



# Forest Management Plan for Niue



1<sup>st</sup> March 2013

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## **Foreword**

The people of Niue value their forests for many reasons. We use our forests for hunting and gathering food and traditional medicines. We collect timber for our houses, canoes and crafts. We value the biodiversity within the forest and the water and air that the forest gives us to survive. We are deeply connected to the forests through our traditions, culture and history.

The people of Niue are the owners and managers of the forests. Individual landowners may have different priorities for how they use and manage their land. However, we all have a collective responsibility to ensure that the forests are managed in a manner that sustains the many values of the forests now and for our future generations.

This Forest Management Plan has been prepared to provide a framework for the sustainable management of our forests. The Plan is based on four important guiding principles-

1. Respecting the ownership of land
2. Respecting private rights to use the resources upon the land
3. Recognising that many values such as biodiversity need to be conserved and sustainably managed for the public good and for future generations
4. Providing opportunities for sustainable economic growth.

This plan is consistent with an ecosystem approach to sustainable resource management taking into account the multiple roles and functions of the forests.

We all have our role to play in ensuring that our forests are managed sustainably. The Department of Agriculture, Forestry and Fisheries looks forward to working in cooperation with landowners, industry, other government agencies, non-governmental organisations and with the general public of Niue to implement this Forest Management Plan and work towards our goal of sustainable forest management.

**Director of the Department of Agriculture, Forestry and Fisheries**

## Part A – Background

### 1. Description of the forests

#### 1.1. Area and forest structure

The island of Niue was once covered by closed forests. Much of this vegetation has been highly modified by shifting agricultural practices that have created a mosaic of cultivated plots and fallow lands in various stages of succession to scrub and secondary forest. The current area of native forest is about 19,000 hectares, comprising approximately 70% of the island's land area (Table 1 and Figure 1).

**Table 1. Areas covered by forest in Niue**

(Source: Niue National Forest Inventory 2008)

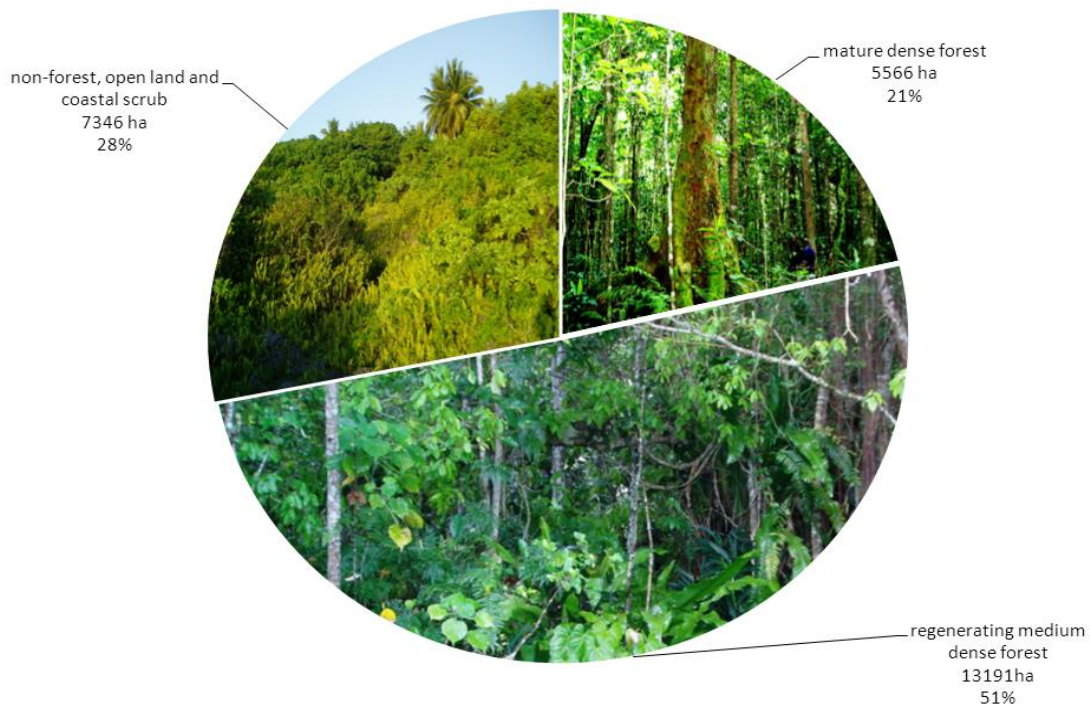
Forest Type	Area (hectares)
Mature dense forests	5,566
Regenerating medium dense forests	13,191
Other – Littoral (coastal) forests, fernland and other non-forest land	7,346
Total area of Niue	26,103

About 30% of the forest (5,566 ha) is classified as 'mature dense forest' with a height of 18-35 metres. This forest is dominated by *Kolivao* and *Kafika* trees with an understorey of ferns such as *Palatao* (*Angiopteris* sp.). It has no signs of recent agricultural activity. Most of this forest is found in the central east of the island within the area between Mana, Lakepa and Hakupu villages.

The remaining 70% of forest (13,191 ha) is classified as 'regenerating medium dense forest' with a height of 12-20 m. This forest type is also dominated by *Kolivao* and *Kafika*, with a slightly higher diversity of other species than the mature forest. The understorey generally comprises ferns such as *Mohuku* (*Nephrolepis* sp.) and the forest structure is variable, depending upon the period of recovery since previous agricultural activity.

Niue has a very small plantation area of 290 ha across 50 small woodlots. The main species is mahogany (*Swietenia macrophylla*), comprising about 75% of the plantings. Other species include Australian Red Cedar (*Toona australis*). The growth and form of the plantings is variable.

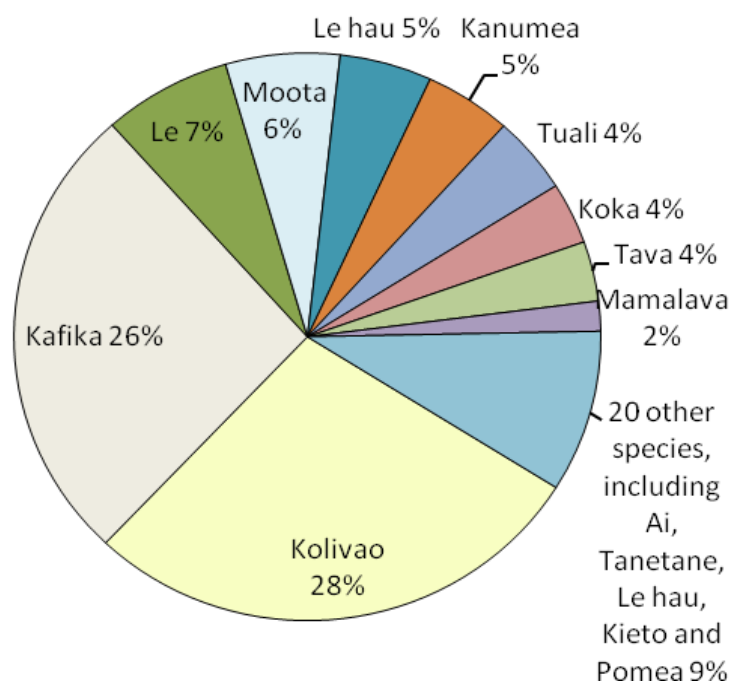
**Figure 1. Proportions of the vegetation types in Niue**



The natural forests contain 66 species of trees and shrubs, which is a relatively low number compared to larger islands in the Pacific. The most common tree species are Kolivao and Kafika, which comprise about half of the forest canopy. The forests are well-stocked with a range of size classes, showing that the forests regenerate very well after natural disturbance by cyclones. About 10% of the wood in the forest comprises dead standing or fallen trees from natural mortality, including cyclone damage.

The location of the major vegetation types of Niue is shown in Appendix 1. The proportions of major tree species in the mature forest are shown in Figure 2. Appendix 2 provides a list of the main tree species and their uses.

