	.
Flowering Plants	White Flood Plant	*Mitrasacme exserta*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme glaucescens*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme laricifolia*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme micrantha*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme multicaulis*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme nidulifera*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme nudicaulis*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme nudicaulis var. nudicaulis*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme nummularia*	.	.	.
Flowering Plants	Mitre Plant	*Mitrasacme scrithicola*	.	.	.
Flowering Plants	Strychnine Tree	*Strychnos lucida*	.	.	.
Flowering Plants	Milkwood	*Alstonia actinophylla*	.	.	.
Flowering Plants	Chainfruit	*Alyxia spicata*	.	.	.
Flowering Plants	Chainfruit	*Alyxia tropica*	.	.	.

Group	Common Name	Scientific Name	NT Status	National Status	ID
Flowering Plants	Bally Yam	*Brachystelma glabriflorum*	.	.	.
Flowering Plants	Conkerberry	*Carissa lanceolata*	.	.	.
Flowering Plants	Mangrove Creeper	*Cynanchum carnosum*	.	.	.
Flowering Plants	Gymnanthera	*Gymnanthera oblonga*	.	.	.
Flowering Plants	Sandstone Wax Flower	*Hoya australis subsp. rupicola*	.	.	.
Flowering Plants	Milkvine	*Marsdenia angustata*	.	.	.
Flowering Plants	Milkvine	*Marsdenia geminata*	.	.	.
Flowering Plants	Milkvine	*Marsdenia trinervis*	.	.	.
Flowering Plants	Milkvine	*Marsdenia velutina*	.	.	.
Flowering Plants	Bush Banana	*Marsdenia viridiflora subsp. tropica*	.	.	.
Flowering Plants	Hairy Silkpod	*Parsonsia velutina*	.	.	.
Flowering Plants	Caustic Vine	*Sarcostemma viminale*	.	.	.
Flowering Plants	Caustic Vine	*Sarcostemma viminale subsp. brunonianum*	.	.	.
Flowering Plants	Corky Milk Vine	*Secamone elliptica*	.	.	.
Flowering Plants	Iodine Plant	*Tabernaemontana orientalis*	.	.	.
Flowering Plants	Tylophora	*Tylophora cinerascens*	.	.	.
Flowering Plants	Tylophora	*Tylophora flexuosa*	.	.	.
Flowering Plants	Milk Bush	*Wrightia saligna*	.	.	.
Flowering Plants	False Fiddle-leaf	*Hydrolea zeylanica*	.	.	.
Flowering Plants	Wild Tobacco	*Nicotiana monoschizocarpa*	DD	.	.
Flowering Plants	Wild Gooseberry	*Physalis angulata*	.	.	291984
Flowering Plants	Wild Tomato	*Solanum dioicum*	.	.	.
Flowering Plants	Wild Tomato	*Solanum echinatum*	.	.	.
Flowering Plants	Thorny Nightshade	*Solanum lucani*	.	.	.
Flowering Plants	Solanum	*Solanum pugiunculiferum*	.	.	.
Flowering Plants	Bonamia	*Bonamia brevifolia*	.	.	.
Flowering Plants	Grey-vine	*Bonamia media var. media*	.	.	.
Flowering Plants	Bonamia	*Bonamia pannosa*	.	.	.
Flowering Plants	Rosinweed	*Cressa australis*	.	.	.
Flowering Plants	Blue Periwinkle	*Evolvulus alsinoides*	.	.	.
Flowering Plants	Cow-vine	*Ipomoea abrupta*	.	.	.
Flowering Plants	Desert Cow-vine	*Ipomoea diamantinensis*	.	.	.
Flowering Plants	Cow-vine	*Ipomoea diversifolia*	.	.	.
Flowering Plants	Small Pink Convolvulus	*Ipomoea eriocarpa*	.	.	.
Flowering Plants	Slender Bindweed	*Ipomoea gracilis*	.	.	.
Flowering Plants	Mallamak	*Ipomoea graminea*	.	.	.
Flowering Plants	Common Cow-vine	*Ipomoea lonchophylla*	.	.	.
Flowering Plants	Morning Glory	*Ipomoea nil*	.	.	.
Flowering Plants	Bell Vine	*Ipomoea plebeia*	.	.	.
Flowering Plants	Silky Cow-vine	*Ipomoea polymorpha*	.	.	.
Flowering Plants	Cow-vine	*Ipomoea sp. Tolmer*	.	.	.
Flowering Plants	Snake Stem	*Jacquemontia browniana*	.	.	.
Flowering Plants	Purple-flowered Jungle Creeper	*Jacquemontia paniculata*	.	.	.
Flowering Plants	Merremia	*Merremia gemella*	.	.	.
Flowering Plants	Merremia	*Merremia incisa*	DD	.	.
Flowering Plants	Potato Vine	*Operculina brownii*	.	.	.
Flowering Plants	Creeping Polymeria	*Polymeria ambigua*	.	.	.
Flowering Plants	Erect Bindweed	*Polymeria longifolia*	.	.	.
Flowering Plants	Morning Vine	*Xenostegia tridentata*	.	.	.
Flowering Plants	Stiff Jasmine	*Jasminum molle*	.	.	.
Flowering Plants	Mock-Olive	*Notelaea sp. Elcho Island*	.	.	.
Flowering Plants	Long-leaved Desert Fuchsia	*Eremophila longifolia*	.	.	.
Flowering Plants	Desert Boobialla	*Myoporum montanum*	.	.	.
Flowering Plants	White Mangrove	*Avicennia marina var. eucalyptifolia*	.	.	.
Flowering Plants	Dicpliptera	*Dicliptera armata*	.	.	.
Flowering Plants	Hygrophila	*Hygrophila angustifolia*	.	.	.
Flowering Plants	Rosy Hypoestes	*Hypoestes floribunda*	.	.	.
Flowering Plants	Rosy Hypoestes	*Hypoestes floribunda var. angustifolia*	.	.	.
Flowering Plants	Nelsonia	*Nelsonia campestris*	.	.	.
Flowering Plants	Pink Tongues	*Rostellularia adscendens*	.	.	.
Flowering Plants	Pink Tongues	*Rostellularia adscendens subsp. adscendens*	.	.	.
Flowering Plants	Pink Tongues	*Rostellularia adscendens subsp. clementii*	.	.	.
Flowering Plants	Josephinia Burr	*Josephinia eugeniae*	.	.	.
Flowering Plants	Lippia	*Phyla nodiflora var. nodiflora*	.	.	291964
Flowering Plants	Whistling Tree	*Dolichandrone filiformis*	.	.	.

Group	Common Name	Scientific Name	NT Status	National Status	ID
Flowering Plants	Lemon Wood	*Dolichandrone heterophylla*	.	.	.
Flowering Plants	Purple Bush Flower	*Anisomeles malabarica*	.	.	.
Flowering Plants	Musk Basil	*Basilicum polystachyon*	.	.	.
Flowering Plants	Beauty Berry	*Callicarpa candicans*	.	.	.
Flowering Plants	Smooth Spiderbush	*Clerodendrum floribundum*	.	.	.
Flowering Plants	Scrambling Clerodendrum	*Clerodendrum inerme*	.	.	.
Flowering Plants	Sacred Basil	*Ocimum tenuiflorum var. anisodorum*	.	.	.
Flowering Plants	Pityrodia	*Pityrodia quadrangulata*	.	.	.
Flowering Plants	Pityrodia	*Pityrodia ternifolia*	.	.	.
Flowering Plants	Mintbush	*Plectranthus scutellarioides*	.	.	.
Flowering Plants	Pogo	*Pogostemon stellatus*	.	.	.
Flowering Plants	Premna	*Premna acuminata*	.	.	.
Flowering Plants	Cheeky Black Plum	*Vitex acuminata*	.	.	.
Flowering Plants	Black Plum	*Vitex glabrata*	.	.	.
Flowering Plants	Monkey-flower	*Mimulus sp. Groote Eylandt*	.	.	.
Flowering Plants	Blackrod	*Buchnera asperata*	.	.	.
Flowering Plants	Blackrod	*Buchnera ciliata*	.	.	.
Flowering Plants	Dainty Bush Flower	*Buchnera linearis*	.	.	.
Flowering Plants	Swamp Foxglove	*Centranthera cochinchinensis*	.	.	.
Flowering Plants	Bacopa	*Bacopa floribunda*	.	.	.
Flowering Plants	Limnophila	*Limnophila fragrans*	.	.	.
Flowering Plants	Bluerod	*Stemodia lathraia*	.	.	.
Flowering Plants	Bluerod	*Stemodia lythrifolia*	.	.	.
Flowering Plants	Bluerod	*Stemodia tephropelina*	.	.	.
Flowering Plants	Sticky Bluerod	*Stemodia viscosa*	.	.	.
Flowering Plants	Witchweed	*Striga curviflora*	.	.	.
Flowering Plants	Lindernia	*Lindernia clausa*	.	.	.
Flowering Plants	Lindernia	*Lindernia sp. open throated*	.	.	.
Flowering Plants	Golden Bladderwort	*Utricularia aurea*	.	.	.
Flowering Plants	Golden Bladderwort	*Utricularia chrysantha*	.	.	.
Flowering Plants	Bladderwort	*Utricularia lasiocaulis*	.	.	.
Flowering Plants	Bladderwort	*Utricularia limosa*	.	.	.
Flowering Plants	Bladderwort	*Utricularia muelleri*	.	.	.
Flowering Plants	Flypaper Trap	*Byblis liniflora*	.	.	.
Flowering Plants	Northern Holly	*Ilex arnhemensis subsp. arnhemensis*	.	.	.
Flowering Plants	Lace Flower	*Trachymene microcephala*	.	.	.
Flowering Plants	Auranticarpa	*Auranticarpa melanosperma*	.	.	.
Flowering Plants	Trigger Plant	*Stylidium capillare*	.	.	.
Flowering Plants	Trigger Plant	*Stylidium muscicola*	.	.	.
Flowering Plants	Trigger Plant	*Stylidium schizanthum*	.	.	.
Flowering Plants	Trigger Plant	*Stylidium semipartitum*	.	.	.
Flowering Plants	Wavy Marshwort	*Nymphoides crenata*	.	.	.
Flowering Plants	Water Snowflake	*Nymphoides indica*	.	.	.
Flowering Plants	Marshwort	*Nymphoides quadriloba*	.	.	.
Flowering Plants	Goodenia	*Goodenia argillacea*	DD	.	.
Flowering Plants	Narrow-leaved Goodenia	*Goodenia armstrongiana*	.	.	.
Flowering Plants	Split-end Goodenia	*Goodenia byrnesii*	.	.	.
Flowering Plants	Streaked Goodenia	*Goodenia coronopifolia*	.	.	.
Flowering Plants	Goodenia	*Goodenia hispida*	.	.	.
Flowering Plants	Goodenia	*Goodenia holtzeana*	.	.	.
Flowering Plants	Goodenia	*Goodenia janamba*	.	.	.
Flowering Plants	Goodenia	*Goodenia lamprosperma*	.	.	.
Flowering Plants	Goodenia	*Goodenia leiosperma*	.	.	.
Flowering Plants	Goodenia	*Goodenia malvina*	DD	.	.
Flowering Plants	Goodenia	*Goodenia odonnellii*	.	.	.
Flowering Plants	Hairy Goodenia	*Goodenia pilosa*	.	.	.
Flowering Plants	Goodenia	*Goodenia purpurascens*	.	.	.
Flowering Plants	Goodenia	*Goodenia redacta*	.	.	.
Flowering Plants	Goodenia	*Goodenia viscidula*	.	.	.
Flowering Plants	Fanflower	*Lechenaultia filiformis*	.	.	.
Flowering Plants	Fanflower	*Scaevola amblyanthera*	.	.	.
Flowering Plants	Fanflower	*Scaevola amblyanthera var. amblyanthera*	.	.	.
Flowering Plants	Fanflower	*Scaevola browniana*	.	.	.
Flowering Plants	Fanflower	*Scaevola browniana subsp. browniana*	.	.	.
Flowering Plants	Bushy Fanflower	*Scaevola ovalifolia*	.	.	.
Flowering Plants	Fanflower	*Scaevola revoluta*	.	.	.
Flowering Plants	Fanflower	*Scaevola revoluta subsp. revoluta*	.	.	.

