

Proposal to lease 2,500 ha
for plantation forestry
Melville Island

**ENVIRONMENTAL ASSESSMENT REPORT AND
RECOMMENDATIONS**

by the
ENVIRONMENT AND HERITAGE DIVISION
DEPARTMENT OF LANDS, PLANNING AND ENVIRONMENT
February 2000

SUMMARY OF RECOMMENDATIONS

Recommendation 1

The proponent shall ensure that the proposal is implemented in accordance with the environmental commitments and safeguards contained in the documentation as supplied and listed in Section 1.3 and as recommended in this assessment report.

Recommendation 2

No further forestry development in addition to the current 2,500 ha lease should occur on the Tiwi Islands without the satisfactory completion of a Strategic Plan, Regional Biodiversity Assessment and other key recommendations in Assessment Report 29.

Recommendation 3

A copy of the final Plantation Design Plan shall be submitted to the Department of Lands, Planning and Environment for approval before the commencement of disturbance.

Recommendation 4

The exclusions shown on Figure 7 of the report shall become part of the Plantation Design Plan.

Recommendation 5

Advice on weed management within areas of natural vegetation, particularly for *Acacia mangium*, shall be sought from the Department of Primary Industry and Fisheries, and Parks and Wildlife Commission of the Northern Territory.

Recommendation 6

An Action Plan shall be prepared to the satisfaction of the Bushfires Council to address the detail of operations, including their nature, timing and location, and the responsibilities of staff, as part of the Operational Management Plan.

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Proposal to lease 2,500 ha for plantation forestry Melville Island

1. INTRODUCTION AND BACKGROUND

This report assesses the environmental impact of the development of an additional lease of 2,500 ha for plantation forestry on Melville Island (Figure 1) as described in the documentation submitted by the Tiwi Land Council detailed below. The development would involve clearing of native vegetation and its replacement with *Acacia mangium* within the majority of the lease (excluding areas retained for soil conservation, water resources management or biodiversity protection). Plantation activities that are planned as part of the development include soil cultivation, weed control, fertilising and the construction of roads. The lease area is located on Aboriginal land held under the Commonwealth *Aboriginal Land Rights (Northern Territory) Act*.

1.1 Environmental Assessment Process

Environmental impact assessment is based on adequately defining those elements of the environment which may be affected by a proposed development, and on quantifying the significance, risks and consequences of the potential impacts of the proposal at a local and regional level.

The Operation Management Plan, Biodiversity Assessment and other documents provide a description of the existing environment in the area and the proposed operations, and evaluates the environmental impacts and proposed mitigating measures to minimise the expected impacts.

This report assesses the adequacy of the documents provided by the Tiwi Land Council in achieving the above objectives, and evaluates the undertakings and environmental safeguards proposed by the proponent to mitigate the potential impacts.

The safeguards may be implemented at various levels within the planning framework of a project. These include, but are not limited to:

1. Site selection;
2. Design and layout of facilities;
3. Management of construction activities;
4. Processes used in operations and facilities (i.e. inputs and outputs); and
5. Management of operations, processes and facilities.

The contents of this report form the basis of advice on the environmental issues associated with the project.

1.2 Environmental Assessment History

On 17 August 1999, Environment and Heritage Division of the Department of Lands, Planning and Environment delivered its Assessment Report 29, containing recommendations to ensure the environmental sustainability of a proposal to establish plantations on Melville Island, to the Tiwi Land Council. The main recommendation of Assessment Report 29 was that several additional studies were necessary before development beyond the 2,700 ha already approved by the Commonwealth Minister for Aboriginal Affairs, Senator John Herron, could proceed.

In October, Environment Australia produced an assessment report supporting the recommendations of the Northern Territory. The Commonwealth Minister for the Environment, Senator Robert Hill, noted in a letter to Senator Herron that before any consideration of future leases for plantations, the project would need to demonstrate satisfactory compliance with these recommendations.