**Figure 2. Proportions of the major tree species in the mature forest**



## 1.2. Tenure

Almost all land (95%) in Niue is owned by kinship groups (*magafaoa*). The balance (5%) is Crown land. All members of the *magafaoa* have the right to use the land and to participate in decisions concerning it. The members of a *magafaoa* may select a representative, the *leveki magafaoa*, to administer the land on their behalf. This system has traditionally provided a high degree of communal ownership and interest in the forests.

## 1.3 Biodiversity

Niue's native species diversity includes 175 vascular plants, 31 birds, one native mammal, five reptiles (lizards), 376 insects and eight crabs (Appendix 3). Three species of animal are of particular importance for biodiversity and cultural (hunting) reasons- the *uga* or coconut crab (*Birgus latro*), the *peka* or flying fox (*Pteropus tonganus*) and the *lupe* or Pacific pigeon (*Ducula pacifica*).

The maintenance of adequate habitat across the island is important for the survival of species such as birds and *peka* which move across the island to take advantage of local variations in flowering and fruiting patterns.

#### **1.4 Soils, landforms and water**

Niue consists of an uplifted coral limestone plateau perched on top of a submerged volcano. The terrain consists of steep limestone cliffs along the coast with a central plateau at 40 to 60 metres above sea level. The soils are geochemically unusual, comprising highly weathered tropical soils derived from the weathering of coral and from brief sea submergence 120,000 years ago and volcanic heating. The soils are very rich in phosphate, but it is not accessible to plants, being in the very insoluble form of iron phosphate, or crandallite. Plant growth may also be limited by low levels of nitrogen, potassium, sodium and zinc. Declines in soil structure and fertility have been evident as a result of inappropriate land management activities such as over-cropping, over-cultivation by heavy machines and repeated burning.

The forest areas contain high levels of surface limestone and caves. In many areas, rocky outcrops cover 20-50% of the ground surface, significantly restricting access for farming or forestry activities. Tree growth is restricted by the shallow depth of soil (less than 75 cm over much of the underlying limestone).

The highly porous nature of the soils and limestone means that there are no streams or surface water bodies. Water supplies come from sub-surface aquifers. The aquifer strata are porous and are vulnerable to contamination from activities carried out on the surface.

#### **1.5 Timber resources**

The mature dense forests have a total timber volume of 275 m<sup>3</sup> per ha, which is very high for Pacific Island forests. About 26% of this volume (72 m<sup>3</sup> per ha) is of a quality and size suitable for timber harvest (trees with a stem diameter >35 cm). The regenerating medium dense forests have a lower volume of timber (29 m<sup>3</sup> per ha) and are generally unsuitable for timber production.

The growth rate of Niuean forests has not been determined. However, comparable forests in the Pacific have been measured to grow at a conservative rate of 1 to 1.5 m<sup>3</sup> of timber volume per ha per year. This level of increment would mean that the mature dense forests are growing about 5,000 to 7,500 m<sup>3</sup> of new volume per year. This volume growth replaces losses due to natural mortality and cyclones. In managed forests the principle of sustained yield is based on harvesting a proportion of trees before they die from natural causes. The sustained yield is always lower than the total volume increment of the forest because not all of the forest is available or suitable for harvesting and allowance must be made for periodic losses due to cyclones. For the Niuean forests a realistic figure would be a potential sustained yield of up to 3,000 m<sup>3</sup> of timber per year. However, a survey of landowner attitudes to logging in July 2011 found that only 27% of landowners are currently interested in logging, with 36% undecided and 36% not interested. On this basis, the annual allowable cut should be initially set at 1,500m<sup>3</sup> and subjected to ongoing review (see Part B section 4.1).



## **1.6 Cultural values**

Archaeological research indicates that Niue has been settled for at least 1,000 years. Evidence of early human occupation includes burial caves, midden deposits, mounds, platforms, enclosures and dry stone walls.

Many of the coastal sites have been eroded and removed by storms. Important sites are managed by landowners, often within *tapu* areas.

## **2. Uses of the forests**

### **2.1. Traditional Uses**

Niueans have a deep cultural and spiritual attachment to the forests and they use the forests for hunting and trapping (*wild chickens, feral pigs, uga, lupe* and *peka*), gathering edible ferns, collecting medicinal plants and cutting timber for houses, shelters, canoes, crafts and gathering firewood for cooking.

### **2.2. Timber processing and consumption**

The processing of timber has declined from about 200m<sup>3</sup> per year in the 1990s to less than 10 m<sup>3</sup> in 2011. The processing capacity is limited to a single company, Niue Timber, which has produced building products and furniture. The processing capacity includes an old sawmill with vertical and horizontal circular saws for breakdown and re-sawing, an onsite Mahoe Mini-Max portable sawmill, drying kiln and joinery machines of various ages and condition. The two mills, if fully operational, could realistically process up to 6 to 8 m<sup>3</sup> of logs per day, or about 1,200 to 1,600 m<sup>3</sup> per year.

Log extraction in Niue is confined to tracked machines because of the rocky ground conditions. One well-equipped machine, preferably with a winch, would be capable of extracting up to 20m<sup>3</sup> of logs per day, which is more than adequate to supply a fully functioning sawmill.

Niue annually imports about 700m<sup>3</sup> of wood products, predominantly treated pine sawn timber from New Zealand, for the maintenance of homes and occasional new construction projects. Imported softwood is preferred by many builders because it is lighter and easier to work than the very hard local timbers. However, many Niueans believe that the higher strength local timbers are more likely to resist cyclone damage. The local timbers are highly valued for furniture and appearance-grade products. Niue has a declining population of only 1,700 residents and the local demand for timber is therefore likely to stay very low.

### 2.3. Conservation

Under the system of land ownership in Niue there are no formal public forest reserves. However, there are 160 ha of mature forest declared by the landowners as *tapu* areas for the conservation of wildlife habitat and cultural sites. The Huvalu Forest Conservation Area is the largest area specifically managed for conservation and sustainable resource use. It comprises an area of 5,400 ha, consisting of 100 hectares of *tapu* where hunting, logging and research are prohibited. This is surrounded by 2,500 ha of primary forest in which some hunting and other activities are permitted. Beyond this area is a buffer zone of 2,800 ha of agricultural land that is subject to controlled, shifting cultivation.

There are few controls on the removal of forest products outside of *tapu* areas. *Lupe* and *peka* are partly protected species except during the hunting season from 1-31 December each year. *Uga* is regulated under the Domestic Fishing Act. However, there is no regular monitoring of wildlife populations and habitat.

### 2.4. Eco-tourism

The forests of Niue are becoming increasingly important for ecotourism ventures, including walking tracks and tours that provide visitors with an interpretation of forest values and traditional use of the forest.

## 3. Legislative and Institutional framework

### 3.1. Legislation and Policy

The Forestry Act 2008 and Forest Regulations 2008 are in draft form awaiting parliamentary consent. The key provisions of the (draft) legislation are-

- The making of a Forest Management Plan, which must prescribe the maximum annual allowable cut (AAC)
- The issue of Timber Licences and Timber Processing Licences for the commercial harvesting and processing of timber
- The issue of a Code of Harvesting Practice
- The listing of protected species and regulations for the taking and export of such species
- Restrictions on the removal of prescribed species
- Enforcement measures.

Appendix 4 contains a list of other legislations relevant to forest management.

The National Forest Policy Statement for Niue was approved in 2004. The key guiding principles in the policy are detailed in section B2 of this plan.

The Code of Harvesting Practice for the Indigenous Forests of Niue (2004) prescribes the manner in which timber harvesting must be conducted. The Code is binding on all holders of timber licences under the (draft) Forest Regulations 2008.