Group	Common Name	Scientific Name	NT Status	National Status	ID
Flowering Plants	Adenostemma	*Adenostemma lavenia*	.	.	.
Flowering Plants	Parrot Daisy	*Alloptenigeron filifolius*	.	.	.
Flowering Plants	Cobbler's Pegs	*Bidens bipinnata*	.	.	288764
Flowering Plants	Daisy	*Blumea axillaris*	.	.	.
Flowering Plants	Daisy	*Blumea benthamiana*	DD	.	.
Flowering Plants	Daisy	*Blumea diffusa*	.	.	.
Flowering Plants	Daisy	*Blumea saxatilis*	.	.	.
Flowering Plants	Daisy	*Blumea tenella*	.	.	.
Flowering Plants	Burr-Daisy	*Calotis breviseta*	.	.	.
Flowering Plants	Spreading Sneezeweed	*Centipeda minima*	.	.	.
Flowering Plants	Vernonia	*Cyanthillium cinereum*	.	.	.
Flowering Plants	Daisy	*Diodontium filifolium*	DD	.	.
Flowering Plants	Yellow Twin Stem	*Flaveria australasica*	.	.	.
Flowering Plants	Daisy	*Pentalepis ecliptoides*	.	.	.
Flowering Plants	Fruit Salad Bush	*Pterocaulon serrulatum*	.	.	.
Flowering Plants	Fruit Salad Bush	*Pterocaulon serrulatum var. velutinum*	.	.	.
Flowering Plants	Apple Bush	*Pterocaulon sphacelatum*	.	.	.
Flowering Plants	Daisy	*Pterocaulon verbascifolium*	.	.	.
Flowering Plants	East Indian Globe-Thistle	*Sphaeranthus indicus*	.	.	.
Flowering Plants	Spreading Nut-heads	*Sphaeromorphaea australis*	.	.	.
Flowering Plants	Stinkweed	*Streptoglossa bubakii*	.	.	.
Flowering Plants	Aromatic Daisy	*Streptoglossa odora*	.	.	.
Flowering Plants	Daisy	*Wedelia cunninghamii*	.	.	.
Flowering Plants	Daisy	*Wedelia verbesinoides*	.	.	.
Fish	Freshwater Sawfish	*Pristis microdon*	VU	VU	176261
Frogs	Marbled Frog	*Limnodynastes convexiusculus*	.	.	.
Frogs	Ornate Burrowing Frog	*Opisthodon ornatus*	DD	.	.
Frogs	Bilingual Froglet	*Crinia bilingua*	.	.	.
Frogs	Desert Froglet	*Crinia deserticola*	.	.	.
Frogs	Remote Froglet	*Crinia remota*	.	.	.
Frogs	Northern Spadefoot Toad	*Notaden melanoscaphus*	.	.	.
Frogs	Floodplain Toadlet	*Uperoleia inundata*	.	.	.
Frogs	Stonemason Toadlet	*Uperoleia lithomoda*	.	.	.
Frogs	Giant Frog	*Litoria australis*	DD	.	.
Frogs	Northern Dwarf Tree-frog	*Litoria bicolor*	DD	.	.
Frogs	Green Tree-frog	*Litoria caerulea*	.	.	.
Frogs	Copland's Rock Frog	*Litoria coplandi*	.	.	.
Frogs	Hidden-ear Frog	*Litoria cryptotis*	.	.	.
Frogs	Peter's Frog	*Litoria inermis*	.	.	.
Frogs	Long-footed Frog	*Litoria longipes*	.	.	.
Frogs	Rocket Frog	*Litoria nasuta*	.	.	.
Frogs	Pale Frog	*Litoria pallida*	.	.	.
Frogs	Roth's Tree-Frog	*Litoria rothii*	.	.	.
Frogs	Red Tree-frog	*Litoria rubella*	.	.	.
Frogs	Tornier's Frog	*Litoria tornieri*	.	.	.
Frogs	Wotjulum Frog	*Litoria wotjulumensis*	.	.	.
Reptiles	Freshwater Crocodile	*Crocodylus johnstoni*	.	.	.
Reptiles	Saltwater Crocodile	*Crocodylus porosus*	.	.	.
Reptiles	Northern Long-necked Turtle	*Macrochelodina rugosa*	.	.	.
Reptiles	Cann's Long-necked Turtle	*Chelodina canni*	.	.	.
Reptiles	Northern Snapping Turtle	*Elseya dentata*	.	.	.
Reptiles	Diamond Head Turtle	*Emydura subglobosa*	.	.	.
Reptiles	Victoria River Red-faced Turtle	*Emydura victoriae*	.	.	.
Reptiles	Fat-tailed Gecko	*Diplodactylus conspicillatus*	.	.	.
Reptiles	Northern Dtella	*Gehyra australis*	.	.	.
Reptiles	Borroloola Dtella	*Gehyra borroloola*	.	.	.
Reptiles	Northern Spotted Rock Dtella	*Gehyra nana*	.	.	.
Reptiles	Arnhem Land Spotted Dtella	*Gehyra pamela*	.	.	.
Reptiles	Bynoe's Gecko	*Heteronotia binoei*	.	.	.
Reptiles	Pale-striped Ground Gecko	*Lucasium immaculatum*	.	.	.
Reptiles	Crowned Gecko	*Lucasium stenodactylum*	.	.	.
Reptiles	Marbled Velvet Gecko	*Oedura marmorata*	.	.	.
Reptiles	Zig-zag Gecko	*Oedura rhombifer*	.	.	.
Reptiles	Beaked Gecko	*Rhynchoedura ornata*	.	.	.
Reptiles	Spiny-tailed Gecko	*Strophurus ciliaris*	.	.	.
Reptiles	Rusty-topped Delma	*Delma borea*	.	.	.
Reptiles	Sharp-snouted Delma	*Delma nasuta*	.	.	.
Reptiles	Burton's Legless Lizard	*Lialis burtonis*	.	.	.

Group	Common Name	Scientific Name	NT Status	National Status	ID
Reptiles	Western Hooded Scaly-foot	*Pygopus nigriceps*	.	.	.
Reptiles	Two-Spined Rainbow Skink	*Carlia amax*	.	.	.
Reptiles	Slender Rainbow Skink	*Carlia gracilis*	.	.	.
Reptiles	Striped Rainbow Skink	*Carlia munda*	.	.	.
Reptiles	Red-Sided Rainbow Skink	*Carlia rufilatus*	.	.	.
Reptiles	Port Essington Ctenotus	*Ctenotus essingtonii*	.	.	.
Reptiles	Plain Ctenotus	*Ctenotus inornatus*	.	.	.
Reptiles	Military Ctenotus	*Ctenotus militaris*	.	.	.
Reptiles	Leopard Ctenotus	*Ctenotus pantherinus*	.	.	.
Reptiles	Robust Ctenotus	*Ctenotus robustus*	.	.	.
Reptiles	Spalding's Ctenotus	*Ctenotus spaldingi*	.	.	.
Reptiles	Scant-Striped Ctenotus	*Ctenotus vertebralis*	.	.	.
Reptiles	Narrow-Banded Sand Swimmer	*Eremiascincus fasciolatus*	.	.	.
Reptiles	Smooth-Tailed Skink	*Glaphyromorphus isolepis*	.	.	.
Reptiles	Griffin's Lerista	*Lerista griffini*	.	.	.
Reptiles	Eastern Lerista	*Lerista orientalis*	.	.	.
Reptiles	Grey's Menetia	*Menetia greyii*	.	.	.
Reptiles	Main's Menetia	*Menetia maini*	.	.	.
Reptiles	Red-Tailed Snake-Eyed Skink	*Morethia ruficauda*	.	.	.
Reptiles	Storr's Snake-Eyed Skink	*Morethia storri*	.	.	.
Reptiles	Ornate Snake-Eyed Skink	*Notoscincus ornatus*	.	.	.
Reptiles	Kinghorn's Snake-Eyed Skink	*Proablepharus kinghorni*	.	.	.
Reptiles	Slender Snake-Eyed Skink	*Proablepharus tenuis*	.	.	.
Reptiles	Centralian Blue-Tongued Lizard	*Tiliqua multifasciata*	.	.	.
Reptiles	Common Blue-Tongued Lizard	*Tiliqua scincoides*	DD	.	.
Reptiles	Frilled Lizard	*Chlamydosaurus kingii*	.	.	.
Reptiles	White-lipped Dragon	*Diporiphora albilabris*	.	.	.
Reptiles	Two-Lined Dragon	*Diporiphora bilineata*	.	.	.
Reptiles	Lally's Two-line Dragon	*Diporiphora lalliae*	.	.	.
Reptiles	Yellow-sided Two-line Dragon	*Diporiphora magna*	.	.	.
Reptiles	Gilbert's Dragon	*Lophognathus gilberti*	.	.	.
Reptiles	Ridge-tailed Monitor	*Varanus acanthurus*	.	.	.
Reptiles	Sand Goanna	*Varanus gouldii*	.	.	.
Reptiles	Mangrove Monitor	*Varanus indicus*	.	.	.
Reptiles	Mertens' Water Monitor	*Varanus mertensi*	VU	.	347295
Reptiles	Mitchell's Water Monitor	*Varanus mitchelli*	DD	.	.
Reptiles	Spotted Tree Monitor	*Varanus scalaris*	DD	.	.
Reptiles	Black-tailed Monitor	*Varanus tristis*	.	.	.
Reptiles	Northern Blind Snake	*Ramphotyphlops diversus*	.	.	.
Reptiles	Robust Blind Snake	*Ramphotyphlops ligatus*	.	.	.
Reptiles	Children's Python	*Antaresia childreni*	DD	.	.
Reptiles	Black-headed Python	*Aspidites melanocephalus*	.	.	.
Reptiles	Water Python	*Liasis fuscus*	.	.	.
Reptiles	Olive Python	*Liasis olivaceus*	.	.	.
Reptiles	Carpet Python	*Morelia spilota*	.	.	.
Reptiles	Arafura File Snake	*Acrochordus arafurae*	.	.	.
Reptiles	Brown Tree Snake	*Boiga irregularis*	DD	.	.
Reptiles	Green Tree Snake	*Dendrelaphis punctulata*	DD	.	.
Reptiles	Keelback	*Tropidonophis mairii*	.	.	.
Reptiles	Half-girdled Snake	*Brachyurophis semifasciatus*	.	.	.
Reptiles	Northern Small-eyed Snake	*Cryptophis pallidiceps*	DD	.	.
Reptiles	Olive Whip Snake	*Demansia olivacea*	DD	.	.
Reptiles	Papuan Whip Snake	*Demansia papuensis*	DD	.	.
Reptiles	Black Whip Snake	*Demansia vestigiata*	DD	.	.
Reptiles	Orange-naped Snake	*Furina ornata*	.	.	.
Reptiles	King Brown Snake	*Pseudechis australis*	.	.	.
Reptiles	Ringed Brown Snake	*Pseudonaja modesta*	.	.	.
Reptiles	Western Brown Snake	*Pseudonaja nuchalis*	.	.	.
Reptiles	Little Spotted Snake	*Suta punctata*	.	.	.
Reptiles	Bandy Bandy	*Vermicella annulata*	.	.	.
Birds	Emu	*Dromaius novaehollandiae*	VU	.	176363
Birds	Brown Quail	*Coturnix ypsilophora*	.	.	.
Birds	Magpie Goose	*Anseranas semipalmata*	.	.	.
Birds	Wandering Whistling-Duck	*Dendrocygna arcuata*	.	.	.
Birds	Plumed Whistling-Duck	*Dendrocygna eytoni*	.	.	.
Birds	Radjah Shelduck	*Tadorna radjah*	.	.	177769