The Tiwi Land Council forwarded an application to lease an additional 2,500 ha to Senator Herron on 13 October 1999. The Environment and Heritage Division was notified of the proposal by the Tiwi Land Council on 14 December 1999.

Environment and Heritage Division of the Department of Lands, Planning and Environment prepared a scope of work entitled "Minimum requirements before consideration of additional 2,500 ha", which was supplied to the Tiwi Land Council, the proponent for the proposal, on 14 December 1999. This document forms Attachment A of this assessment.

The Tiwi Land Council provided the following documentation to the Northern Territory Minister for Lands, Planning and Environment on 21 February 2000 in fulfilment of the scope of work identified above.

- An evaluation of progress towards the implementation of recommendations of Assessment Report 29 (five pages)
- Tiwi Islands Hardwood Plantations Monitoring Protocols (ten pages)
- Tiwi Islands Hardwood Plantations Environmental Evaluation (13 pages)
- Environmental Commitments – Sylvatech (three pages)
- Plantation proposal - Assessment of Biodiversity (prepared by Parks and Wildlife Commission of the Northern Territory) (32 pages)
- Site Selection Protocol (three pages)
- Tiwi Islands Fire Management Report (19 pages)
- Operational Management Plan (nine pages of text and 11 pages of maps)
- A map of Forestry Project Exclusion Zones - 1:25,000 satellite imagery

Advice has been sought from the Parks and Wildlife Commission of the Northern Territory, the Natural Resources Division of the Department of Lands, Planning and Environment and the Department of Primary Industry and Fisheries. These

comments, in addition to the Environment and Heritage Division's assessment, will form the basis of recommendations for the project.

Consultation and liaison between the proponent, the Tiwi Land Council, which is the representative body for traditional owners, and Commonwealth and Northern Territory Government agencies, has been ongoing.

The Tiwi community is strongly committed to this project as a means of achieving self-determination and is keen to see the additional stage proceed without delay. The Tiwi Land Council also wishes to ensure that the project is environmentally sustainable.

1.3 Scope of the Assessment

This report assesses the environmental impacts of the establishment and ongoing maintenance of plantation forestry and associated infrastructure on a lease area of 2,500 ha. It does not address the impact of the establishment of the full 30,000 ha of plantation.

2. THE PROPOSAL

The proposal plans to develop an additional 2,500 ha of Melville Island, one of the Tiwi Islands (Figure 1), as *Acacia mangium* plantation, replacing the existing native vegetation of predominantly *Eucalyptus* woodland and forest. The development of the lease for plantation forestry is part of an overall scheme to establish a plantation of approximately 30,000 ha to be grown on a seven-year rotation. Key elements of the development are:

- Clearing of the final plantation area in two stages. Chaining by bulldozer to lay all vegetation on the ground and ensure that all stumps are removed and raking to remove the residue from the site, either by a timber salvage program or by burning.
- Soil cultivation based on soil and slope characteristics. Generally, planting sites will be strip ploughed and deep ripped along planting lines. On steeper slopes contour mounding/ploughing will be implemented. Other soil erosion mitigation measures will be designed in consultation with the Natural Resources Division of the Department of Lands, Planning and Environment.
- Weed control using herbicides will be carried out before planting. Ground application methods will be used for small or sensitive areas, while aerial application by helicopter will be undertaken on large contiguous blocks.
- Planting will be undertaken using purpose-built planting machines at 1,111 stems per hectare at a 3 m by 3 m spacing.
- Fertiliser will be applied immediately after planting at 240 kg per hectare.

- A network of roads will be established, consisting of plantation roads, secondary roads and primary roads. The exact location of roads will be determined in consultation with the Department of Lands, Planning and Environment.
- A monitoring program and environmental management system will be developed.