### **3.2. Institutional arrangements**

The key parties involved in forest management in Niue are as follows-

- Niue landowners, *magafaoa* and the 14 village communities: The people of Niue have a vested interest in their forest resources. Because the *magafaoa* decide how land and associated resources are used and managed, their consent and participation are necessary for the success of any forest management programme.
- The Department of Agriculture, Forestry and Fisheries (DAFF) is established “to promote and protect the development of a sustainable and viable agriculture, fishing and forestry base and to monitor the use of natural resources to ensure sustainability within the framework of a dynamic economy, while recognising the contribution of its environmental and cultural values”. The Forestry Division of DAFF is the lead support organisation for the forestry sector.
- The Department of Environment (DoE) and Taoga Niue are established “to promote respect for Niue’s cultural values and unique environment through conservation and sustainable development”. These departments have an advisory role to play in identifying priority areas and species for biodiversity and cultural heritage conservation.
- The Department of Justice, Lands and Surveys was established “to administer land tenure, resource access, property and individual rights to facilitate Niue’s economic and social development”. The department plays a collaborative role in implementing the National Forest Policy, providing support in Geographic Information Systems (GIS) mapping for land capability and land use in Niue.
- The role of the private sector is to work in close collaboration with the Forestry Division in implementing codes, regulations and silvicultural prescriptions. Niue Timber Ltd is currently the sole timber processor.
- Donors and development agencies will continue to play a role in providing technical advice and assistance on forest management and research.

## **4. Threats to sustainable forest management**

### **4.1. Clearing of forest for agriculture**

It has been estimated that the forest cover of Niue declined from 90% in the 1950s to 70% in 2008 due to high levels of clearing in the 1980s and early 1990s. About 70% of the forest cover has been used for *Tugitugi* shifting agriculture, which incorporates periods of fallow in which the land naturally regenerates to native pioneering species but is generally re-cleared before the forest and its associated biodiversity reach maturity. The traditional slash and burn method has been replaced by the use of large bulldozers. The Niue Government has imposed limits on the size of bulldozers that are used for clearing in order to retain large trees.

### **4.2. Extending road access into mature forest**

The construction of new road access into mature forest for logging operations could open up more forests for hunting, agricultural activities and invasive species, which could have negative impacts on the conservation of other forest values.

#### **4.3. Over-exploitation of forest products**

The rate of timber harvesting has been well below the sustainable capacity of the forest for many decades. There is no formal monitoring of other forest products and wildlife but there are concerns that over-hunting and habitat loss are threatening the populations of species such as *lupe*, *peka* and *uga*.

#### **4.4. Lack of institutional capacity**

Niue's small population of less than 2,000 residents means that institutional capacity is limited across all facets of government. The Forestry Division has two officers, only one has formal training in forestry and both have other duties within DAFF.

#### **4.5. Processing and marketing**

The current sawmilling capacity is very limited but with upgrading would be capable of processing 2,500 m<sup>3</sup> of sawlogs per year, which would be adequate to handle most of the potential annual cut from the forests. However, substantial upgrading of the old mill and extraction equipment would be required. In addition, there would be a need to recruit and train local people if the capacity of the mill is to be extended beyond the current one-person operation.

There is a need to develop a marketing strategy for local timbers. Many Niueans prefer to work with green sawn local timber which has much better working properties than when it is dried. However, dried timber is essential for higher value products and for export.

#### **4.6. Cyclones and climate change**

Cyclones are the major natural cause of disturbance in Niue's forests, resulting in defoliation, stem breakage and uprooting of trees. However, natural recovery is rapid providing that the damage is not followed by clearing or burning activities.

Global climate change will have serious implications for Niue with expected temperature rises, increased frequency and intensity of cyclones and more periods of drought. These factors will place additional stress on the resilience of the forest ecosystem highlighting a need for a conservative approach to the removal of forest products.

#### **4.7. Invasive species**

The spread of invasive plants, like *Merrremia peltata* and mile-a-minute vine (*Persicaria perfoliata*), is smothering parts of the Niuean forests particularly the secondary and disturbed forests.

#### **4.8. Population Increase**

An increase in the population of Niue will mean a corresponding increase on the demand for forest products and areas for development.

#### **4.9. Uncoordinated Development**

Uncoordinated development, particularly on tourism infrastructures and public utilities may lead to the removal of forests.

#### **4.10. Land Tenure System**

There are increasing challenges for forest management due to a lack of title and surveyed boundaries and changing demographics, particularly the very large proportion of Niueans who reside in New Zealand and other overseas countries.

**4.11. Lack of Education and Awareness**

The lack of understanding on the values, multiple functions and roles of the forests leads to unnecessary clearing of the forests.

## Part B – Management Prescriptions

### 1. Implementation of this Plan

This Forest Management Plan upon approval by Cabinet has the force of a regulation under the draft Forestry Act.

This plan will be implemented as far as is practicable through a co-operative and consultative approach among government agencies, landowners and other stakeholders with emphasis on:

- training and education
- responsible self regulation by landowners and processors
- transparent monitoring and reporting of the standards being achieved
- Governmental commitment to ensure that the forests of Niue are managed on a sustainable basis.

### 2. Objectives of forest management

The forests of Niue will be managed in accordance with the guiding principles of the National Forest Policy Statement for Niue as follows-

- To foster a nationwide consensus on the value of forests, by promoting individual and collective responsibility for their control and management while respecting the *magafaa* ownership of land and resources.
- To provide opportunities for a range of sustainable forest-based industries to the extent that the forest resource is able to contribute to Niue's economic growth.
- To maintain and use the natural resources in our forests in a sustainable manner, keeping in mind future generations so that equity between the generations can be maintained.
- To maintain and develop the ecological, cultural and economic value of Niue's forests and to ensure that any forest development respects the livelihood of the present generation without compromising on the needs of future generations.
- To safeguard the plants, animals and genetic resources of Niue and to maintain endangered habitats, as well as sacred and historic sites.
- To ensure that the forests can meet essential subsistence needs — namely for food, water, fuel, building materials, medicines, cultural materials, and recreation.

### 3. Roles and Responsibilities of key stakeholders

#### 3.1. Department of Agriculture, Forestry and Fisheries ,

- 3.1.1. To consult with stakeholders, including landowners, industry and other parts of government, with regard to the formulation of forest policies and guidelines

- 3.1.2. To provide technical advice on forestry matters, including training and education programs
- 3.1.3. To foster research, investment and development relating to the sustainable use of Niue's forest resources
- 3.1.4. To administer legislative requirements, including enforcement
- 3.1.5. To monitor and report on progress with the implementation of forest policies and the Niue Forest Management Plan

### **3.2. Niuean landowners**

- 3.2.1. To sustainably manage their forests in accordance with Niue's legislative and policy framework, including the provisions of the Niue Forest Management Plan
- 3.2.2. To identify the economic, environmental and cultural values within their forests and to ensure that these values are fully considered prior to any management activities upon their land

### **3.3. Industry**

- 3.3.1. In consultation with landowners and other relevant bodies, to ensure that natural and cultural values are adequately assessed and protected before commencing any operations or activities in forest areas
- 3.3.2. To ensure that developments do not unfairly impair the use of forest areas by other sectors.
- 3.3.3. To ensure that all necessary licences and regulatory requirements are met and that all operators under their control are properly trained to carry out their tasks.
- 3.3.4. To develop commercial opportunities for the sustainable use of natural resources.

## **4. Timber Harvesting**

### **4.1. Annual Allowable Cut**

- 4.1.1. The maximum Annual Allowable Cut (AAC) from the mature forest estate will be initially set at 1,500 m<sup>3</sup> with the approval of the Director of Agriculture, Forestry and Fisheries. This will be reviewed and may be extended by Cabinet up to a maximum of 3,000 m<sup>3</sup> only if the following conditions are present-
  - Expressions of interest from landowners indicate that more than 40% of the mature forest resource is potentially available for timber harvesting; and
  - Expressions of interest from processors indicate that there is a market for value-added local processing of the timbers; and
  - Timber licensees have robust planning and assessment systems in place to ensure that significant natural and cultural values are documented

and protected through the timber harvesting plan process (section 4.4 of this Forest management Plan).