Group	Common Name	Scientific Name	NT Status	National Status	ID
Birds	Pink-eared Duck	*Malacorhynchus membranaceus*	.	.	.
Birds	Green Pygmy-Goose	*Nettapus pulchellus*	.	.	.
Birds	Grey Teal	*Anas gracilis*	.	.	.
Birds	Pacific Black Duck	*Anas superciliosa*	.	.	.
Birds	Hardhead	*Aythya australis*	.	.	.
Birds	Australasian Grebe	*Tachybaptus novaehollandiae*	.	.	.
Birds	Hoary-headed Grebe	*Poliocephalus poliocephalus*	.	.	.
Birds	Great Crested Grebe	*Podiceps cristatus*	.	.	.
Birds	Common Bronzewing	*Phaps chalcoptera*	.	.	.
Birds	Flock Bronzewing	*Phaps histrionica*	.	.	.
Birds	Crested Pigeon	*Ocyphaps lophotes*	.	.	.
Birds	Spinifex Pigeon	*Geophaps plumifera*	.	.	.
Birds	Partridge Pigeon	*Geophaps smithii*	VU	VU	176384
Birds	Chestnut-quilled Rock-Pigeon	*Petrophassa rufipennis*	.	.	.
Birds	Diamond Dove	*Geopelia cuneata*	.	.	.
Birds	Peaceful Dove	*Geopelia striata*	.	.	.
Birds	Bar-shouldered Dove	*Geopelia humeralis*	.	.	.
Birds	Pied Imperial Pigeon	*Ducula bicolor*	.	.	.
Birds	Tawny Frogmouth	*Podargus strigoides*	.	.	.
Birds	Spotted Nightjar	*Eurostopodus argus*	.	.	.
Birds	Large-tailed Nightjar	*Caprimulgus macrurus*	.	.	.
Birds	Australian Owlet-nightjar	*Aegotheles cristatus*	.	.	.
Birds	Fork-tailed Swift	*Apus pacificus*	.	.	.
Birds	Australasian Darter	*Anhinga novaehollandiae*	.	.	.
Birds	Little Pied Cormorant	*Microcarbo melanoleucos*	.	.	.
Birds	Great Cormorant	*Phalacrocorax carbo*	.	.	.
Birds	Little Black Cormorant	*Phalacrocorax sulcirostris*	.	.	.
Birds	Pied Cormorant	*Phalacrocorax varius*	.	.	.
Birds	Australian Pelican	*Pelecanus conspicillatus*	.	.	.
Birds	Black-necked Stork	*Ephippiorhynchus asiaticus*	.	.	.
Birds	Black Bittern	*Ixobrychus flavicollis*	DD	.	.
Birds	White-necked Heron	*Ardea pacifica*	.	.	.
Birds	Eastern Great Egret	*Ardea modesta*	.	.	.
Birds	Intermediate Egret	*Ardea intermedia*	.	.	.
Birds	Great-billed Heron	*Ardea sumatrana*	.	.	.
Birds	Cattle Egret	*Ardea ibis*	.	.	.
Birds	Pied Heron	*Egretta picata*	.	.	.
Birds	White-faced Heron	*Egretta novaehollandiae*	.	.	.
Birds	Little Egret	*Egretta garzetta*	.	.	.
Birds	Nankeen Night Heron	*Nycticorax caledonicus*	.	.	.
Birds	Glossy Ibis	*Plegadis falcinellus*	.	.	.
Birds	Australian White Ibis	*Threskiornis molucca*	.	.	.
Birds	Straw-necked Ibis	*Threskiornis spinicollis*	.	.	.
Birds	Royal Spoonbill	*Platalea regia*	.	.	.
Birds	Yellow-billed Spoonbill	*Platalea flavipes*	.	.	.
Birds	Eastern Osprey	*Pandion cristatus*	.	.	.
Birds	Black-shouldered Kite	*Elanus axillaris*	.	.	.
Birds	Square-tailed Kite	*Lophoictinia isura*	.	.	.
Birds	Black-breasted Buzzard	*Hamirostra melanosternon*	.	.	.
Birds	Pacific Baza	*Aviceda subcristata*	.	.	.
Birds	White-bellied Sea-eagle	*Haliaeetus leucogaster*	.	.	.
Birds	Whistling Kite	*Haliastur sphenurus*	.	.	.
Birds	Brahminy Kite	*Haliastur indus*	.	.	.
Birds	Black Kite	*Milvus migrans*	.	.	.
Birds	Brown Goshawk	*Accipiter fasciatus*	.	.	.
Birds	Collared Sparrowhawk	*Accipiter cirrhocephalus*	.	.	.
Birds	Grey Goshawk	*Accipiter novaehollandiae*	.	.	.
Birds	Spotted Harrier	*Circus assimilis*	.	.	.
Birds	Red Goshawk	*Erythrotriorchis radiatus*	VU	VU	176391
Birds	Wedge-tailed Eagle	*Aquila audax*	.	.	.
Birds	Little Eagle	*Hieraaetus morphnoides*	.	.	.
Birds	Nankeen Kestrel	*Falco cenchroides*	.	.	.
Birds	Brown Falcon	*Falco berigora*	.	.	.
Birds	Australian Hobby	*Falco longipennis*	.	.	.
Birds	Grey Falcon	*Falco hypoleucos*	.	.	.
Birds	Black Falcon	*Falco subniger*	.	.	.
Birds	Peregrine Falcon	*Falco peregrinus*	.	.	.
Birds	Sarus Crane	*Grus antigone*	.	.	.
Birds	Brolga	*Grus rubicunda*	.	.	.
Birds	Purple Swamphen	*Porphyrio porphyrio*	.	.	.

Group	Common Name	Scientific Name	NT Status	National Status	ID
Birds	White-browed Crake	*Amaurornis cinerea*	.	.	.
Birds	Black-tailed Native-hen	*Tribonyx ventralis*	.	.	.
Birds	Eurasian Coot	*Fulica atra*	.	.	.
Birds	Australian Bustard	*Ardeotis australis*	VU	.	176354
Birds	Bush Stone-curlew	*Burhinus grallarius*	.	.	.
Birds	Black-winged Stilt	*Himantopus himantopus*	.	.	.
Birds	Red-necked Avocet	*Recurvirostra novaehollandiae*	.	.	.
Birds	Black-fronted Dotterel	*Elseyornis melanops*	.	.	.
Birds	Red-kneed Dotterel	*Erythrogonys cinctus*	.	.	.
Birds	Masked Lapwing	*Vanellus miles*	.	.	.
Birds	Comb-crested Jacana	*Irediparra gallinacea*	.	.	.
Birds	Whimbrel	*Numenius phaeopus*	.	.	.
Birds	Common Sandpiper	*Actitis hypoleucos*	.	.	.
Birds	Marsh Sandpiper	*Tringa stagnatilis*	.	.	.
Birds	Wood Sandpiper	*Tringa glareola*	.	.	.
Birds	Red-necked Stint	*Calidris ruficollis*	.	.	.
Birds	Sharp-tailed Sandpiper	*Calidris acuminata*	.	.	.
Birds	Red-backed Button-quail	*Turnix maculosus*	.	.	.
Birds	Chestnut-backed Button-quail	*Turnix castanotus*	DD	.	.
Birds	Australian Pratincole	*Stiltia isabella*	.	.	.
Birds	Red-tailed Black-Cockatoo	*Calyptorhynchus banksii*	N	.	223765
Birds	Galah	*Eulophus roseicapilla*	.	.	.
Birds	Little Corella	*Cacatua sanguinea*	.	.	.
Birds	Sulphur-Crested Cockatoo	*Cacatua galerita*	N	.	223772
Birds	Cockatiel	*Nymphicus hollandicus*	.	.	.
Birds	Rainbow Lorikeet	*Trichoglossus haematodus*	.	.	.
Birds	Varied Lorikeet	*Psitteuteles versicolor*	.	.	.
Birds	Red-winged Parrot	*Aprosmictus erythropterus*	.	.	.
Birds	Northern Rosella	*Platycercus venustus*	.	.	.
Birds	Hooded Parrot	*Psephotus dissimilis*	.	.	.
Birds	Budgerigar	*Melopsittacus undulatus*	.	.	.
Birds	Pheasant Coucal	*Centropus phasianinus*	.	.	.
Birds	Eastern Koel	*Eudynamys orientalis*	.	.	.
Birds	Channel-billed Cuckoo	*Scythrops novaehollandiae*	.	.	.
Birds	Horsfield's Bronze-Cuckoo	*Chalcites basalis*	.	.	.
Birds	Little Bronze-Cuckoo	*Chalcites minutillus*	.	.	.
Birds	Pallid Cuckoo	*Cacomantis pallidus*	.	.	.
Birds	Brush Cuckoo	*Cacomantis variolosus*	.	.	.
Birds	Oriental Cuckoo	*Cuculus optatus*	.	.	.
Birds	Rufous Owl	*Ninox rufa*	.	.	.
Birds	Barking Owl	*Ninox connivens*	.	.	.
Birds	Southern Boobook	*Ninox novaeseelandiae*	.	.	.
Birds	Masked Owl	*Tyto novaehollandiae*	EN/VU	EN/VU	177895
Birds	Masked Owl (northern mainland)	*Tyto novaehollandiae kimberli*	VU	VU	594609
Birds	Eastern Barn Owl	*Tyto javanica*	.	.	.
Birds	Azure Kingfisher	*Ceyx azureus*	.	.	.
Birds	Blue-winged Kookaburra	*Dacelo leachii*	DD	.	.
Birds	Forest Kingfisher	*Todiramphus macleayii*	.	.	.
Birds	Red-backed Kingfisher	*Todiramphus pyrrhopygius*	.	.	.
Birds	Sacred Kingfisher	*Todiramphus sanctus*	.	.	.
Birds	Rainbow Bee-eater	*Merops ornatus*	.	.	.
Birds	Dollarbird	*Eurystomus orientalis*	.	.	.
Birds	Black-tailed Treecreeper	*Climacteris melanura*	.	.	.
Birds	Western Bowerbird	*Ptilonorhynchus guttatus*	.	.	.
Birds	Great Bowerbird	*Ptilonorhynchus nuchalis*	.	.	.
Birds	Red-backed Fairy-wren	*Malurus melanocephalus*	.	.	.
Birds	Variegated Fairy-wren	*Malurus lamberti*	.	.	.
Birds	Weebill	*Smicrornis brevirostris*	.	.	.
Birds	Green-backed Gerygone	*Gerygone chloronota*	.	.	.
Birds	White-throated Gerygone	*Gerygone albogularis*	.	.	.
Birds	Red-browed Pardalote	*Pardalotus rubricatus*	.	.	.
Birds	Striated Pardalote	*Pardalotus striatus*	.	.	.
Birds	Singing Honeyeater	*Lichenostomus virescens*	.	.	.
Birds	White-gaped Honeyeater	*Lichenostomus unicolor*	.	.	.
Birds	Grey-fronted Honeyeater	*Lichenostomus plumulus*	.	.	.
Birds	Yellow-tinted Honeyeater	*Lichenostomus flavescens*	.	.	.
Birds	Yellow-throated Miner	*Manorina flavigula*	.	.	.
Birds	Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*	.	.	.
Birds	Bar-breasted Honeyeater	*Ramsayornis fasciatus*	.	.	.

Group	Common Name	Scientific Name	NT Status	National Status	ID
Birds	Rufous-banded Honeyeater	*Conopophila albogularis*	.	.	.
Birds	Rufous-throated Honeyeater	*Conopophila rufogularis*	.	.	.
Birds	Crimson Chat	*Epthianura tricolor*	.	.	.
Birds	Yellow Chat (inland)	*Epthianura crocea crocea*	.	.	.
Birds	Black Honeyeater	*Sugomel niger*	.	.	.
Birds	Dusky Honeyeater	*Myzomela obscura*	.	.	.
Birds	Banded Honeyeater	*Cissomela pectoralis*	.	.	.
Birds	Brown Honeyeater	*Lichmera indistincta*	.	.	.
Birds	Black-chinned Honeyeater	*Melithreptus gularis*	.	.	.
Birds	White-throated Honeyeater	*Melithreptus albogularis*	.	.	.
Birds	Blue-faced Honeyeater	*Entomyzon cyanotis*	.	.	.
Birds	Silver-crowned Friarbird	*Philemon argenticeps*	.	.	.
Birds	Little Friarbird	*Philemon citreogularis*	.	.	.
Birds	Grey-crowned Babbler	*Pomatostomus temporalis*	.	.	.
Birds	Varied Sittella	*Daphoenositta chrysoptera*	.	.	.
Birds	Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	.	.	.
Birds	White-bellied Cuckoo-shrike	*Coracina papuensis*	.	.	.
Birds	White-winged Triller	*Lalage sueurii*	.	.	.
Birds	Varied Triller	*Lalage leucomela*	.	.	.
Birds	Crested Shrike-tit	*Falcunculus frontatus whitei*	VU	VU	176377
Birds	Rufous Whistler	*Pachycephala rufiventris*	.	.	.
Birds	Little Shrike-thrush	*Colluricincla megarhyncha*	.	.	.
Birds	Sandstone Shrike-thrush	*Colluricincla woodwardi*	.	.	.
Birds	Grey Shrike-thrush	*Colluricincla harmonica*	.	.	.
Birds	Australasian Figbird	*Sphecotheres vieilloti*	.	.	.
Birds	Yellow Oriole	*Oriolus flavocinctus*	.	.	.
Birds	Olive-backed Oriole	*Oriolus sagittatus*	.	.	.
Birds	White-breasted Woodswallow	*Artamus leucorynchus*	.	.	.
Birds	Masked Woodswallow	*Artamus personatus*	.	.	.
Birds	White-browed Woodswallow	*Artamus superciliosus*	.	.	.
Birds	Black-faced Woodswallow	*Artamus cinereus*	.	.	.
Birds	Little Woodswallow	*Artamus minor*	.	.	.
Birds	Pied Butcherbird	*Cracticus nigrogularis*	.	.	.
Birds	Australian Magpie	*Cracticus tibicen*	.	.	.
Birds	Spangled Drongo	*Dicrurus bracteatus*	.	.	.
Birds	Arafura Fantail	*Rhipidura dryas*	.	.	.
Birds	Grey Fantail	*Rhipidura albiscapa*	.	.	.
Birds	Northern Fantail	*Rhipidura rufiventris*	.	.	.
Birds	Willie Wagtail	*Rhipidura leucophrys*	.	.	.
Birds	Torresian Crow	*Corvus orru*	.	.	.
Birds	Leaden Flycatcher	*Myiagra rubecula*	.	.	.
Birds	Shining Flycatcher	*Myiagra alecto*	.	.	.
Birds	Restless Flycatcher	*Myiagra inquieta*	.	.	.
Birds	Magpie-lark	*Grallina cyanoleuca*	.	.	.
Birds	Apostlebird	*Struthidea cinerea*	.	.	.
Birds	Jacky Winter	*Microeca fascinans*	.	.	.
Birds	Lemon-bellied Flycatcher	*Microeca flavigaster*	.	.	.
Birds	Hooded Robin	*Melanodryas cucullata*	EN/-	EN/-	597046
Birds	Hooded Robin	*Melanodryas cucullata picata/westralensis*	.	.	.
Birds	White-browed Robin	*Poecilodryas superciliosa*	.	.	.
Birds	Singing Bushlark	*Mirafra javanica*	.	.	.
Birds	Golden-headed Cisticola	*Cisticola exilis*	.	.	.
Birds	Australian Reed-Warbler	*Acrocephalus australis*	.	.	.
Birds	Tawny Grassbird	*Megalurus timoriensis*	.	.	.
Birds	Rufous Songlark	*Cincloramphus mathewsi*	.	.	.
Birds	Yellow White-eye	*Zosterops luteus*	.	.	.
Birds	Fairy Martin	*Petrochelidon ariel*	.	.	.
Birds	Tree Martin	*Petrochelidon nigricans*	.	.	.
Birds	Mistletoebird	*Dicaeum hirundinaceum*	.	.	.
Birds	Zebra Finch	*Taeniopygia guttata*	.	.	.
Birds	Double-barred Finch	*Taeniopygia bichenovii*	.	.	.
Birds	Long-tailed Finch	*Poephila acuticauda*	.	.	.
Birds	Masked Finch	*Poephila personata*	.	.	.
Birds	Crimson Finch	*Neochmia phaeton*	.	.	.
Birds	Star Finch	*Neochmia ruficauda*	.	.	.
Birds	Gouldian Finch	*Erythrura gouldiae*	EN	EN	176370
Birds	Yellow-rumped Mannikin	*Lonchura flaviprymna*	.	.	.
Birds	Pictorella Mannikin	*Heteromunia pectoralis*	.	.	.
Birds	Australasian Pipit	*Anthus novaeseelandiae*	.	.	.
Birds	Grey Wagtail	*Motacilla cinerea*	.	.	.
Mammals	Echidna	*Tachyglossus aculeatus*	.	.	.