3. ENVIRONMENTAL ASSESSMENT

3.1 Introduction

The information provided in the documentation provided by the Tiwi Land Council has been assessed and then used, along with comments from advisory bodies, to determine the adequacy of the information provided by the proponent and the accuracy and acceptability of predicted impacts and safeguards. Comments and recommendations are then made.

It is acknowledged that during implementation of proposals, flexibility is necessary and desirable to allow for minor and non-substantial changes to the design and specifications, which have been examined as part of this assessment. It is considered that subsequent statutory approvals for this project could make provisions for such changes, where it can be shown that the changes are not likely to have a significant effect on the environment.

It is important for interpretation purposes that the recommendations (in **bold**) are not considered in isolation, as the text identifies concerns, suggestions and undertakings associated with the project.

Subject to decisions that permit the project to proceed, the primary recommendation of this assessment is:

Recommendation 1

The proponent shall ensure that the proposal is implemented in accordance with the environmental commitments and safeguards contained in the documentation as supplied and listed in Section 1.3 and as recommended in this assessment report.

3.2 Issues

3.2.1 Major Environmental Issues

The principal environmental issues identified with the development of 2,500 ha for plantation forestry and the construction of associated infrastructure are:

1. Potential loss of local and regional biodiversity with consequent reduction in the conservation values of the Tiwi Islands;

2. Impacts on threatened species of flora and fauna and on wildlife habitat corridors;
3. Management of erosion and soil conservation;
4. Water quality and water resource management.

3.2.2 General

There is concern that incremental development is likely to prevent adequate examination of the cumulative impacts of the proposal to develop 30,000 ha of the Tiwi Islands for plantation forestry. While the aspirations of the Tiwi people are recognised as being of great importance, uncoordinated assessment and development may result in long-term adverse environmental impacts to the Tiwi Islands which compromise their very high conservation values.

Recommendation 2

No further forestry development in addition to the current 2,500 ha lease should occur on the Tiwi Islands without the satisfactory completion of a Strategic Plan, Regional Biodiversity Assessment and other key recommendations in Assessment Report 29.

3.2.3 Site Selection

A site selection protocol has been developed which uses a three-step process to select appropriate plantation areas:

- broad scale identification of suitable sites;
- detailed plantation selection based on criteria such as topography, soils, water resources and biodiversity; and
- plantation design plan.

While the criteria outlined in the protocol are appropriate, the major shortcoming of this protocol is lack of detail, particularly in the absence of the final Plantation Design Plan. Of particular concern is that the site selection protocol does not place the environmental values of plantation sites in a bioregional context.

The proponent recognises that the protocol is not adequate and states that more detailed Site Selection Guidelines will be developed as part of the Strategic Plan. Recommendation 9 of Assessment Report 29 remains of major importance to the long-term sustainability of plantation forestry on the Tiwi Islands.

The map entitled “Forestry Project Exclusion Zones” was prepared prior to the completion of the Biodiversity Assessment. It addresses the site selection criteria for soil conservation and water protection. It needs to be updated to include the recommendations from Parks and Wildlife Commission of the Northern Territory’s study.

Recommendation 3

A copy of the final Plantation Design Plan shall be submitted to the Department of Lands, Planning and Environment for approval before the commencement of disturbance.

3.2.4 Biodiversity

Parks and Wildlife Commission of the Northern Territory has undertaken a Biodiversity Assessment of the proposed 2,500 ha lease area. The results of this survey confirm the high conservation values of the Tiwi Islands. Two species of fauna recorded as vulnerable under the Commonwealth *Endangered Species Protection Act* were recorded during the current survey:

- A subspecies of Masked Owl (*Tyto novaehollandiae melvillensis*) which is restricted to the Tiwi Islands.
- The Partridge Pigeon (*Geohaps smithii smithii*) which has a broad but patchy distribution, with the Tiwi Islands probably a stronghold.

Two populations of about 40 and 11 individuals of the flora species, *Typhonium mirabile*, previously known from only four records, were located in the project area.