- 4.1.2. The AAC will not be altered without the consent of landowners and the Cabinet.

#### **4.2. Landowner intent**

- 4.2.1. Landowners seeking to harvest their forest will register their interest with an approved licensee (see section 3.3), indicating the approximate area and preferred date of harvest.
- 4.2.2. Landowners will be encouraged to submit expressions of interest well in advance of planned operations to provide a sound basis for long term harvest scheduling and investment in processing capacity.

#### **4.3. Licensing**

- 4.3.1. Persons wishing to process or trade in timber must hold a Timber Processing Licence in accordance with the (draft) Forestry Act and Regulations.
- 4.3.2. A licensee must lodge by 30 June each year with the Director of the Department of Agriculture, Forestry and Fisheries a Harvesting Schedule that provides details of the location and area of forest that is proposed to be harvested within each of the following two years.
- 4.3.3. The Director will require a licensee to amend a Harvesting Schedule if it is deemed necessary to avoid harvesting in excess of the AAC or to avoid harvesting within sensitive areas such as wildlife habitats.

#### **4.4. Timber Harvesting Plans**

- 4.4.1. A licensee must prepare a Timber Harvesting Plan (THP) before harvesting any mature dense forest.
- 4.4.2. The THP should be prepared by the licensee in consultation with the landowners to ensure that sensitive or significant areas such as cultural sites, important habitat areas and caves are identified and excluded from harvesting operations.
- 4.4.3. A THP must comply with the provisions of the Code of Harvesting Practice for the Indigenous Forests of Niue
- 4.4.4. The THP shall be in an approved form (Appendix 5) and shall contain the following-
  - The consent in writing of the landowner to the provisions of the THP
  - A map showing the location and access route to the harvest area
  - The location of the boundaries of the harvest area and the method to mark the boundaries in the forest
  - Areas to be excluded from harvesting, including cultural sites, important habitat areas and caves
  - Planned harvest volume
  - The period for which the THP applies shall not exceed 12 months.



- 4.4.5. The Licencee shall, provide a copy of the THP to the Director of the Department of Agriculture, Forestry and Fisheries for verification at least 21 days before any operations commence.
- 4.4.6. The Director will require a licensee to amend a THP if it is deemed necessary to ensure that it complies with the Code of Harvesting Practice for the Indigenous Forests of Niue and with any policies that relate to the protection of sensitive areas such as wildlife habitats.
- 4.4.7. The Director may refuse approval of the THP if the licensee failed to comply with 4.4.6 above.

#### **4.5. Harvesting regime**

- 4.5.1. Forest harvesting will be done in a manner that maintains the natural forest structure and distribution of age classes. This means that harvesting should only take the older and larger size stems that are approaching natural mortality, allowing future growth to occur on the younger stems.
- 4.5.2. Trees will only be felled if their diameters exceed the limits in the Stem Diameter Cutting Limit Table.
- 4.5.3. No more than 30% of trees eligible for felling under the Stem Diameter Cutting Limit Table shall be felled.
- 4.5.4. Trees to be felled will be marked prior to the start of operations.
- 4.5.5. The period between harvest cycles will be no less than 20 years.
- 4.5.6. Damage to retained trees and understorey will be minimised by careful directional felling and the minimisation of skid tracks
- 4.5.7. Old trees with hollows, important fruit trees and trees with significant epiphytes (such as orchids and ferns) will be retained.
- 4.5.8. Very large trees and other trees or rocky outcrops with interesting features will be retained in areas used or likely to be used for ecotourism purposes.
- 4.5.9. Felling or skidding will be restricted from areas that contain significant cultural or environmental values, including wildlife habitat and caves.

#### **4.6. Boundary issues**

- 4.6.1. Landowner boundaries must be located in the forest before operations commence.
- 4.6.2. Buffers must be marked along all boundaries to a width of at least 25 metres. Boundary buffers will form an interconnecting series of 'habitat corridors' to provide undisturbed areas for wildlife.
- 4.6.3. No felling or skidding shall occur within boundary buffers.

**Stem Diameter Cutting Limit Table**

<b>Species</b>	<b>Diameter<sup>1</sup> (cm)</b>
Tuali Kanumea Moota Kolivao Tavahi Tava	60
<b>Kafika</b> Toi Le Le ata Le hau Kieto	50
Pomea Mamalava Koka Selie Hooto Oluolu Fetau Kahame Ai Fou Futu Ovava Piliva Pua Tuitui	40

<sup>1</sup>stem diameter at breast height over bark

## 5. Road access

- 5.1. Roads must be constructed and maintained in accordance with the Code of Harvesting Practice for the Indigenous Forests of Niue
- 5.2. The consent in writing must be obtained from the owners of all land upon which any road is to be built.
- 5.3. After the completion of harvesting the roads will be blocked to vehicular traffic and closed to allow natural revegetation.

## 6. Protected areas and buffers

- 6.1. Forest management will aim to ensure that the harvesting of timber and other forest products does not have a negative impact on sites that are important for the conservation of biodiversity, caves, cultural values, visual landscape, and ecotourism, including walking tracks and interpretation sites.

- 6.2. Buffers of undisturbed forest will be retained where necessary to protect important sites.

## **7. Control of weeds and fire**

- 7.1. Landowners will be responsible for the removal of introduced species, particularly invasive species, from their mature forests in order to maintain the natural ecology of the forest.
- 7.2. Heavy machinery will be cleaned before entering mature forest in order to prevent the spread of weed species.
- 7.3. Landowners and users will not burn vegetation in mature forest or in areas where the fire may spread to mature forest, particularly after harvesting operations, cyclones and drought conditions.
- 7.4. Where an operator contributes to the spread of the invasive species, then the operator will be responsible for its removal during and within 6 months after the operation.
- 7.5. The Department of Agriculture, Forestry and Fisheries in collaboration with the Department of Environment shall provide advice on remedial measures to control spread of invasive plant and animal species.

## **8. Land clearing and agriculture**

- 8.1. Mature forests will not be cleared for agricultural purposes.
- 8.2. In previously cleared and cropped forest, forest management will aim to ensure that-
  - 8.2.1. where agriculture is no longer sustainable the forest will be rehabilitated through either natural regeneration or the assisted planting of native species.
  - 8.2.2. where agricultural development is intended any clearing will be in accordance with best practice guidelines, as follows-
    - Bull dozer capacity shall not exceed D6 or equivalent.
    - Buffers are left around sites that are important for the conservation of biodiversity, caves, cultural values, visual landscape, and ecotourism.
    - Trees will not be felled or damaged if they are important for wildlife or for the demarcation of boundaries or are species that are prescribed in the Forest Regulations.
    - Disturbance of the soil layers is minimised.
    - Any timber from the clearing of trees is not wasted but is used wherever possible for processing or firewood.
    - The use of fire is minimised.
  - 8.2.3. Advice on forest management and on clearing guidelines will be provided by the Department of Agriculture, Forestry and Fisheries.

## **9. Hunting and harvesting of other forest products**

- 9.1. Hunting will be in accordance with the Wildlife Act and the Domestic Fishing Act and any other controls by government.
- 9.2. The harvesting of other forest products will follow the following principles of sustainable resource use-
  - Landowners may collect non-timber forest products (NTFPs) for their own use.
  - The collection of NTFPs for commercial use will be subject to the approval of a harvesting plan by the Director of the Department of Agriculture, Forestry and Fisheries.
  - Harvesting should ensure that the product is not fully removed from a harvest area and that there are sufficient retained specimens, seed sources or habitat to allow the recovery of the product to natural levels.

## **10. Disposal of rubbish**

- 10.1. Rubbish and waste will not be left in the forest and will be removed to an approved disposal site.