Group	Common Name	Scientific Name	NT Status	National Status	ID
Mammals	Northern Quoll	*Dasyurus hallucatus*	CR	EN	176443
Mammals	Sandstone Antechinus	*Pseudantechinus bilarni*	DD	.	.
Mammals	Long-tailed Planigale	*Planigale ingrami*	.	.	.
Mammals	Common Planigale	*Planigale maculata*	.	.	.
Mammals	Kultarr	*Antechinomys laniger*	.	.	.
Mammals	Kakadu Dunnart	*Sminthopsis bindi*	DD	.	.
Mammals	Stripe-faced Dunnart	*Sminthopsis macroura*	.	.	.
Mammals	Golden Bandicoot	*Isoodon auratus*	EN	VU	176421
Mammals	Northern Brown Bandicoot	*Isoodon macrourus*	.	.	.
Mammals	Sugar Glider	*Petaurus breviceps*	.	.	.
Mammals	Rock Ringtail	*Petropseudes dahli*	.	.	.
Mammals	Common Brushtail Possum (northern)	*Trichosurus vulpecula arnhemensis*	.	.	.
Mammals	Spectacled Hare-wallaby	*Lagorchestes conspicillatus*	.	.	.
Mammals	Agile Wallaby	*Macropus agilis*	N	.	223786
Mammals	Antilopine Wallaroo	*Macropus antilopinus*	.	.	.
Mammals	Common Wallaroo	*Macropus robustus*	.	.	.
Mammals	Northern Nailtail Wallaby	*Onychogalea unguifera*	.	.	.
Mammals	Short-eared Rock-wallaby	*Petrogale brachyotis*	.	.	.
Mammals	Black Flying-fox	*Pteropus alecto*	.	.	.
Mammals	Little Red Flying-fox	*Pteropus scapulatus*	.	.	.
Mammals	Ghost Bat	*Macroderma gigas*	.	.	.
Mammals	Dusky Leaf-nosed Bat	*Hipposideros ater*	.	.	.
Mammals	Orange Leaf-nosed bat	*Rhinonicteris aurantia*	.	.	.
Mammals	Yellow-bellied Sheath-tailed Bat	*Saccolaimus flaviventris*	.	.	.
Mammals	Common Sheath-tailed Bat	*Taphozous georgianus*	.	.	.
Mammals	Northern Free-tailed Bat	*Chaerephon jobensis*	.	.	.
Mammals	Beccari's Free-tailed Bat	*Mormopterus beccarii*	.	.	.
Mammals	Large Bent-winged Bat	*Miniopterus schreibersii*	.	.	.
Mammals	Northern Long-eared Bat	*Nyctophilus arnhemensis*	.	.	.
Mammals	Eastern Long-eared Bat	*Nyctophilus bifax*	.	.	.
Mammals	Lesser Long-eared Bat	*Nyctophilus geoffroyi*	.	.	.
Mammals	Pygmy Long-eared Bat	*Nyctophilus walkeri*	.	.	.
Mammals	Gould's Wattled Bat	*Chalinolobus gouldii*	.	.	.
Mammals	Hoary Wattled Bat	*Chalinolobus nigrogriseus*	.	.	.
Mammals	Large-footed Myotis	*Myotis macropus*	.	.	.
Mammals	Inland Broad-nosed Bat	*Scotorepens balstoni*	.	.	.
Mammals	Little Broad-nosed Bat	*Scotorepens greyii*	.	.	.
Mammals	Northern Cave Bat	*Vespadelus caurinus*	.	.	.
Mammals	Brush-tailed Rabbit-rat	*Conilurus penicillatus*	VU	VU	176414
Mammals	Northern Short-tailed Mouse	*Leggadina lakedownensis*	.	.	.
Mammals	Delicate Mouse	*Pseudomys delicatulus*	.	.	.
Mammals	Western Chestnut Mouse	*Pseudomys nanus*	.	.	.
Mammals	Common Rock-rat	*Zyzomys argurus*	.	.	.
Mammals	Grassland Melomys	*Melomys burtoni*	.	.	.
Mammals	Pale Field-rat	*Rattus tunneyi*	.	.	.
Mammals	Long-haired Rat	*Rattus villosissimus*	.	.	.
Mammals	Dingo / Wild dog	*Canis lupus*	N	.	183280

EX = Extinct EW = Extinct in the Wild ER= Extinct in the NT EN = Endangered
EN/VU = One Endangered subspecies/One Vulnerable subspecies
VU=Vulnerable
VU/- = One or more subspecies vulnerable EN/- = One or more subspecies endangered

More species info: Go to www.landmanager.org.au/view/index.aspx?id=##### where ##### is the ID number from the tables above for the species of interest.

Species listed in the table above were recorded from all the grid cells (red/blue line) shown below that overlap AIR_for_PER

AIR_for_PER Weeds and Potential Weeds

Introduced plants recorded in the grid cell(s) in which AIR_for_PER occurs and that have been identified as problem weeds in one or more locations in northern Australia. Occurence based on Department of Natural Resources, Environment and The Arts databases.

Common Name	Scientific Name	NT Status	National Status	Other Status	ID
Awnless Barnyard Grass	*Echinochloa colona*	.	.	*DEU*	290114
Barleria	*Barleria prionitis*	*A C*	*ALERT*	*MP K2 C&E G&M*	288734
Bellyache Bush	*Jatropha gossypiifolia*	*B C*	.	*K2 WA1 WA4 Q2 C&E G&M CYP DEU*	113957
Buffel Grass	*Cenchrus ciliaris*	.	.	*MP Gr G&M DEU*	643089
Caltrop	*Tribulus terrestris*	*B C*	.	*CYP SA*	361555
Camel Melon	*Citrullus lanatus*	.	.	*G&M*	289444
Caribbean Stylo	*Stylosanthes hamata*	.	.	*DEU*	292974
Coffee Senna	*Senna occidentalis*	*B C*	.	*G&M DEU*	292474
Columbus Grass	*Sorghum almum*	.	.	*NSW*	361495
Flannel Weed	*Sida cordifolia*	*B C*	.	*WA1 G&M DEU*	292594
Gambia Pea	*Crotalaria goreensis*	.	.	*MP*	183442
Gomphrena Weed	*Gomphrena celosioides*	.	.	*DEU*	290514
Grader Grass	*Themeda quadrivalvis*	*B C*	.	*G&M CYP DEU*	107883
Hyptis	*Hyptis suaveolens*	*B C*	.	*G&M*	290734
Lippia	*Phyla nodiflora var. nodiflora*	.	.	*G&M NSW*	291964
Madagascan Rubber Vine	*Cryptostegia madagascariensis*	*A C*	.	*K2 WA1 WA2 Q3 C&E*	237689
Mesquite	*Prosopis pallida*	*A C*	*WONS*	*K2 WA1 WA2 WA4 Q2 G&M NSW SA*	114045
Mission Grass (annual)	*Pennisetum pedicellatum*	.	.	*WeedsAus*	291864
Mossman River Grass	*Cenchrus echinatus*	*B C*	.	*NSW*	289124
Paddy's Lucerne	*Sida rhombifolia*	*B C*	.	*MP G&M DEU*	292604
Para Grass	*Urochloa mutica*	.	.	*MP G&M*	293304
Parkinsonia	*Parkinsonia aculeata*	*B C*	*WONS*	*MP K2 WA1 WA4 Q2 G&M CYP DEU NSW SA*	114160
Prickly Malvastrum	*Malvastrum coromandelianum*	.	.	*DEU*	291094
Purpletop Chloris	*Chloris barbata*	.	.	*DEU*	289314
Rubber Bush	*Calotropis procera*	*B C (S of 16.5 deg S)*	.	*WA1 WA2 G&M*	288914
Sicklepod	*Senna obtusifolia*	*B C*	.	*WA1 WA2 Q2 G&M CYP DEU*	131903
Small Devil's Claw	*Martynia annua*	*A C*	.	*MP K2 WA1 WA2 G&M CYP*	291124
Soft Lovegrass	*Eragrostis pilosa*	.	.	*DEU*	372338
Spiked Malvastrum	*Malvastrum americanum*	.	.	*DEU*	291084
Spiny Sida	*Sida spinosa*	.	.	*DEU*	292614
Spiny-head Sida	*Sida acuta*	*B C*	.	*WA1 G&M*	292584
Starburr	*Acanthospermum hispidum*	*B C*	.	.	288214
Sweet Acacia	*Vachellia farnesiana*	.	.	*DEU*	288164
Townsville Lucerne	*Stylosanthes humilis*	.	.	*DEU*	292984
Ulcardo Melon	*Cucumis melo*	.	.	*DEU*	289734

Status Codes:
1. NATIONAL STATUS CODES
WONS, Weeds of National Significance
Alert, Alert List for Environmental Weeds (Please call Exotic Plant Pest Hotline 1800 084 881 if you think you have seen this weed)
Sleeper, National Sleeper Weed
Target,Targeted for eradication. (www.landmanager.com.au/view/index.aspx?id=449837)

2. NT STATUS CODES
A, NT Class A Weed (to be eradicated)
B, NT Class B Weed (growth & spread to be controlled)
C, NTClass C Weed (not to be introduced) (www.landmanager.com.au/view/index.aspx?id=449869)

3. OTHER STATUS CODES
C&E, Csurhes, S. & Edwards, R. (1998) Potential Environmental Weeds in Australia. Candidate Species for Preventative Control. Environment Australia, Canberra (www.landmanager.com.au/view/index.aspx?id=394504)
CYP, Draft Cape York Peninsula Pest Management Plan 2006-2011 (www.landmanager.com.au/view/index.aspx?id=371200)
DEU, Plants listed as environmental weeds by the Desert Uplands Strategic Land Resource Assessment (www.landmanager.com.au/view/index.aspx?id=332123)
G&M, Grice AC, Martin TG. 2005. The Management of Weeds and Their Impact on Biodiversity in the Rangelands. Cooperative Research Centre (CRC) for Australian Weed Management and CSIRO Sustainable Ecosystems. Commonwealth Australia (www.landmanager.com.au/view/index.aspx?id=163572)

Gr, Groves et al. 2003. Weed categories for natural and agricultural ecosystem management. Bureau of Rural Sciences (www.landmanager.com.au/view/index.aspx?id=388018)
KD, High Priority Weeds not yet established in the Katherine region
K1, High Priority Weeds posing environmental threats in the Katherine region
K2, High Priority Weeds posing existing threats in the Katherine region, as described in the Katherine Regional Weed Management Strategy 2005-2010 (www.landmanager.com.au/view/index.aspx?id=130286)
MP, Northern Territory Parks & Conservation Masterplan (www.landmanager.com.au/view/index.aspx?id=144141)
NAQS, North Australian Quarantine Strategy Target List (www.landmanager.com.au/view/index.aspx?id=449416)
NSW, Declared Noxious Weed in NSW (www.landmanager.com.au/view/index.aspx?id=449983)
Q1, QLD Class 1 Weed (not to be introduced, kept or supplied-
Q2, Class 2 Weed (eradicate where possible, not to be introduced, kept or supplied)
Q3, Qld Class 3 Weed (to be controlled near environmentally sensitive areas- not to be supplied/sold without a permit) (www.landmanager.com.au/view/index.aspx?id=190714)
SA, Declared Plant in South Australia (www.landmanager.com.au/view/index.aspx?id=449996)
WeedsAus, Listed as a significant weed by Weeds Australia (www.landmanager.com.au/view/index.aspx?id=14576)
WA1,WA Weed Class P1 (movement prohibited)
WA2, WA Weed Class P2 (aim to eradicate)
WA3, WA Weed Class P3 (control infestations)
WA4, WA Weed Class P4 (prevent spread)
WA5, WA Weed Class P3 (control infestations on public land) (www.landmanager.com.au/view/index.aspx?id=449884).