As a result of the assessment, Parks and Wildlife Commission of the Northern Territory has made several recommendations for areas that should be excluded from clearing for forestry operations to minimise impacts on biodiversity. These areas include all occurrences of “treeless plains” vegetation types, the site of the largest known population of *Typhonium mirabile*, a buffered area around the known locations of the Masked Owl and around two rare rainforest plants.

The report recognises the shortcomings of the assessment, particularly the lack of a bioregional context for the values of the project area. This reiterates the need for a Regional Biodiversity Assessment. The proponent has recognised this as a priority and has made a commitment to carry out such a study.

The Environment and Heritage Division supports the findings of the Biodiversity Assessment.

Recommendation 4

The exclusions shown on Figure 7 of the report shall become part of the Plantation Design Plan.

3.2.5 Heritage

It is noted that no archaeological surveys have been carried as part of the current site selection process, although the protection of cultural sites has been addressed through consultation with the Tiwi community.

A study by Burns (1995) found that there are large numbers of unrecorded prehistoric sites in the Darwin Catchment Region. It is likely that a similar situation exists for the Tiwi Islands. Middens are the most common site type, with artefact scatters the next most prevalent. The distribution of sites is highly patterned. Middens predominantly occur within 300 m of mangrove communities, while all site types are heavily concentrated within 300 m of biogeographic land unit boundaries.

It is therefore considered that a statistical survey methodology using similar premises could be devised and tested for the Tiwi Islands.

The site selection criteria for heritage outlined in the Site Selection Protocol are predicated on the premise that the exclusion of certain areas from the development will be likely to avoid any sites which might be present. These areas are: within 200 metres of watercourses, within 200 metres of coastal habitats (including dune areas, *Melaleuca* and *Casuarina* communities, etc.), areas incorporating significant changes in relief, ecotones and vegetation communities which are distinct and of limited distribution. This strategy, while not ideal, is likely to minimise impacts on sites of heritage significance.

It is noted that the proponent has made a commitment to prepare a Heritage Conservation Plan. It is recommended that a survey methodology be developed as part of this Plan in consultation with Heritage Conservation Branch to ensure that sites of heritage significance are adequately addressed.

3.2.6 Soils

Soil conservation for the Tiwi Islands Forestry Project is managed under a Natural Heritage Trust funded study entitled "Addressing Land Degradation and Implementing Land Using Planning: Tiwi Islands". Advice from the Department of Lands, Planning and Environment's study is being implemented in soil conservation practices on an ongoing basis.

The approach put forward in the document "Evaluation of progress towards the implementation of recommendations in Assessment Report 29" which aims to integrate the above study with the current water study discussed in Section 3.2.7 and the Regional Biodiversity Assessment to develop an overall Natural Resources Management Plan is strongly supported.

Some areas of excessive erosion and sediment transport were noted both in field inspections and in the Environmental Evaluation report prepared by Forsci (1999).

Remedial measures are being undertaken for these areas, and modification of clearing and plantation management practices has occurred.

3.2.7 Water management

Management of water resources is being addressed through a Natural Heritage Trust funded project "The Tiwi Islands Water Study" managed by the Natural Resources Division of the Department of Lands, Planning and Environment. Results of this study are being progressively incorporated into management.

Water resource protection is currently occurring principally through the exclusion of watercourses and water sensitive communities, including rainforest, swamps and riparian vegetation, and the use of appropriate buffers to protect these areas. This is adequate to protect water values for the current area of 2,500 ha. However, the concept of an integrated Natural Resources Management Plan as discussed in Section 3.2.6 is strongly supported, as is the proponent's commitment to prepare a Water Management Plan as part of the Strategic Plan.

3.2.8 Weeds

The management of weeds within plantation areas appears appropriate, although more detail of methods should be provided in the Weed Management Plan in the Strategic Plan. However, insufficient attention has been given to the potential of *Acacia mangium* to spread into adjoining native vegetation and to hybridise with the naturally occurring *A. auriculiformis*. Field inspections noted that some areas of invasion had already occurred as a result of previous plantation trials using *A. mangium*.