## **11. Tree plantings and agroforestry**

- 11.1. Tree plantings of local or introduced timber species will be encouraged to provide benefits such as a future resource of high value timber, to demarcate boundaries and to provide shade and shelter for agricultural crops.
- 11.2. Advice on the selection of species and the management of plantings will be provided by the Department of Agriculture, Forestry and Fisheries.

## **12. Ecotourism**

- 12.1. Ecotourism developments will be promoted as means of providing employment and commercial opportunities whilst highlighting the cultural, environmental and economic values of the forests.
- 12.2. Developments should be planned in an integrated manner that recognises and does not preclude other uses of the forest.

## **13. Training and education**

- 13.1. The Department of Agriculture, Forestry and Fisheries will provide information and advice on sustainable forest management under this forest management plan to landowners. Advice will be provided through consultations, field days, workshops and information leaflets.
- 13.2. Any person who holds a Timber Processing Licence will be responsible for ensuring that all workers and contractors are trained and competent to carry out the tasks under the licence.

## **14. Processing and marketing capacity**

- 14.1. The Department of Agriculture, Forestry and Fisheries will develop a Timber Industry Strategy with the aim of developing better utilisation and processing capacity for local timbers, including more value-adding and marketing of high value timber for furniture, interior linings and handicrafts for local and export trade.

- 14.2. The Timber Industry Strategy will be developed in consultation with landowners, timber industry and other potential processing or marketing organisations.

## **15. Forest certification and carbon trading**

- 15.1. The Department of Agriculture, Forestry and Fisheries will liaise with other nations within the Pacific region and review the opportunities for gaining recognition for sustainable forest management under the provisions of this management plan, as part of a broader regional certification system.
- 15.2. The Department will promote the ecological sustainability of forest management under this Plan as part of Niue's broader eco-friendly brand.
- 15.3. The Department will keep abreast of developments in carbon trading and it will provide advice to landowners on the opportunities that may arise for gaining carbon credits for specific forest management regimes.

## **16. Monitoring and reporting**

- 16.1. The Department of Agriculture, Forestry and Fisheries will conduct an annual monitoring program to assess the outcomes under this Forest Management Plan.
- 16.2. The monitoring will be done in consultation with landowners, using a standard assessment form (Appendix 6).
- 16.3. The Department of Agriculture, Forestry and Fisheries will, in collaboration with landowners, other government agencies and international bodies, establish and maintain an ongoing program to monitor the population of key indicator species.
- 16.4. An annual report on progress with the implementation of the Forest Management Plan will be prepared by the Director of the Department of Agriculture, Forestry and Fisheries and submitted to the Minister for Agriculture, Forestry and Fisheries for tabling in parliament. The annual report will contain the details listed in Appendix 7 and will be made publicly available.

## **17. Enforcement**

- 17.1. This plan will be subject to the enforcement provisions of the Forestry Act and Regulations and the relevant legislation including those listed in appendix 4.

## **18. Review of this Plan**

- 18.1. The Director of the Department of Agriculture, Forestry and Fisheries will conduct a review of this plan every five years from the commencement, or sooner if circumstances necessitate changes to be made to this plan.
- 18.2. The review will include-
  - An assessment and report by an independent party
  - Consultations with stakeholders, including landowners, processors and governmental agencies

- A report to Cabinet on the implementation of the plan and recommendations for any changes to the plan.
- 18.3. Any changes to the plan will be subject to the approval of Cabinet in accordance with the requirements of the (draft) Forestry Act.

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# Appendix 1 – Map of Niue showing major vegetation types





## Appendix 2 – List of major tree species

(source: Isaac Rounds, 2008 in de Vletter 2008 and Streil 2004))

Family	Species		Niuean Name	Uses
		Native(N) or Introduced (I)		
<i>Arecaceae</i>	<i>Cocos nucifera</i>	N	<b>Niu</b>	Many uses as the 'tree of life', including coconuts, palm leaves, timber
<i>Arecaceae</i>	<i>Pritchardia pacifica</i>	I	<b>Piu</b>	Used as a shade tree, leaves used for handicraft, sleeping mats and thatching.
<i>Anacardiaceae</i>	<i>Rhuus taitensis</i>	N	<b>Tavahi</b>	Bark used to make baskets and receptacles (kahi) for processing pia (Polynesian arrowroot), timber used for making canoes, firewood, carving and other uses.
<i>Anacardiaceae</i>	<i>Magnifera indica</i>	I	<b>Mago</b>	Fruits edible can also be used for making jams, chutney, juice. Leaves used as food wrappers. Timber used in light construction, firewood and musical instruments.
<i>Anacardiaceae</i>	<i>Spondias dulcis</i>	I	<b>Vi</b>	Edible fruits, bark, leaves and fruits used for medicinal purposes. Lightwood used for interior house construction.
<i>Annonaceae</i>	<i>Annona muricata</i>	I	<b>Talapo fua, fotofoto</b>	Edible fruits good for making fruit juices. Leaves used as a natural pesticide to control pests and disease in gardens.
<i>Annonaceae</i>	<i>Annona reticulata</i>	I	<b>Talapo fua, momole</b>	Edible fruits also used as fodder for pigs.
<i>Annonaceae</i>	<i>Cananga odorata</i>	I	<b>Motooi</b>	Fragrant flowers used in scenting coconut oil.
<i>Rubiaceae</i>	<i>GardeniaTahitiensis</i>	I	<b>Tiare</b>	Flowers used to make leis, scent coconut oil and other decorations. Wood also used as firewood.
<i>Apocynaceae</i>	<i>Neisosperma oppositifolium</i>	N	<b>Pao</b>	Wood used in construction, basket hanging hooks (taki), seed used as a famine food while the leaves are used to wrap fish for baking.
<i>Araliaceae</i>	<i>Polyscias multijuga</i>	N	<b>Tanetane</b>	Leaves used to cover earth ovens and also used as animal fodder. Trees also used as living fences and protection from sea spray.
<i>Barringtoniaceae</i>	<i>Barringtonia asiatica</i>	N	<b>Futu</b>	Grated seed used as a fish poison, fruits sometimes used as fishnet floaters. Leaves are used as linings for traditional earth ovens.

<i>Bombaceae</i>	<i>Ceiba pentandra</i>	I	<b>Vavae</b>	Cotton in the pods used as stuffing in pillows, mattresses etc. Light timber can also be used for light construction such as building canoes, cricket bats and handicrafts.
<i>Boraginaceae</i>	<i>Cordia subcordata</i>	N	<b>Motou</b>	Fine wood used for carving, canoe hulls, tools and back rests. Seeds are used in pea shooters and leaves are good mulch, compost and animal feed
<i>Boraginaceae</i>	<i>Tournefortia argentea</i>	N	<b>Taihuni</b>	The wood is used for making furniture, handicrafts, canoe planks, beams, posts, tools, drums, fishing rods and cricket bats. Flowers used to make leis and a paste in tapa making.
<i>Burseraceae</i>	<i>Canarium harveyi</i>	N ?	<b>Ai</b>	Seed edible and sap used to caulk canoes. Sap used to calk canoes while the bark is used to scent coconut oil
<i>Caesalpinaceae</i>	<i>Cassia alata</i>	I	<b>Mulamula</b>	
<i>Caesalpinaceae</i>	<i>Tamarindus indica</i>	I	<b>Tamalen</b>	A very good shade tree, ripe fruit eaten by children. The timber is used as firewood.
<i>Caesalpinaceae</i>	<i>Delonix regia</i>	I	<b>Pine</b>	Ornamental tree
<i>Caesalpinaceae</i>	<i>Leucaena leucocephala</i>	I	<b>Pepe</b>	Leaves used as fodder.
<i>Caricaceae</i>	<i>Carica papaya</i>	I	<b>Loku</b>	Edible fruits used in variety of ways.
<i>Casuarinaceae</i>	<i>Casuarina equisetifolia</i>	I	<b>Toa</b>	Grown as natural windbreaks, hardwood sued to make weapons, canoe parts, paddles, house posts, fishhooks and firewood. Sap used to make red-brown dye.
<i>Clusiaceae</i>	<i>Calophyllum inophyllum</i>	N	<b>Fetau</b>	Tree produces durable timber, sap used for caulking canoes and seeds used by children as marbles.
<i>Clusiaceae</i>	<i>Calophyllum neo-ebudicum</i>	N	<b>Tamanu</b>	Timber while flowers used to scent coconut oil.
<i>Combretaceae</i>	<i>Terminalia catappa</i>	N	<b>Telie</b>	Timber used to make canoes and slit-gongs, bark and leaves used to make black dye.
<i>Combretaceae</i>	<i>Terminalia richii</i>	I	<b>Malili</b>	Wood can be used for furniture and flowers used for scenting coconut oil.
<i>Ebenaceae</i>	<i>Diospyros elliptica</i>	N	<b>Kanume</b>	Valuable wood used for making handicrafts, timber and firewood. Edible fruits and barks are used for preparing medicines.
<i>Ebenaceae</i>	<i>Diospyros samoensis</i>	N	<b>Kieto</b>	Good timber tree and used for making furniture, warclubs and carvings.