More species info: Go to www.landmanager.org.au/view/index.aspx?id=#####
where #### is the ID number from the tables above for the species of interest.

Plants listed in the table above were recorded from all the grid cells shown below (red/blue line) that overlap AIR_for_PER

AIR_for_PER Pest and Potential Pest Animals

Animals with pest potential recorded in the bioregion(s) in which AIR_for_PER occurs. Occurence based on Department of Natural Resources, Environment and The Arts databases.

Common Name	Scientific Name	NT Status	National Status	ID
Cane Toad	*Chaunus marinus*	P	.	183252
Asian House Gecko	*Hemidactylus frenatus*	P	.	188964
Rock Dove	*Columba livia*	P	.	183336
Red-tailed Black-Cockatoo	*Calyptorhynchus banksii*	N	.	223765
Sulphur-Crested Cockatoo	*Cacatua galerita*	N	.	223772
Agile Wallaby	*Macropus agilis*	N	.	223786
House Mouse	*Mus musculus*	P	.	187720
Black Rat	*Rattus rattus*	P	.	183236
Dingo / Wild dog	*Canis lupus*	N	.	183280
Cat	*Felis catus*	P	.	183259
Donkey	*Equus asinus*	P	.	183287
Horse	*Equus caballus*	P	.	183315
Pig	*Sus scrofa*	P	.	183329
Camel	*Camelus dromedarius*	P	.	183210
Swamp Buffalo	*Bubalus bubalis*	P	.	183245
Cattle	*Bos indicus / Bos taurus*	P	.	183266

NT STATUS CODES:
P, Prohibited species (all exotic vertebrates except those listed as non-prohibited (www.landmanager.com.au/view/index.aspx?id=450509)
Int, Introduced species (all non-prohibited vertebrates, and all other exotic species (www.landmanager.com.au/view/index.aspx?id=280771)
N, Native species with pest potential.

More species info: Go to www.landmanager.org.au/view/index.aspx?id=##### where ##### is the ID number from the tables above for the species of interest.

Potential pest animals listed in the table above were recorded from the bioregions shown below (red/blue line) that overlap AIR_for_PER

Generated from NT Infonet (http://www.infonet.cdu.edu.au/nrm) Tue Sep 20 10:14:44 CST 2011

Soils and vegetation graphs and tables refer to area of soils and vegetation only. Fire graphs and tables refer to entire selected area including sea if present. Calculations are derived from map images or vector data, and should be taken as a guide only. Accuracy cannot be guaranteed. For small areas, figures should be rounded to the nearest whole number.

Appendix B6 - Threatened Species Discussion

This Appendix discusses further the distribution, ecology and threats of the threatened species that possibly occur in the development area as identified in Section 4.2. Principally this review was done to examine the relative impact the development may have on these species.

Australian Bustard (*Ardeotis australis*)

The Australian Bustard is listed as Vulnerable within the Northern Territory (*TPWC Act*) and is not nationally listed under the EPBC Act. NT Fauna Atlas records indicate that this species has not been recorded within 10 km of ML27422. Australian Bustards are large, long-legged birds that are widespread, but generally scarce, in the Northern Territory, with higher numbers generally found in the north. They are the heaviest flying bird species in Australia. Preferred habitat includes open country, grasslands, shrublands, grassy woodlands and other structurally similar habitats (Woinarski *et al.,* 2007). Bustards range widely and tend to track rainfall, fire and food resources, and can fly large distances in search of suitable country for these purposes. They are often found foraging in recently burnt country.

The Bustard is Vulnerable in the Northern Territory due to their population declining by more than 30% over the last 10 years. Populations outside of the Northern Territory are still relatively substantial. Major threats to this species include predation, altered fire regimes, hunting, habitat disturbance, pesticides and grazing (Woinarski *et al.,* 2007).

Mertens' Water Monitor (*Varanus mertensi*)

Mertens' Water Monitors are listed as Vulnerable within the Northern Territory (TPWC Act), although they are not nationally listed (EPBC Act). NT Fauna Atlas records indicate that this species has not previously been recorded within 10 km of ML27422. Mertens' Water Monitor is a medium-large semi-aquatic monitor. It is dark olive grey to olive brown with numerous small, dark-edged cream or yellow spots. It is typically found near rivers, large creeks, lagoons, reservoirs and billabongs in northern Australia (Woinarski *et al.,* 2007).

Mertens' Water Monitors have a strong sense of smell and feed mostly on fish, frogs, and carrion, but also insects and small terrestrial invertebrates (Woinarski *et al.* 2007). Mertens' Water Monitor has a broad geographic range and has been recorded in coastal and inland waters across most of the Top End and gulf region (Woinarski *et al.,* 2007). The cane toad is a major threat to the Mertens' Water Monitor as amphibians are part of the Monitor's diet and it will often eat them and die from the ingested poisons. Tests have shown that this species is highly susceptible to cane toad toxins and is being a major threat to populations (Burnett, 1997). The Mertens' Water Monitor is listed as Vulnerable due to a predicted reduction of more than 30% of its population, to be met within the next 10 years or within three generations, primarily due to Cane Toads (Woinarski *et al.,* 2007).

Emu (*Dromaius novaehollandiae*)

The Emu is listed as Vulnerable in the Northern Territory (TPWC Act) but it is not nationally listed under the EPBC Act. NT Fauna Atlas records indicate that this species has not been recorded within 10 km of ML27422. It is a large, flightless bird with a long neck and long legs, standing 1.5 m-2 m tall. The Emu inhabits most of the Northern Territory, though it is scarce in the driest desert areas and woodlands of the Top End (Marchant and Higgins, 1990). Emus can move large distances in search of suitable habitat. They are believed to be more sedentary in the north than they are in the south of the Northern Territory (Woinarski *et al.,* 2007). Female emus lay up to 20 eggs in a ground level nest, and the male incubates the eggs (for up to 55 days) and broods the chicks. Emus are omnivores, and mainly eat seeds, fruits, insects and growing

tips of plants. Fern-leafed Palm *Livistona inermis* is one of the preferred elements of the Emus diet in the region.

There has been a substantial decline in Emu populations within the Northern Territory. The species is listed as vulnerable due to an inferred population decline of more than 30% over the last three generations. One of the primary threats to Emus is reported to involve altered fire regimes (http://www.anu.edu.au/caepr-old/country/garawa.php). Repetitive fires destroy emu nests and any male emus incubating at the time of the fire. These fires often burn fruit producing plants (such as *Livistona inermis*), thus reducing food for Emus at critical stages during the year (http://www.anu.edu.au/caepr-old/country/garawa.php). Pastoralism also poses a threat to Emus through vegetation changes (Woinarski *et al.,* 2007).

Red Goshawk (*Erythrotriorchis radiatus*)

Red Goshawks are considered Vulnerable in both Northern Territory and Commonwealth legislation. NT Fauna Atlas records indicate that this species has not been recorded within 10 km of ML27422. These raptors occur across much of northern Australia, and are usually found in taller open forests characteristic of higher rainfall zones (Woinarski *et al*., 2007). Red Goshawks are a bird of prey that hunts predominantly for medium sized birds within a large territory of 200 km^2 (Woinarski *et al*., 2007). Nests are basket shaped and typically occur in large trees in riparian zones.

The main threat to Red Goshawks is destruction of their preferred habitat (mainly associated with agriculture/plantations). Other threats include; egg poaching, shooting and altered fire regimes.

Northern Quoll (*Dasyurus hallucatus*)

Northern Quolls (*Dasyurus hallucatus*) are nationally Endangered (EPBC Act) and Critically Endangered in the Northern Territory (TPWC Act). They are nocturnal carnivorous marsupials that feed on large insects, small invertebrates and soft fruits. Appearance is similar to a small cat with white spots on a dark grey/brown furred body and a long tail. Northern Quolls are most common in dissected rock scarps, however they are also found in Eucalyptus woodlands, around human settlements, rainforest patches and on beaches (Oakwood, 2008).

Quolls are both terrestrial and arboreal and individuals are known to use a range of den sites, including rocks crevices, hollows, termite mounds, rooves, and goanna burrows (Oakwood, 2008). Breeding occurs once a year (late May early June) with male mortality occurring post mating (Woinarski, 2006).

Northern Quolls are currently distributed within several disjunct populations across mainland and islands of northern Australia. Their distribution has contracted significantly since European settlement, as they were once one widespread across the top end of Australia. This contraction over the past 3 decades has been accelerated by the establishment of Cane Toads across Queensland and the Northern Territory (Oakwood, 2008; Watson and Woinarski, 2003).

Additional factors influencing the rapid decline in Northern Quolls over the past few decades has been attributed to feral cats, disease, and changes in fire regimes within their preferred habitat (Woinarski *et al.,* 2007; Woinarski *et al*., 2001; Brathwaite and Griffiths, 1994). The species is particularly susceptible to Cane Toad toxins and quickly die when they attempt to prey on the toads (Woinarski *et al*., 2007), which results in the Quolls not being able to learn to avoid the toads.

There is currently no recovery or management plan for this species, mainly due to current lack of broad-scale options for controlling Cane Toads (the Quoll's major threat). Northern Quolls have not been recorded within 10 km of ML27422 (NT Fauna Atlas).

Gouldian Finch (Erythrura gouldiae)

The Gouldian Finch, is classified as Endangered under both TPWC and EPBC Acts. This species have not been recorded within 10km of ML27422. The species is also classified as Migratory under the EPBC Act due to annual cyclic patterns of population movements between dry and wet seasons (on a regional scale).

The Gouldian Finch is listed as nationally Endangered due to anecdotal and quantitative evidence of range contraction and population decline (Woinarski *et al*., 2007). The endangered listing within the Northern Territory's TPWC Act is due to an estimated total population of less than 2500 mature individuals in the NT, with no subpopulation containing more than 250 mature individuals, and evidence of continued decline in population numbers.

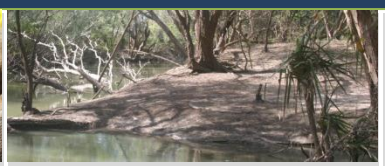
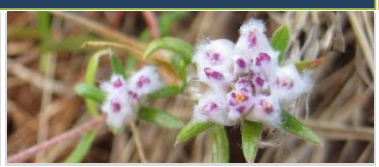
There are a variety of threatening processes contributing to the declines in Gouldian Finch populations within the Northern Territory, with the most important being altered availability of food resources due to changes in understorey vegetation. Grazing by livestock and other introduced grazing species, and changes due to alterations from natural fire regimes are believed to be the primary drivers towards disturbing the balance of Gouldian food availability. Reduced populations of a number of other granivorous (seed eating) birds within northern Australia have also been recorded (Franklin *et al*., 2005). Other threatening processes to the Gouldian Finch include the parasitic mite *Sternostoma tracheacolum*, finch trapping for illegal pet trades, and habitat reduction. The Gouldian Finch's distribution is restricted to isolated areas, mostly within the top end of the Northern Territory and Kimberley region (Woinarski *et al*., 2007).

Gouldian Finches are primarily granivorous, preferring native sorghum during the dry season and soft Spinifex, Cockatoo Grass and Golden Beard grass in the wet season. They are also known to feed on flying ants and termites at the start of the wet season, which also coincides with their breeding season. They occupy two different landscape components on an annual cycle (Dostine *et al*., 2001), generally including wooded hills containing Snappy or Salmon Gums in the dry season (February to October) and lowland drainages with perennial grasses during the wet season (mid-December till February) (Woinarski *et al*., 2007).

Appendix C - Aquatic Vertebrate Survey

Australian Ilmenite Resources Pty Ltd

SILL80 Project

2012

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Executive Summary

As part of Australian Ilmenite Resources Pty Ltd (AIR) SILL80 project, it is proposed that water be drawn from the nearby Roper River for ore processing. An assessment of the environmental impacts of this proposed operation included evaluation of water resources in the region, aquatic flora and fauna potentially present and the risks to these environmental values, with particular attention on impacts to threatened species.

The Roper River is one of the largest in the Northern Territory, one of the most pristine and is largely undeveloped throughout its catchment. Its annual flow is variable, being dependent on annual rainfall and groundwater discharge. Water is proposed to be drawn from the Flying Fox station pump hole, a naturally occurring perennial pool situated in the main channel of the Roper River that is utilised to supply stock water to nearby stations.