Recommendation 5

Advice on weed management within areas of natural vegetation, particularly for *Acacia mangium*, shall be sought from the Department of Primary Industry and Fisheries, and Parks and Wildlife Commission of the Northern Territory.

3.2.9 Fire management

Sylvatech has prepared a Fire Management Strategy to protect the plantations and surrounding native vegetation to the satisfaction of the Bushfires Council. However, the Bushfires Council has noted the need to extend the planning process to develop an action plan indicating specifically the operations to be undertaken, the timing and location of operations, and responsibilities allocated to staff. Such an Action Plan should be part of the annual Operations Plan. The Bushfires Council has also indicated that it is prepared to assist in training of bushfire volunteers.

Recommendation 6

An Action Plan shall be prepared to the satisfaction of the Bushfires Council to address the detail of operations, including their nature, timing and location, and the responsibilities of staff, as part of the Operational Management Plan.

3.2.10 Monitoring

Sylvatech has prepared a Monitoring Protocol which provides a general indication of the areas for which monitoring is proposed. Sylvatech has also made a commitment to develop a Monitoring Program as part of the Strategic Plan, based on advice from specialist Government agencies.

The areas identified for environmental monitoring are broadly supported. Sylvatech has recognised that the Monitoring Protocol does not provide a specific monitoring program for the current development area and has made a commitment to provide specific details of proposed monitoring to the Department of Lands, Planning and Environment incorporating advice from Government agencies for inclusion in an amended Operational Management Plan.

3.2.11 Environmental progress and audit

The proponent has provided a table detailing the current status of the recommendations of Assessment Report 29. It is considered that adequate progress has been made towards their implementation. However, it is stressed that the key recommendations of the Assessment Report need to be completed or substantially completed before any further consideration can be given to granting additional leases for plantation forestry.

A field inspection was made by officers of the Department of Lands, Planning and Environment on 4 February 2000. In addition, Forsci has prepared a report entitled "Environmental Evaluation" which examines the environmental progress of the project so far.

Results of the site inspection indicate that there are some problems evident in site selection and soil conservation management, which are being addressed by Sylvatech with advice from the Department of Lands, Planning and Environment. The plantings appear to be relatively concentrated, further emphasising the need to undertake a Regional Biodiversity Assessment to allow for better land use planning.

Overall, the environmental performance of the plantation so far is adequate, but the need to address long-term environmental management and regional biodiversity issues remains pressing.

3.2.12 Environmental commitments by lessee

The Environment and Heritage Division supports the commitments made by the lessee, Sylvatech, and would like to see development of these commitments into more detailed undertakings as part of the Strategic Plan, Regional Biodiversity Assessment, Natural Resources Management Plan and other programs and documents prepared as part of the Tiwi Islands Forestry Project.