<i>Elaeocarpaceae</i>	<i>Elaeocarpus tonganus</i>	N	<b>Malava, mamalava</b>	Timber and very good firewood.
<i>Euphorbiaceae</i>	<i>Aleurites moluccana</i>	I	<b>Tuitui</b>	Seeds used to make torches, ornaments and dye used for tattooing.
<i>Euphorbiaceae</i>	<i>Baccaurea seemanii</i>	N	<b>Koka</b>	Timber, bark utilized for making brown dye used to colour tapa.
<i>Euphorbiaceae</i>	<i>Excoecaria agallocha</i>	N	<b>Fetanu</b>	Very good natural wind breaks.
<i>Euphorbiaceae</i>	<i>Glochidion ramiflorum</i>	N	<b>Kahame</b>	Timber, leaves and bark used for native medicines.
<i>Euphorbiaceae</i>	<i>Macaranga harveyana</i>	N	<b>Le hau</b>	Leaves used to cover earth ovens and for wrapping.
<i>Euphorbiaceae</i>	<i>Macaranga seemanii</i>	N	<b>Le</b>	Timber used for making canoe parts.
<i>Euphorbiaceae</i>	<i>Omalanthus nutans</i>	N	<b>Fu mamala</b>	Bark used for making fishing nets and fishing lines, leaves have medicinal use.
<i>Fabaceae</i>	<i>Adenanthera pavonia</i>	I	<b>Pomea</b>	Seeds used in making necklaces and can also be eaten raw or roasted, wood used for handicraft and firewood.
<i>Fabaceae</i>	<i>Erythrina variegata</i>	N	<b>Gate</b>	Very good living fence post and a very good nitrogen fixing tree.
<i>Fabaceae</i>	<i>Inocarpus fagifer</i>	I	<b>Ifi</b>	Fruit edible.
<i>Flacourtiaceae</i>	<i>Xylosma samoense</i>	N	<b>palamu</b>	
<i>Hernandiaceae</i>	<i>Hernandia nymphaeifolia</i>	N	<b>Puka kula, puka uli</b>	Stems used to make canoes, firewood, furniture and carvings.
<i>Hernandiaceae</i>	<i>Hernandia moerenhoutiana</i>	I?	<b>Pipi</b>	Timber used in general construction.
<i>Lauraceae</i>	<i>Cryptocarya turbinata</i>	N	<b>Taputoki, tokitoki</b>	Very rare tree, bark used for scenting oils and making handicrafts.
<i>Lauraceae</i>	<i>Persea americana</i>	I	<b>Avoka</b>	Edible fruit
<i>Loganiaceae</i>	<i>Fragraea berteriana</i>	N	<b>Pua</b>	Good quality wood used for various purposes; flowers used to make garlands and scent coconut oil.
<i>Loganiaceae</i>	<i>Geniostoma rupestre</i>	N	<b>Tete</b>	Bark used in native medicines.

<i>Lythraceae</i>	<i>Pemphis acidula</i>	N	<b>Gigie</b>	Hardwood used to make spearhead of the tika spear.
<i>Malvaceae</i>	<i>Hibiscus tiliaceus</i>	N	<b>Fou</b>	Inner bark used for making traditional skirts, outside bark used as cordage.
<i>Malvaceae</i>	<i>Thespesia populnea</i>	N	<b>Milo</b>	Bark, leaves and fruits have medicinal properties. Good quality wood used to make handicrafts.
<i>Meliaceae</i>	<i>Aglaia saltatorum</i>	N	<b>Lagakali</b>	Flowers used to scent coconut oil, house construction and handicrafts.
<i>Meliaceae</i>	<i>Dysoxylum forsteri</i>	N	<b>Moota</b>	Timber used to make canoes and handicrafts.
<i>Meliaceae</i>	<i>Swietenia macrophylla</i>	I		Timber.
<i>Moraceae</i>	<i>Artocarpus altilis</i>	I	<b>Mei</b>	Edible fruit, trunks used as canoe hulls while the sap used to caulk canoes and leaves used to cover earth ovens.
<i>Moraceae</i>	<i>Ficua obliqua</i>	N	<b>Pualiki</b>	Roots used as cordage, leaves used for medicine.
<i>Moraceae</i>	<i>Ficus prolixa</i>	N	<b>Ovava</b>	
<i>Moraceae</i>	<i>Ficus scabra</i>	N	<b>Mati</b>	Seeds chewed by women.
<i>Moraceae</i>	<i>Ficus tinctoria</i>	N	<b>Ata</b>	Bark sometimes used as a rough cordage and formerly for tapa cloth.
<i>Moraceae</i>	<i>Streblus anthropophagorum</i>	N	<b>Atatu</b>	Leaves used as fodder
<i>Myrtaceae</i>	<i>Psidium guajava</i>	I	<b>Lala, kautoga</b>	Fruits eaten, young leaves are used to treat diarrhoea.
<i>Myrtaceae</i>	<i>Syzygium dealatum</i>	N	<b>Tuali</b>	Timber, moderately durable, susceptible to insect attack
<i>Myrtaceae</i>	<i>Syzygium inophylloides</i>	N	<b>Kafika</b>	Timber, durable, low susceptibility to insect and fungal attack
<i>Myrtaceae</i>	<i>Syzygium samarangense</i>	N	<b>Kolivao</b>	Timber, moderately durable, susceptible to insect and fungal attack
<i>Myrtaceae</i>	<i>Syzygium malaccense</i>	I	<b>Fekakai</b>	Edible fruit
<i>Nyctaginaceae</i>	<i>Pisonia grandis</i>	N	<b>Puka tea</b>	Wood used for making canoe parts.
<i>Oleaceae</i>	<i>Linociera vitiense</i>	N	<b>Ooto, hooto</b>	Timber good for building construction and firewood.
<i>Pandanaceae</i>	<i>Pandanus tectorious</i>	I	<b>Fa</b>	Important tree used in handicraft making.