A matters of National Environmental Significance Search was undertaken, which identified three aquatic species listed as threatened potentially present in the proposed water extraction area.

A field survey of the water hole was undertaken on 19 May 2011. Fauna survey effort comprised gill netting, seine netting, spotlighting, setting baited traps and angling within the river at the location of the proposed pumping. Flora investigations comprised aquatic and riparian flora surveys in and around Flying Fox station pump hole. Other incidental observations, including water birds present, were recorded.

Thirty three fauna species were identified during the survey, including 17 fish, two reptiles, seven amphibians, four crustaceans, one mollusc and two birds. These were all new biological records for the area, with all of the species not being previously recorded within 10km of the area. Riparian vegetation was defined and four aquatic plant species were recorded. No species of conservation significance were found in the area, although it is assumed that several species, in spite of no evidence of their presence, would still be considered likely to inhabit the area at some stage of the year.

It is considered likely that the Flying Fox station pump hole acts as a significant refuge during the late dry season, particularly in years of lower rainfall.

The proposed water extraction will have three key impacts:

- Diversion of water flow downstream and diminished environmental flow, with particular consequence to migratory fish which may be prevented from travelling up stream;
- Drawdown of water levels at point of extraction, particularly during dry seasons, compromising the refuge value of the pool to aquatic fauna; and
- Increased noise and activity in the area and continued disturbance from pumping operations.

Provided the water extraction operation is limited during periods of low to no flow, appropriate thresholds in water level observed and ongoing monitoring for detection of fauna impact is undertaken, it is considered unlikely that the water extraction operation will significantly affect the aquatic fauna or flora of the area, or the environmental values of the Roper River.

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Tables

Figures

Acknowledgements

Special thanks to David Wilson for preparation of equipment, sampling method development, project execution and peer review of this report. Thanks are also extended to the Darwin Museum for the generous loan of their boat for sampling purposes. Thanks to Moira Lanzarin at Numul Numul Station for providing accommodation during the sampling period. Thanks are also extended to Jojo Huddleston and Mark Sullivan for their local information concerning the sampling site.

1 Introduction

Australian Ilmenite Resources Pty Ltd (AIR) plan to develop its SILL80 Ilmenite Project within Mineral Lease (ML) 27422. This area is located in the Roper River region of the Northern Territory approximately 105 km east of Mataranka and 8 km south of the Roper Highway. The project involves strip mining dolerite sills and processing this material using an on-site gravity separation plant to extract the ilmenite (FeTiO3). Water is required for the gravity separation (washing) process. It is proposed that the water required for the washing process be obtained from the Roper River at a point approximately 12 km north of the processing site and outside of ML27422 (Figure 2-1).

The Guidelines for the Preparation of a Public Environment Report prepared specifically for the SILL80 Ilmenite Project by the NT Department of Natural Resources the Environment the Arts and Sport (NRETAS) has identified water management, including extraction from the Roper River, as a key risk citing concerns about downstream users including wildlife. This report aims to identify the aquatic biota of the Roper River and the pool from where water will be extracted and, with the terrestrial fauna and flora survey (see Appendix B of the PER) give a comprehensive description of the biota and vegetation communities that need to be considered in this development. Furthermore, they support the development of the Water Management Plan which has the stated objective of ensuring a sustainable off-take of water from the Roper Rover including considerations of the riverine biota (See Appendix G of the PER).

This report, combined with the PER, aims to provide the information required to guide the Northern Territory Minister for Natural Resources, Environment and Heritage (the Minister) and the NT Government in assessing the potential environmental and social impacts of the proposal in accordance with the Environmental Assessment Act 1982.

1.1 Scope and Objectives

This report outlines the aims, methods and results of the aquatic vertebrate survey conducted at the proposed water extraction point on the Roper River in May 2011. Such a survey is important as it develops baseline knowledge on species presence with particular attention on threatened species and communities. The aims of this survey are:

- To identify potential species and habitats of significance at the water extraction point;
- Assess the likelihood of threatened species occurring at the water extraction point; and
- Utilise the information gathered within this survey to develop management strategies to minimise potential impacts on species located at the water extraction point.

The focus of this report is aquatic species, terrestrial species of the surrounding area and any species identified as migratory (Under the EPBC Act) are discussed in the Fauna and Flora Report (Appendix B of the PER).

2 The Roper River

The Roper River is a large river with a catchment of over 80,000 km^2 (Faulks 2001). It is one of the largest rivers in the Katherine region and is the largest Northern Territory river flowing into the Gulf of Carpentaria. The river is perennial in its upper reaches with supply throughout the dry season by discharge from the Tindall Aquifer (Zaar 2009). Faulks (2001) describes the Roper River as being in high to very high physical and ecological condition with generally little disturbance or degradation. Land use and tenure are predominantly pastoral and traditional Aboriginal use, and the majority of land is held under pastoral lease or Aboriginal land trusts as private freehold. Pastoral activities in the region are of generally low productivity and grazing occurs largely on native pastures. Several small communities are located within the catchment and rely on surface and groundwater supplies.

Importantly the community of Ngukurr is a major population centre (population approximately 1600) along the Roper River and is situated near the tidal limit of the river. This community draws most of its water from groundwater sources. However, the community regularly supplements their requirements with water drawn directly from the river. Any significant loss of water from the Roper River will cause the saltwater/freshwater interface to migrate upstream and deny the community of Ngukurr an essential source of freshwater.

Base flow in the river over the dry season is variable from year to year and is largely dependent on discharge from the Tindall Aquifer, which in turn is dependent on the magnitude of the preceding wet season. Variability of rainfall also impacts on the flow conditions in the river during the wet season.

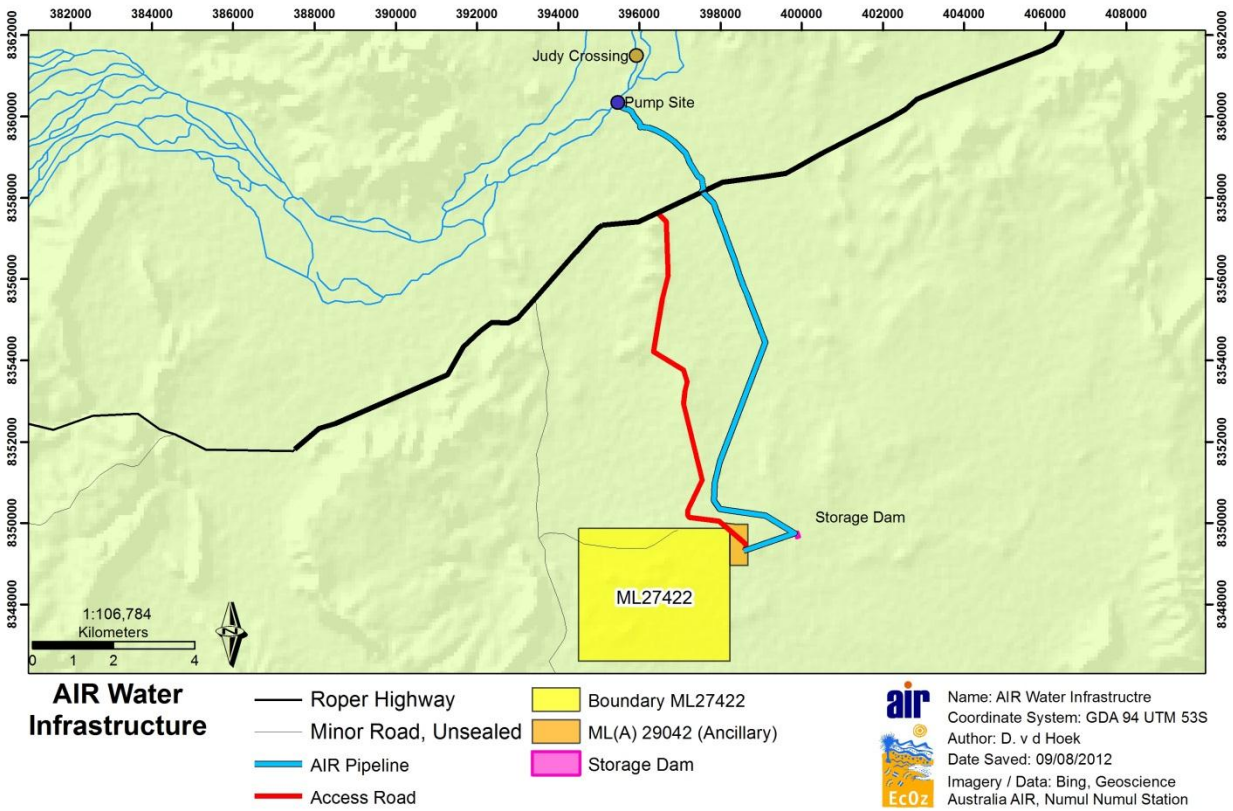

Figure 2-1: ML27422, pipeline route and connection to the Roper River.

The Roper River along the stretch from which water extraction is planned is a losing stream (i.e. flow decreases with distance downstream). In dry years, when groundwater discharge is reduced from below average rainfall during the preceding wet season, it is expected that the river will cease to flow in the vicinity of the Flying Fox station pumping hole. Although records of flow at this point of the river are limited, cease to flow events have been recorded from the now closed gauging station at Judy Crossing. This gauging station was located approximately one kilometre downstream of the planned water extraction point. The records from the Judy Crossing gauging station allow other cease to flow events to be inferred from additional records for some years from gauging stations which have now been closed. The remaining operational gauging stations on the Roper River are located at Mataranka (G9030176) and Red Rock (G9030250) approximately 80 km upstream and 60 km downstream of the planned extraction point, respectively. Within this stretch there are limited permanent waterholes, so the pool proposed for water extraction may be a moderately important dry season refuge for aquatic flora and fauna.

Important wetlands on the Roper River have been identified at the headwaters and the mouth of the river. These are the *Mataranka Thermal Pools* and the *Limmen Bight (Port Roper) Tidal Wetlands System* respectively (Environment Australia 2001).

3 Desktop Review

3.1 Matters of National Environmental Significance within the Region

A search of matters protected under the EPBC Act for a 10 km radius (centring on Flying Fox stations pump hole - co-ordinates 14o49'46"S 134o01'42"E – Figure 3-1) indicated that matters of National Environmental Significance, namely Threatened and Migratory species (refer to Table 3-1) could be present within the region. Six nationally threatened, and fourteen nationally listed migratory species could potentially occur in the vicinity of the Flying Fox station pump hole according to EPBC Act protected matters report (refer to Table 3-2), however there are no nationally listed heritage places, marine areas, wetlands, or threatened ecological communities within close vicinity to the AIR proposed water extraction point.

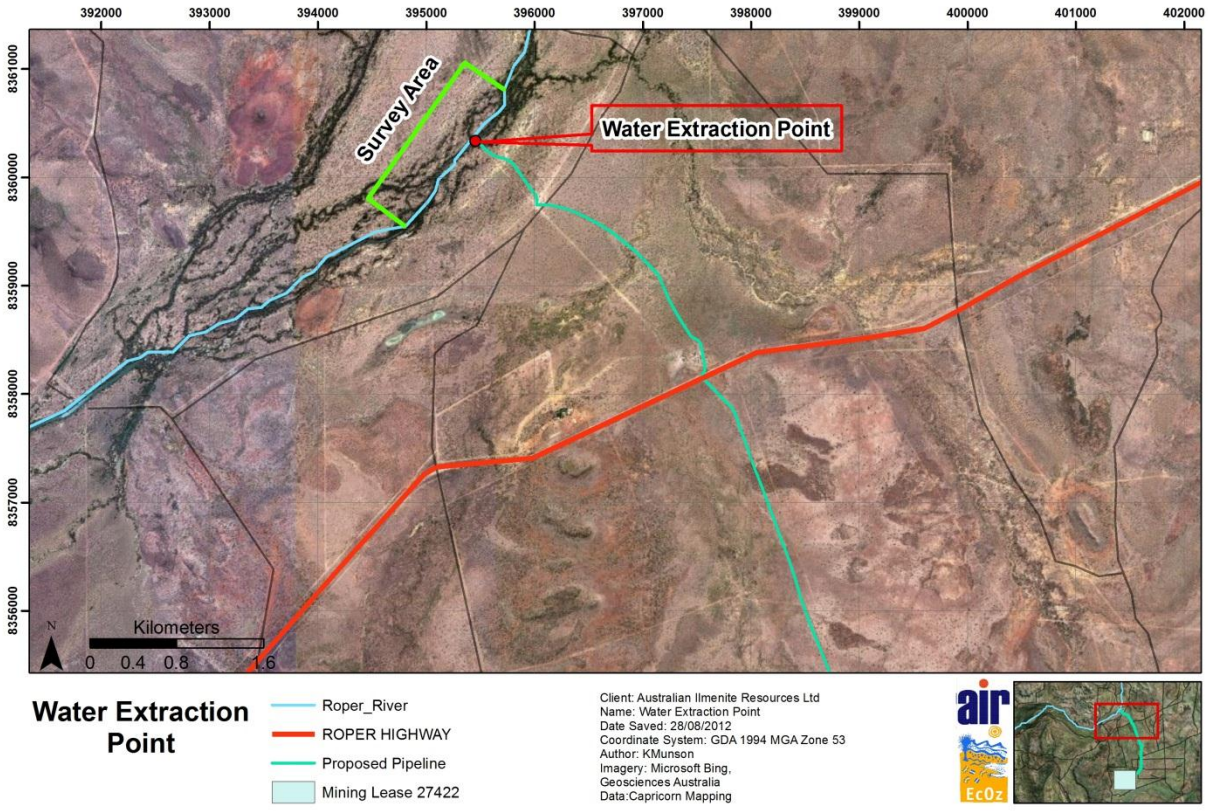

Figure 3-1: Flying Fox station pump hole and proposed pipeline.