4. CONCLUSION

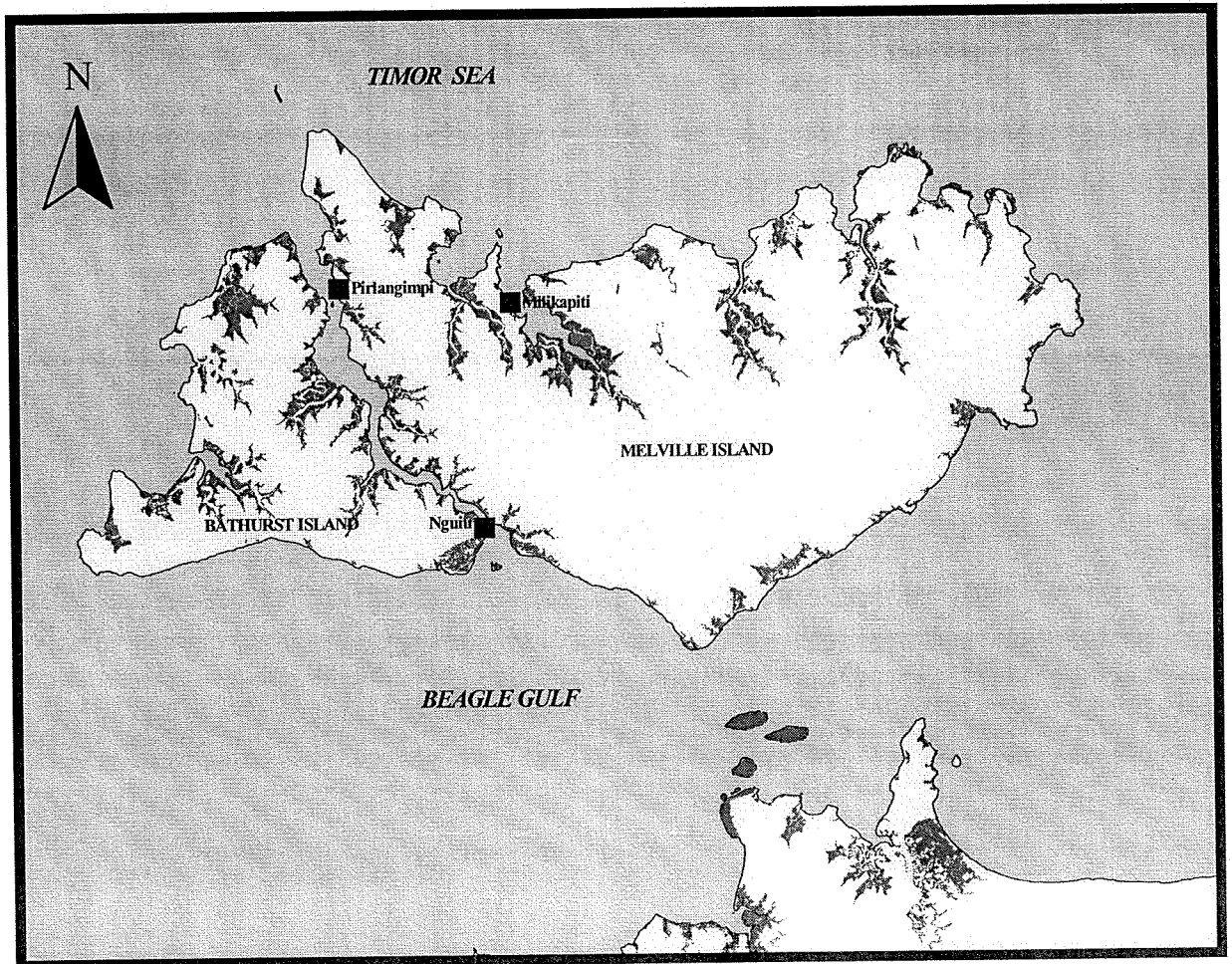
It is considered that all significant environmental issues associated with the proposed project have been adequately identified. Some of these issues have been resolved through the assessment process, while others will be addressed through monitoring and management actions to be detailed and subject to review by relevant NT agencies.

Provided that the environmental commitments and safeguards detailed in the documentation provided are undertaken, the recommendations in this Assessment Report are adopted, and regular compliance auditing and reporting are carried out, long term impacts should be avoided or mitigated.

5. REFERENCES

Burns, T. (1995). The Northern Territory Archaeological Survey – Stage 1. Darwin Catchment Region. Heritage Conservation Branch, Department of Lands, Planning and Environment. A report to the Australian Heritage Commission on research funded under the National Estate Grants Program for 1995.

Figure 1: Location Map for Tiwi Islands Forestry Project



Key to Resources

- Aboriginal Communities
- Mangroves

LAND AND SEA

- island
- mainland
- sea