<i>Pittosporaceae</i>	<i>Pittosporum brackenridgei</i>	N	<b>Kuiti</b>	Bark used in native medicines.
<i>Rhamanaceae</i>	<i>Alphitonia zizyphoides</i>	N	<b>Toi</b>	Wood used for various purposes.
<i>Rubiaceae</i>	<i>Guettarda speciosa</i>	N	<b>Panopano</b>	Wood used for various purposes.
<i>Rubiaceae</i>	<i>Ixora triflora</i>	I	<b>Moea</b>	Ornamental tree.
<i>Rubiaceae</i>	<i>Morinda citrifolia</i>	N	<b>Nonu</b>	Fruits reputedly have many medicinal properties.
<i>Rubiaceae</i>	<i>Tarenna sambucina</i>	N	<b>Manono</b>	Stems used for digging sticks and spear shafts.
<i>Rutaceae</i>	<i>Citrus aurantium</i>	I	<b>Moli kana</b>	Edible fruit.
<i>Rutaceae</i>	<i>Citrus limon</i>	I	<b>Tipolo fua</b>	Fruits used to marinate raw fish, make drinks, leaves used as a natural brew for tea.
<i>Rutaceae</i>	<i>Citrus reticulata</i>	I	<b>Moli menetalini</b>	Fruits edible when ripe and juice used to make drinks.
<i>Rutaceae</i>	<i>Citrus sinensis</i>	I	<b>Moli Kai</b>	Leaves boiled to make tea, wood used in light construction.
<i>Rutaceae</i>	<i>Micromelum minutum</i>	N	<b>Takapalu</b>	Hardwood reportedly use as crowbar.
<i>Santalaceae</i>	<i>Santalum yasi</i>	I?	<b>Ahi</b>	Heartwood used to scent oils, incense and mosquito repellent.
<i>Sapindaceae</i>	<i>Allophylus cobbe</i>	N	<b>Takatakpalu</b>	Matured strong branches used as husking sticks or planting sticks while flowers used for decorating necklaces.
<i>Sapindaceae</i>	<i>Elattostachys falcata</i>	N	<b>Lautaha</b>	Wood formerly used for weapons
<i>Sapindaceae</i>	<i>Pometia pinnata</i>	N	<b>Tava</b>	Tree sometimes used as timber, fruit edible.
<i>Sapotaceae</i>	<i>Planchonella garberi</i>	N	<b>Oluolu</b>	Wood used for making club and tools
<i>Sapotaceae</i>	<i>Planchonella grayana</i>	N	<b>Kalaka</b>	
<i>Sapotaceae</i>	<i>Planchonella samoensis</i>	N	<b>Kanumea, kanomea</b>	Timber, moderately durable. Seeds used for making necklaces.
<i>Sterculiaceae</i>	<i>Heritiera ornithocephala</i>	N	<b>Tafaki</b>	Wood reportedly used to make weapons.
<i>Sterculiaceae</i>	<i>Sterculia fanaiho</i>	N	<b>Kanatuata</b>	Bark formerly used in weaving baskets and hats.

<i>Tiliaceae</i>	<i>Grewia crenata</i>	N	<b>Lala uli</b>	Wood used in variety of ways.
<i>Ulmaceae</i>	<i>Celtis harperi</i>	N	<b>Piliva</b>	Slow-burning wood used to keep fire alight at night.
<i>Urtiaceae</i>	<i>Dendrocnide harveyi</i>	N	<b>Magiho</b>	Barks used to make tapa cloth.
<i>Urticaceae</i>	<i>Pipturus argenteus</i>	N	<b>Malege</b>	Useful medicinal tree and leaves used as pig feed.
<i>Urticaceae</i>	<i>Vitex trifolia</i>	N	<b>Lala tea</b>	Ornamental tree.

### Appendix 3 – List of biodiversity (terrestrial)

(from Environment Unit, Department of Community Affairs and Butler, D. (2001)

1. Plants – 175 native vascular species and 26 introduced species identified as potentially invasive
2. Native mammals – one species (*Peka* or flying fox)
3. Introduced mammals – rat (two species), house mouse, pigs, dogs and cats
4. Reptiles – five species of lizard, two geckos and three skinks
5. Invertebrates – 376 recorded species
6. Birds – 31 species, 6 seabirds, 10 shorebirds, 15 land birds
7. Land crabs – eight species of which the *uga* or coconut crab is the largest.

## **Appendix 4– List of Niuean legislation relevant to forest management**

(from Christy 2008)

### *1. Agriculture Quarantine Act*

The Act provides generally for the powers of quarantine officers, and it requires a permit for the import of any plant or plant material. Regulations provide specifically for “forest tree species”, the import of which is limited to “seeds which are inspected and treated as prescribed.” (Plant Quarantine Regulations reg. 19(2)). The import of all planting material of certain orchard species is prohibited.

### *2. Arms Act*

A permit is required for both import and possession of arms and ammunition. Although there is no mention of quantitative limits, in practice the amount of ammunition for which a permit will be issued is limited according to the number of firearms a person possesses. This is used as an indirect limit on hunting.

### *3. Commissions of Inquiry Act*

Commissions of Inquiry are appointed by the Cabinet and have the powers of judges to summon witnesses. The Constitution requires a Commission of Inquiry to examine any legislation that affects ownership of Niuean land.

### *4. Criminal Law Code*

The criminal law and procedure provisions of the Niue Act and the General Laws Act have been consolidated and reprinted as the Criminal Law Code. The crimes of particular interest for forestry are theft (which includes conversion and would apply to the theft of standing as well as cut timber); arson, trespass and animal trespass. Arrest without a warrant is permitted in the case of an offence punishable by imprisonment. In such cases or where “immediate and serious injury” is likely the arresting officer may enter premises as well. Seizure of evidence, on the other hand, is only permitted on the authority of a warrant.

The Proceeds of Crime Act applies to crimes punishable by one year or more of imprisonment. It provides for “forfeiture” of “tainted property” (the instruments or proceeds of a crime), as well as for the “confiscation” of the value of the benefit from a crime. It provides for the seizure of tainted property with a warrant.

### *5. Development Investment Act*

A foreign enterprise (defined in terms of shareholding) must be registered under the Act to do business in Niue. The Cabinet determines the incentives to be granted. The incentives override the Customs, Customs Tariff, Entry, Residence and Departure, and Income Tax Acts .

### *6. Domestic Fishing Act*

The Act prohibits taking or possessing coconut crabs of less than the size prescribed by regulations. The currently prescribed size is 36 millimetres thoracic length. It is also forbidden to export coconut crabs from 1 October to 1 March. The Domestic Fishing Act also provides a precedent for declaring a reserve.

### *7. Environment Act*

The Act provides for the appointment of “any appropriately qualified person to be an Environment Officer, including constables, quarantine officers, fisheries officers and public health inspectors.”

Officers have powers of inspection, but a warrant is required to enter “private residential premises”. So far only biosafety regulations have been made.

#### *8. Interpretation Act*

The Act defines a number of terms, including “owner” which, “in relation to Niuean land other than land held under lease or licence as defined in the Land Act 1969, means the mangafaoa or a member of the mangafaoa”. “Niuean land” is not defined in the Interpretation Act, but it is clearly defined in the Niue Act. Unless otherwise specified, no enactment binds the Crown.

#### *9. Mining Act*

The Act declares minerals on or under the surface of the land (but not sand or gravel, to which it does not apply) to be Crown property . Cabinet may take land for mining or require the owners to open it to mining. Landowners are compensated for losses, not including the value of minerals extracted. Mining requires a licence, which is issued by the Cabinet.

#### *10. Pesticides Act*

The Act would apply to forest pest control, although it does not make any specific mention of forest pests.

#### *11. Pig Control Act*

The Act requires the owners of pigs to keep them enclosed or tethered.

#### *12. Territorial Sea and Exclusive Economic Zone Act*

The Act contains a precedent for management plans. It authorizes the Director of Agriculture, Forestry and Fisheries to direct a fisheries officer “to prepare and implement a management and development plan for a designated fishery”. The plan does not need higher approval, but the Cabinet can declare exemptions to the plan.

#### *13. Village Councils Act*

The Act provides for local government. Each Village Council has the power to make bylaws, including for “agricultural, pastoral, horticultural and forestry industries and the economic use of Niuean customary land”. Bylaws must be approved by the Cabinet before they are effective. A Council may also make recommendations to Cabinet.