Table 3-1 Matters of National Environmental Significance for AIR's water extraction point (July 2011)

Matter of National Environmental Significance	
World Heritage Properties	None
National Heritage Places	None
Wetlands of International Significance (Ramsar Sites)	None
Commonwealth Marine Areas	None
Threatened Ecological Communities	None
Threatened Species	6
Migratory Species *	11

* Species listed as Migratory under the EPBC Act are discussed in the Flora and Fauna Report (PER Appendix B).

3.2 Potential Threatened Species

Table 3-2 lists six threatened species (EPBC Act) that may occur near the Flying Fox station water hole, and includes information on preferred habitat and their likelihood of occurrence in the area. One species listed as vulnerable from the TPWC Act has been included in this table – due to its predicted presence at the Flying Fox station water hole. Three of the species included in Table 3-2 were considered as having a high chance of occurring at the site; these were the Freshwater Sawfish *Pristis microdon*, Gulf Snapping Turtle *Elseya lavarackorum* and Merten's Water Monitor *Varanus mertensi*. Birds and mammals listed in Table 3-2 are considered to potentially occur within the proximity of the proposed extraction site - however, this report solely investigates the potential impacts of increased water extraction on aquatic vertebrates. Therefore birds and terrestrial mammals of national significance are not covered in this survey, but are discussed in the flora and fauna report for ML27422 (Appendix B of the PER).

The fish and reptiles listed in Table 3-2 are discussed further in Chapter 6. Management processes developed to minimise negative impact to these species during development/operations of AIR's pump site are covered in the Water Management Plan (WMP) (Appendix G of the PER).

Table 3-2 Threatened species that could utilise the Flying Fox station water hole or immediate surrounds.

CR – Critically Endangered; EN – Endangered; VUL – Vulnerable; DD – Data Deficient; LC – Least Concern.

Common & Scientific Names	EPBC Act Status	Habitat and known distribution	Likelihood of occurrence
BIRDS			
Red Goshawk (*Erythrotriorchis radiates*)	VU	Coastal, sub-coastal forests, tropical woodlands.	**Moderate**. May well inhabit the region. Sparsely distributed across a range of habitats.
Gouldian Finch (*Erythrura gouldiae*)	EN	Open tropical woodland that has a grassy understorey, often in hilly areas.	**Moderate**. May well inhabit the region due to availability of habitat.
Australian Painted Snipe (*Rostratula australis)*	VU	Dense Swamp vegetation – extremely secretive. Emerges only in dawn and dusk periods	**Moderate**. May well inhabit the region due to availability of habitat.
FISH			
Freshwater Sawfish (*Pristis microdon*)	VU	Muddy bottoms of freshwater rivers and estuaries. Moves into marine waters after around 4 years.	**Moderate**. Populations of *P.microdon* have been recorded in the Roper River with reported sightings upstream at Elsey Station.
REPTILES			
Merten's Water Monitor (*Varanus mertensi*)	Not listed in EPBC act but listed as vulnerable in TPWC act	Coastal and inland waters of far northern Australia, from far north-western Australia to central Qld and the western side of Cape York Peninsula.	**Moderate.** Species have wide distribution across Northern Australia – however, have been greatly impacted by Cane Toad populations
Gulf Snapping Turtle (*Elseya lavarackorum*)	EN	Restricted to rivers draining to the Gulf of Carpentaria, mainly herbivorous, feeding upon leaves, flowers, bark and *Pandanus* roots.	**Moderate**. May well inhabit the region due to availability of habitat.
MAMMALS			
Northern Quoll (*Dasyurus hallucatus*)	EN	Rocky escarpment, open forest and open woodland.	**Unlikely**. Lack of suitable habitat and presence of Cane Toads in these areas reduces likelihood of quoll populations.

4 Methodology

4.1 Survey Site

An aquatic flora and fauna survey was conducted at AIR's proposed water extraction point; a permanent water pool on the main channel of the Roper River (14°49'46"S 134°01'42"E). Water is currently extracted from this site by Flying Fox station for domestic and stock supply. Historically, water has also been extracted from this site to supply Numul Numul station during particularly dry years.

The pool was surveyed on 19 May 2011 (Figure 4-1) after the end of the wet season whilst flow was moderate. The timing of the survey increased the probability of detecting migratory species which move whilst water levels and flow rates are dropping, and allowed for the identification of ground cover species prior to desiccation. Photographs of the site and a brief description of surrounding country were recorded. The river was surveyed for a total length of one kilometre.

Figure 4-1: Photo of the Roper River at the survey site.

4.2 Water Quality

Electrical Conductivity, pH and temperature were measured in the field using handheld instruments calibrated by an external ISO9001 accredited agent on the 4th August 2010 and by EcOz internally the day before sampling. An Aquasonics reagent test kit was used to determine carbonate hardness for Alkalinity, and a hardness test for Total Hardness.

4.3 Aquatic Vertebrate Survey

A variety of techniques were employed to survey aquatic vertebrates in the river. These were:

- Gill netting for a period of one hour in the afternoon. Multi-panel nets were used with a total length of 35 metres. The net consists of seven panels, each of five metres length and two metres drop. Each panel has a different mesh size of 26mm, 44mm, 58mm, 76mm, 100mm, 126mm and 150mm. These different panel sizes allow for a large range of fish to be caught. One of these nets was set parallel to the bank. The current in the pool prevented a net being set perpendicular to the bank. The net was watched to ensure that no air breathing animals were drowned.
- Seine netting of shallow waters was performed with a fifteen metre long net of 12mm mesh.
- Spotlighting was used to identify some species at night. When species are small and in shallow water, they will often sit motionless in the light's beam and can be collected using a dip net for positive identification.
- Baited traps were also set and checked at regular intervals.
- Angling provided another method of sampling fish that may be shy of nets or traps.

Other records of fauna were obtained by direct observation. Additional information concerning the surveyed pool was provided by Flying Fox station manager, Mark Sullivan.

4.4 Aquatic and Riparian Flora Survey

An aquatic and riparian flora survey was performed within a 50m x 50m quadrat at the water extraction point. Soil type, underlying geology, vegetation structure and species present were all recorded. General landform and disturbance were also noted.

5 Results

5.1 Site Observations

The Flying Fox station pump hole is a naturally occurring permanent pool in the main channel of the Roper River. The river at this point flows through low hills which are part of an area used for pastoral purposes. The river immediately above and below this pool is shallow and braided. The pump hole consists of brown clay loams overlying quaternary sand soil and alluvial deposits. The soil was bare, particularly on the steep river banks. The river bed was of a similar substrate. The riparian vegetation formed a medium to tall closed forest with no mid storey or ground cover, and numerous dead trees provide structure within the pool. The riparian forest was unburnt.

5.1.1 Water quality

Water quality parameters measured at the Flying Fox station pump hole on the 19th May 2011 are presented in Table 5-1.

Table 5-1 Water quality parameters

Parameter	
Water temp.	25°C
pH	8.6
Turbidity (Secchi depth)	1.2m
Total hardness	220ppm
Electrical conductivity	774µS/cm
Alkalinity	120ppm

Water velocity was measured at 0.25 m/s. At the point where water velocity was measured, the greatest depth of water was also measured at 6.4 metres and the channel width was estimated to be 32 metres.

The discharge of the Roper River at the pump site on the 19th May 2011 was estimated to be approximately 25.6 m^3/s [Discharge (m^3/s) = ½ {Width (m) x Depth (m)} x Velocity (m/s)]. Given the unusually large and prolonged 2010-2011 wet season, it is likely that the observed discharge does not represent the long term average for this site.

5.2 Fauna

Table 5-2 Fauna recorded at the proposed water extraction site.

COMMON NAME	SCIENTIFIC NAME
FISH	
Archer Fish	*Toxotes chatareus*
Chequered Rainbowfish	*Melanotaenia splendida inornata*
Berney's Catfish	*Neoarius berneyi*
Blue Catfish	*Arius graffei*
Shovelnose Catfish	*Neoarius paucus*
Longtom	*Strongylura krefftii*
Flathead Goby	*Glossogobius giurus*
Golden Goby	*Glossogobius aureus*
Barramundi	*Lates calcarifer*
Spangled Perch	*Leiopotherapon unicolor*
Black-striped Rainbowfish	*Melanotaenia nigrans*
Sail-fin Glassfish	*Ambassis agrammus*
Reticulated Glassfish	*Ambassis macleayi*
Flyspecked Hardyhead	*Craterocephalus stercusmuscarum*
Northern Trout Gudgeon	*Mogurnda mogurnda*
Bony Bream	*Nematalosa erebi*
Sleepy Cod	*Oxyeleotris lineolata*
CRUSTACEANS	
Red Claw Yabby	*Cherax quadricarinatus*
Cherabin or Giant River Prawn	*Macrobrachium rosenbergii*
Handschin's River Prawn	*Macrobrachium hanschini*

COMMON NAME	SCIENTIFIC NAME
Freshwater Crab	*Austrothelphusa transversa*
Unknown River Prawn	*Macrobrachium* sp. (possibly juvenile *M.bullatum*)
MOLLUSCS	
Freshwater mussel	*Velesunio angasi*
REPTILES	
Freshwater Crocodile	*Crocodylus johnstoni*
Brown Tree Snake	*Boiga irregularis*
AMPHIBIANS	
Green Tree Frog	*Litoria caerulea*
Wotjulum Frog	*Litoria wotjulumensis*
Rocket Frog	*Litoria nasuta*
Ornate Burrowing Frog	*Opisthodon ornatus*
Peter's Frog	*Litoria inermis*
Red Tree Frog	*Litoria rubella*
Roth's Tree Frog	*Litoria rothii*
BIRDS	
Whistling Duck	*Dendrocygna* sp.
Snake Bird	*Anhinga melanogaster*

5.2.1 New Fauna Records for the Survey Area

All 33 fauna species identified during the survey, including 17 fish, 2 reptiles, 7 amphibians, 4 crustaceans, 1 mollusc, and 2 birds (Table 5-2), have not been previously recorded within 10 km of the Flying Fox station pump hole according to the NT Fauna Atlas database. The large number of new records reflects the general paucity of biological surveys conducted within the area. Many bird species listed in the NT Fauna Atlas were not recorded during May 2011 because the survey only targeted aquatic vertebrates with opportunistic bird identification. All species records generated from this survey will be provided to the Northern Territory Parks and Wildlife Service such that new species records for the area can be included in the NT Fauna Atlas Database.

5.3 Flora

5.3.1 Riparian Flora

The Broad Floristic Formation of the riparian forest from Hnatiuk *et al*. (2009) can be described as Medium to Tall Closed *Excoecaria parvifolia*, *Cathormion umbellatum*, *Melaleuca leucadendra*, *Casuarina cunninghamiana*, *Antidesma ghesaembilla* Forest.

The upper storey and ground cover species surveyed at the site are listed in Table 5-3. There were no mid-storey species present. There was no ground cover under the closed canopy of the forest (Figure 5-1). Ground cover species were only recorded on the margin of the riparian forest at the edge of the quadrat where the canopy became more open.

Table 5-3 Flora recorded at the proposed water extraction point.

UPPER STOREY	GROUND COVER
Excoecaria parvifolia (Gutta Percha)	*Enteropogon minutus*
Cathormion umbellatum	*Paspalidium distans* (Spreading Panic-grass)
Pandanus aquaticus (River Pandanus)	*Chrysopogon fallax* (Golden Beard-grass)
Melaleuca leucadendra (Cajuput)	*Alternanthera nodiflora* (Common Joyweed)
Casuarina cunninghamiana (River She-oak)	*Hygrophila angustifolia* (Willow Hygro)
Flagellaria indica (Supplejack)	*Ammannia baccifera*
Antidesma ghesaembilla (Blackcurrant Bush)	*Indigofera linnaei* (Birdsville Indigo)
	Sporobolus australasicus (Fairy Grass)

The site was moderately damaged from cattle and vehicle access, including soil compaction. The site did not show any evidence of having been burnt, and no exotic species were recorded.

Figure 5-1: Riparian forest at the survey site

5.3.2 Aquatic Flora

Aquatic vegetation was not systematically surveyed but recorded as encountered during the aquatic fauna survey. In-stream vegetation was sparse due to the heavy shading from riparian vegetation. The only floating aquatic species recorded was the water lily *Nymphaea violacea*.

Emergent species recorded were:

- *Pseudoraphis spinescens* (Spiny Mud-grass)
- *Hygrophila angustifolia* (Willow Hygro)
- *Nelsonia campestris*
- *Fimbristylis* sp. (possibly *F.rara*)

6 Discussion

This report presents the results of the survey performed to investigate aquatic vertebrate presence at the Flying Fox station pump hole with regard to the proposed operation of a pump for the AIR mining operations. The survey was performed to address information requirements identified by NRETAS in the "Final Guidelines for the Preparation of a Public Environmental Report for the SILL80 project; April 2011". As such, this report aims to address concerns specific to potential impacts to aquatic vertebrates as the result of water extraction, and therefore decreased flow, in the Roper River as part of AIR's ilmenite processing.

The pool is currently equipped with Flying Fox station's pump used to supply domestic and stock water to adjoining cattle stations. The results of this survey have been used to assist in the development of a Water Management Plan for the AIR mine site as well as assist in the development of sustainable extraction limits agreed with NRETAS. Issues concerning water usage for the mine are beyond the scope of this report and are addressed in the Water Management Plan (Appendix G of the PER) presented with the Public Environmental Report.

6.1 Observations

Archerfish were particularly abundant at the survey site. Interestingly only Spangled Perch and no other species of grunters (*Terapontidae*) were surveyed. However, Flying Fox station manager, Mark Sullivan, was interviewed about fish present at the pump water hole and he indicated that anglers caught Barramundi and Bream. "Bream" in the Gulf of Carpentaria rivers generally refers to three species: Black Bream, Silver Bream and Golden Bream. These are otherwise known as:

- Black Bream, (or Sooty Grunter) *Hephaestus fuliginosus*
- Silver Bream, (or Spangled Perch) *Leiopotherapon unicolor*
- Golden Bream, (or Gulf Grunter) *Scortum ogilbyi*

As Spangled Perch (Silver Bream) are generally too small to be caught by anglers, it is likely that other species of grunter are present in the waterhole but were not detected by this survey. No fishes identified in this survey, or for which there is anecdotal evidence, are listed as threatened under Northern Territory or Commonwealth legislation.

Many chironomids were observed to be flying at the waterhole on dusk. Dropping water levels at the end of the wet season act as a trigger for many aquatic macroinvertebrates to emerge as winged adults. Large numbers of flying insects with aquatic life stages (such as chironomids) are a feature of all Top End waterways at this time of year.

Although not within the study area, a Merten's Water Monitor was observed at a roadside culvert approximately 10.5 km south-south-west of the water extraction point and one kilometre west-north-west of ML27422. This species is listed as Vulnerable under the *Territory Parks and Wildlife Conservation Act* (TPWC).

6.2 Potentially Present Threatened Species

Three threatened species are believed likely to occur at AIR's proposed water extraction point but were not identified in the May 2011 surveys. General descriptions of the species are discussed below – along with the primary threats to their existence.

6.2.1 Freshwater Sawfish (*Pristis microdon*)

Freshwater Sawfish are listed as Vulnerable both nationally (*EPBC Act*) and within the Northern Territory (*TPWC Act*). NT Fauna Atlas records indicate that this species has not been recorded within 10 km of ML27422. Freshwater Sawfish are a large ray-like fish, with an easily recognisable elongated rostrum – present as a long flat blade equipped with rows of teeth on either side. The saw is presumed to be used to dig out crustaceans and molluscs from the substrate as well as being used to stun and injure fish. Freshwater specimens range between 76-250cm and are olive to brown dorsally with a white under body (Allen *et al* 2002).

This species is noted as being relatively uncommon but potentially widespread in coastal drainages of northern Australia, from Northern Queensland to Northern Western Australia. *P.microdon* are a bottom dweller of estuaries and lower reaches of large river systems – but have been known to penetrate considerable distances upstream. Thorburn *et al* (2004) encountered *P.microdon* in the Roper River at Elsey station, upstream from this surveys sampling site.

6.2.2 Merten's Water Monitor (*Varanus mertensi*)

Merten's Water Monitors are listed as Vulnerable within the Northern Territory (*TPWC Act*), although they are not nationally listed (*EPBC Act)*. NT Fauna Atlas records indicate that this species has not been recorded within 10 km of ML27422. Merten's Water Monitor is a medium-large sized semi-aquatic monitor. It is dark olive grey to olive brown with numerous small, dark-edged cream or yellow spots. It is typically found near rivers, large creeks, lagoons, reservoirs and billabongs in northern Australia (Woinarski *et al.* 2007). The Monitor is an excellent swimmer, able to hold its breath for minutes at a time and swim underwater with the aid of special valves in its nostrils that shut tightly when they are underwater (Woinarski *et al.* 2007). Merten's Water Monitors have a strong sense of smell and feed mostly on fish, frogs, and carrion, but also insects and small terrestrial invertebrates (Woinarski *et al.* 2007). Merten's Water Monitor has a broad geographic range and has been recorded in coastal and inland waters across most of the top end and gulf region (Woinarski *et al.* 2007). The cane toad is a major threat to the Merten's Water Monitor as amphibians are part of the Monitor's diet and it will often eat them and die from the ingested poisons. Tests have shown that this species is highly susceptible to cane toad toxins, and several reports (Burnett 1997, Van Dam *et al.* 2002, Griffiths & McKay 2005 and Smith & Phillips 2006) have identified the cane toad as being a major threat to populations. The Merten's Water Monitor is listed as Vulnerable due to a reduction of more than 30% of its population projected to be met within the next 10 years or within three generations, primarily due to Cane Toads (Woinarski *et al.* 2007).

6.2.3 Gulf Snapping Turtle (*Elseya lavarackorum*)

The Gulf Snapping Turtle *Elseya lavarackorum* is listed as Endangered nationally (*EPBC Act*), but is not regarded to be of conservation concern (Least Concern) in the Northern Territory (*TPWC Act*). This is a large, short-necked turtle that can grow up to 35 cm in length. It is similar in appearance to the more common Northern Snapping Turtle (*E. dentata*) but possesses an undulating structure between the humeral and pectoral shields of its plastron (Wilson and Swan 2008). The species is mainly herbivorous, feeding upon leaves, flowers, bark and *Pandanus* roots. Juveniles have been known to feed on insect larvae. The Gulf Snapping Turtle is restricted to rivers draining into the Gulf of Carpentaria including the Calvert and Nicholson River systems of the Northern Territory (Woinarski *et al.* 2007). Little information is available concerning the likelihood of *E. lavarackorum* occurring in the Roper River. The major threat to this species appears to be trampling of its nesting sites by stock and feral animals, such as pigs, though a lack of information on this species limits identification of significant threats (Woinarski *et al.* 2007). Lack of previous records within the region does not confirm that the species does not inhabit the area. Management measures by AIR will focus on maintenance of flow requirements for the Roper River, based on a conservative

approach of assuming that threatened species such as this are either present at the extraction site or further downstream. Additional detail on proposed management measures can be found in the WMP.

6.3 Species and habitats of significance

This survey did not encounter any threatened species at the water extraction point. Two threatened species (Red Goshawk, *Erythrotriorchis radiata* and Merten's Water Monitor, *Varanus mertensi*) were identified in the Notice of Intent as having some likelihood of being encountered because of suitable habitat at the water extraction point. One of these species (Merten's Water Monitor, *Varanus mertensi*) was recorded in the general area and it would be reasonable to assume that this species would utilise the section of river proposed for water extraction. No detailed survey of terrestrial birds was conducted at the water extraction point, so its remains possible that Red Goshawks (*Erythrotriorchis radiata*) may be present in this area.

Freshwater Sawfish (*Pristis microdon*) and Freshwater Whiprays (*Himantura chaophyra*) have both been recorded in the Roper River in a previous study (Thorburn *et al* 2004). That study recorded one Freshwater Whipray downstream of Roper Bar in the tidal zone, but recorded Freshwater Sawfish (*P. microdon*) well up-stream of the proposed extraction site (Thorburn *et al* 2004). However a subsequent survey by the Museum and Art Gallery of the Northern Territory (Dally and Larson 2008) failed to record any Freshwater Sawfish in the same area. Subsequent to this survey a local man, Jojo Huddleston, told of a small, probably juvenile, sawfish that had been caught in a waterhole approximately 35 kilometres upstream of the proposed water extraction point from Strangways Creek in early June 2011. This was probably a Freshwater Sawfish (*P. microdon*). These results may indicate that Freshwater Sawfish are either uncommon in the river or perhaps are only present at certain times of year (Thorburn *et al* 2004).

Although neither Freshwater Sawfish nor Whipray were identified during this survey it is probable that Freshwater Sawfish navigate through the area. Thorburn *et al* (2004) have collected this species from both tidal and non-tidal areas which indicate that this species utilises the entire length of the river. Similarly Freshwater Whiprays have been recorded throughout the lower and middle reaches of other river systems, particularly the Daly River (Thorburn *et al* 2004). Their recorded presence in the lower Roper River means it may be possible that Freshwater Whiprays may utilise the Roper River in the vicinity of Flying Fox station pumping hole.

Pig-nosed turtles (*Carettochelys insculpta*) have been recorded in the Roper River near Roper Bar (Department of Lands and Housing 1991 cited in Faulks 2001). This species is not considered as threatened under either Northern Territory or Commonwealth legislation, but is listed on the International Union for the Conservation of Nature (IUCN) Red List (Asian Turtle Trade Working Group 2000). No turtles were observed in the survey of Flying Fox station pumping hole and surrounds, but this pool is likely to provide suitable habitat for this species and other freshwater turtles.

Given the shallow, braided nature of the Roper River in the vicinity of the proposed extraction site, it is likely that this pool acts as a significant refuge during the late dry season. This will be particularly important in years of low rainfall when the river ceases to flow in these reaches.

6.4 Potential impacts

Extracting water from the Roper River at the proposed site has three main potential impacts. Firstly, drawing water from the river will affect environmental flows downstream. Diminished flow downstream of the extraction point will expose barriers to fish migration earlier in the dry season, or delay them being passable early in the wet season (e.g. Roper Bar). Any delay in flow at the start of the wet season is likely to be more significant for migratory species. It is likely that all migratory species would have completed their movements by the time the river ceases to flow during the dry season, even considering proposed extractions. The second potential impact is on the volume of water and water level in the pool after cessation of flow. The

Flying Fox station pumping hole is not a large pool, and continued extraction of water after the river ceases to flow at this point is likely to be highly significant. The Roper River in the vicinity of the pool is shallow and braided and it is likely that this pool provides a moderately important dry season refuge for many aquatic species. Significant draw down of water from this pool after cessation of inflow will reduce the volume of this refuge and impact on the species therein. Finally, the installation of a pump at the proposed location will increase noise and activity at the site. A pump to provide water to adjacent cattle stations already operates at the site and it is likely that any fauna in the area is already accustomed to some disturbance. However the extraction of water by AIR will require a greater level of activity and noise because the pump will be visited regularly for maintenance purposes and run for longer periods.

6.5 Limitations of this study

This survey was of short duration (one day) and only conducted on the actual extraction point area. Hence it may not have identified all fauna species that are resident or migrate through the area. Safety limitations concerning crocodiles prevented the use of mask and snorkel as a survey technique.

This survey only collected limited information on bird species around the proposed water extraction point. Riparian habitats are known to be important for birds. However, only water birds were recorded in this survey. Permanent freshwater pools are also known to be important to terrestrial birds, especially later in the dry season.

Other water extractions and developments along the length of the Roper River both present and planned are likely to have an influence on the aquatic flora and fauna in the future. This will mean that this baseline survey and on-going monitoring at this site only will be of limited value. Many changes in the condition of the river will only be attributable if surveys are viewed in conjunction with other monitoring conducted along the length of the river.

7 Conclusion

The Flying Fox station pump hole is a perennial waterhole in the main channel of the Roper River. It is most likely of moderate importance as a dry season refuge for a number of aquatic species, particularly when freshwater inflows cease along this stretch. Although this survey did not detect any, it is likely that some threatened species utilise this pool including Merten's water monitor (*Varanus mertensi*) and Freshwater sawfish (*Pristis microdon*).

Properly managed water extraction from this point of the Roper River is unlikely to significantly affect the flora and fauna of the Roper River. Levels of extraction will be limited during periods of low flow and there will be no extraction of water during periods of very low or no flow. These thresholds and levels are detailed in the Water Management Plan (Appendix G to the PER), and can only be properly adhered to if there is some method of determining water flow at the site. Any volume of extraction by AIR for the processing of ilmenite must also take into account the amount of water extracted by the pastoral industry from this pool.

Monitoring of impacts of water extraction at this point can only be meaningful if assessed against results of monitoring of other development and water extraction activities along the entire Roper River.

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