#### *14. Water Resources Act*

The Act is currently under revision. It will vest all groundwater (effectively the only resource there is) in the Crown (Niue Water Act 2012). It provides for the Director of Environment to control potential polluting activities. A “water pollution control licence” issued by the Director will be required for a number of activities, including logging operations and timber milling.

#### *15. Wildlife Act*

The Act empowers the Cabinet to protect any species of bird or mammal partially or absolutely (note that the important forest species coconut crab is regulated under the Domestic Fishing Act.) The Wildlife Protected Species Notice 1991 declares wood pigeons and fruit bats to be “partly protected species throughout Niue, except for the period commencing on 1 December and ending on 31 December in each year.” The Act does not provide for monitoring of wildlife, for planning, or for management measures other than control of hunting.



## Appendix 5 – Template for Timber Harvesting Plan

# TIMBER HARVESTING PLAN

All operations under this THP must comply with the Code of Harvesting Practice for the Indigenous Forests of Niue, the Forestry Act and the Niue Forest Management Plan

Location of harvesting coupe:.....

Landowner:.....

Processor:.....

Planned harvest area:.....Planned harvest volume:.....

Period to which this THP applies: From:..... To:.....

### 1. Landowner consent

I .....(*name*) being an authorised representative of the landowner(s) for the area covered by this THP give my consent to the harvesting of the forest in accordance with the provisions of this plan.

Signed:.....(Landowner representative) Date:.....

### 2. Neighbour consent for road access (to be completed where a road crosses neighbouring land)

I .....(*name*) being an authorised representative of the landowner(s) for the land upon which a road is to be constructed/used give my consent to the construction/use of the road in accordance with the provisions of this plan.

Signed:.....(Landowner representative) Date:.....

### 3. Road access/construction

Road access for this coupe will be as shown on the attached map. New roads will be constructed to avoid sensitive areas and to minimise the disturbance of soil and rocky outcrops. Roads will be drained to disperse run-off and avoid ponding.

New roads will be closed to vehicular traffic after the completion of harvesting in order to allow the natural rehabilitation and regeneration of the forest.

### 4. Boundary Marking

The harvesting boundary will be located at least 50 m from the boundary of any neighbouring land.

The harvesting boundary will be marked in the forest before operations commence using .....(*method*)

Boundaries will be marked by .....(*person*)

**5. Tree marking and felling**

Trees will be marked for felling by .....(person).

Tree selection will be in accordance with the Stem Diameter Cutting Limit Table and no more than 30% of trees shall be felled.

Tree felling will be carried out by a trained tree faller using directional felling techniques to ensure the safety of all operators and to minimise damage to the tree and to the retained trees and understorey vegetation.

**6. Protection of sensitive areas**

Sensitive areas, including cultural sites, caves and trees that are important for habitat (nesting) and food, have been identified through consultation with landowners and .....(list any other sources of information) and are marked on the attached map.

These areas will be marked in the forest by .....(person) before operations commence.

No felling or machinery movement is permitted in these areas.

**7. Fire Protection**

Logging slash will not be burned. All machines, including chainsaws will be maintained in good condition to prevent machinery fires.

**8. Forest Hygiene- Fuels, Rubbish and Weeds**

Machines will be maintained in good condition to prevent the leakage of petroleum products. The storage of fuel and the fuelling and servicing of machines will be carried out on level ground within an appropriately bunded or contained area.

All rubbish must be removed to an approved disposal site.

Machinery will be cleaned before entering the forest in order to prevent the spread of weed species.

**9. Map**

Map to be attached to show-

- The location and boundaries of the harvesting coupe
- The road access
- The location of areas excluded from harvesting
- Major landing sites

**Name of the person who has prepared this THP:**.....**Date:**.....

Signed:.....

**Copies of this THP are to be provided to the following persons at least 21 days before operations commence-**

- 1. Director, Department of Agriculture, Fisheries and Forestry**
- 2. Landowner representative**

## Appendix 6 - Checklist for the Monitoring and Evaluation of Harvesting Operations under the Niue Forest Management Plan

<b>Date of Timber Harvesting Plan:</b>		<b>Monitoring Officer:</b>	<b>Date:</b>
<b>Forest area:</b>			
<b>Sawmill/processor:</b>		<b>Harvesting Contractor:</b>	
<b>No.</b>	<b>Questions</b>	<b>Comments</b>	<b>Score</b>
<b>Planning</b>			
<b>1</b>	Does the THP comply with the requirements of the Forest Management Plan- <ul style="list-style-type: none"> <li>- Landowner consent given</li> <li>- Neighbour consent given to access road</li> <li>- Copy of THP provided to Director DAFF and landowner</li> </ul>		
<b>Road construction and maintenance</b>			
<b>2</b>	Are the new roads well located and correctly marked on the THP map?		
<b>3</b>	Are the roads adequately drained?		
<b>4</b>	Have the roads been closed upon the completion of harvesting?		
<b>Boundaries and protected areas</b>			
<b>5</b>	Have sensitive areas been correctly identified and protected?		
<b>5</b>	Are boundaries and buffers marked in the forest?		
<b>6</b>	Have harvesting and machines kept out of buffers?		
<b>Harvesting</b>			
<b>7</b>	Was the tree marking in accordance with the Stem Diameter Limits and no more 30% of trees harvested?		
<b>8</b>	Have the trees been directionally felled using safe techniques and maximum utilisation?		
<b>9</b>	Have the skid trails minimized soil disturbance and avoided sensitive areas?		

<b>9</b>	Are the landings correctly located, with soil disturbance minimized?		
<b>10</b>	Are all machines in good condition?		
<b>11</b>	Have fuels, rubbish and weeds been correctly managed in accordance with the Forest Management Plan?		
<b>Rehabilitation, reforestation</b>			
<b>21</b>	Has the forest been left in a state that will result in good rehabilitation of tracks and roads and good regeneration and growth of the forest?		
	<b>Average score</b>		
<b>General comments and observations:</b>			

#### Scoring system

<b>Compliance Rating</b>	<b>Description</b>	<b>Score</b>
High	Fully compliant with the objectives of the Forest Management Plan and achieved a very good result	<b>4.0</b>
Sound	Generally compliant and has achieved an acceptable result without any significant adverse impact	<b>3.0</b>
Unacceptable	Non-compliant and has achieved an unacceptable result and/ or serious adverse impact	<b>1.0</b>
Not Assessable	<ul style="list-style-type: none"> <li>• The condition/situation does not occur or operations have not commenced</li> <li>• Insufficient or no objective evidence to make a judgment</li> </ul>	<b>NA</b>

# Appendix 7- Template for Annual Report on progress with the implementation of the Niue Forest Management Plan

## Report for the Year ending 30 June 20..

### 1. Timber harvesting

- 1.1. Volume of timber harvested.....
- 1.2. Area of forest harvested.....
- 1.3. Number of current Timber Licences.....
- 1.4. Number of current Timber Processing Licences.....
- 1.5. Number of Timber Harvesting Plans submitted.....
- 1.6. Number of monitoring assessments conducted by DAFF.....
- 1.7. Results of monitoring assessments-
  - 1.7.1. Average standard achieved.....
  - 1.7.2. Proportion of operations that met or exceeded the minimum standard.....
- 1.8. Number of enforcement actions taken.....
- 1.9. Details of enforcement actions.....

### 2. Processing capacity and trade

- 2.1. Current processing capacity.....
- 2.2. New developments.....
- 2.3. Volume/value of timber exports.....
- 2.4. Volume/value of timber imports.....

### 3. Monitoring of biodiversity

- 3.1. Results of population monitoring surveys for key indicator species.....  
.....

### 4. Training and education

- 4.1. Number of workshops, training programs or meetings with landowners or processors regarding the Forest Management Plan.....

### 5. Other developments

- 5.1. Ecotourism – number of operations and new developments.....
- 5.2. Forest certification and carbon trading – new developments.....

### 6. General comments on the state of Niue's forests.....