

Forest Management Plan 2019 – 2029

Public Document

Mekong Timber Plantations
Co.,Ltd.

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Abbreviations

AFI – [Acacia Forest Industries Sdn Bhd](#)

ESIA - Environmental and Social Impact Assessments

EMP – Environmental Management Plan

EPRP – Emergency Preparedness and Response Plan

ESMMP - Environmental and Social Management and Monitoring Plan

EVMS - Event Management System ([PeopleTray](#))

FMP – Forest Management Plan

FSC® – [Forest Stewardship Council®](#)

GIS – Geographic Information System

HCV – High Conservation Values

HCVF - [High Conservation Value Forest](#)

IFC – [International Finance Corporation](#)

ILO – [International Labour Organisation](#)

JV - Joint Venture Agreement

MAF – [Ministry of Agriculture and Forestry](#)

MAS – Marker Assisted Selection

MTP – Mekong Timber Plantations (Laos)

OGS - Out Grower Scheme

LPFL - Oji Plantation Forest (Laos) Co. Ltd

R&D - Research and Development

RTE - Rare, threatened and endangered species

SOP - Standard Operating Procedure

SPH – Stems per Hectare

TAFF – [Tropical Asia Forestry Fund](#)

1. Introduction

1.1. Operating Framework

Mekong Timber Plantations (MTP) is obligated to meet the environmental and social sustainability standards required for [Tropical Asia Forestry Fund](#) (TAFF) investment projects under [New Forests](#) Asia's management of TAFF. Summaries of these policies are in the:

- [New Forests Responsible Investment Policy \(2015\)](#); and
- [New Forests Corporate Social and Environmental Policy \(2014\)](#).

New Forests Asia and therefore MTP under TAFF, have been a signatory to the [United Nations Principles for Responsible Investment](#) since 2010, with a demonstrated commitment to integrating environmental, social, and corporate governance principles into investment activities, decision-making processes, and on-the-ground Project management.

Under the TAFF and New Forests Asia's Corporate Social and Environmental Policy, MTP is committed to the following standards:

- [Forest Stewardship Council](#) (FSC) Certification within three years of Project acquisition;
- [International Finance Corporation's \(IFC\) Performance Standards](#);
- [IFC General Environment, Health, and Safety Guidelines \(2007\)](#); and
- [IFC Environmental, Health and Safety Guidelines for Forest Harvesting Operations \(2007\)](#).

1.2. Scope and Purpose

The purpose of the FMP is to ensure that MTP:

- set policies and objectives for management which are environmentally sound, socially beneficial and economically viable;
- has an implemented FMP which is entirely consistent with MTP policies and management objectives;

- has a FMP which describes the natural resource and explains how MTP will meet FSC certification;
- regularly updates the MTP with results of monitoring, stakeholder engagement, new scientific and technical information and to respond to changing environmental, social and economic circumstances;
- makes available a summarised FMP, excluding confidential information to affected stakeholders and proactively engage with these stakeholders on the FMP; and
- communicate the FMP to staff to guide them and to make informed management decisions.

1.3. Who we are

[MTP](#) is a limited liability company registered and operating in the Lao People’s Democratic Republic (“Laos”). The company has a Government of Lao PDR (GOL) shareholding of 15%, with the remainder held by Lao Plantation Holdings, itself owned by international investors through [TAFF](#) and managed by Australian-based fund manager [New Forests](#) and is based on a 50-year concession agreement for 50,000 ha.

The company initially founded in 1999 as a joint venture between BGA Holding Asia Ltd (85%) and the Government of Laos (15%). A subsidiary of Oji Paper (Oji Laos Plantation Holdings) purchased the BGA shareholding in 2005, and the company was known as Oji Plantation Forest (Laos) Co. Ltd (LPFL).

The transfer of Oji shares in LPH happened in March 2017 to TAFF, and the company was renamed to Mekong Timber Plantations Co. Ltd in January 2018.

This first trial planting started in 2000.

The Company currently has 24,099 ha of concession land under management, which mostly consists of short-rotation Eucalyptus and Acacia plantations, seasonally flooded areas and temporary unplanted areas, spread in clusters in rural areas in Bolikhamxay and Khammouane Provinces. The existing plantations or the unplanted concession area are located within the boundaries of 133 villages across nine districts in these two provinces.

Also, the Company operates an Out-Grower Scheme (OGS) consisting of approximately 5,000 individual farmers, growing Eucalyptus or Acacia with an average plot size of one hectare. MTP has recently [partnered with the IFC](#) to provide advisory support for the OGS.

The plantations were founded in 1999 as a joint venture between the Laos Government and a subsidiary of Oji Paper for the production of hardwood pulp. New Forest’s investors have purchased the 85% shareholding held by Oji, with the Laos Government remaining as a 15% shareholder. MTP will continue to manage the Eucalyptus plantations but will phase out the Acacia plantations over time.

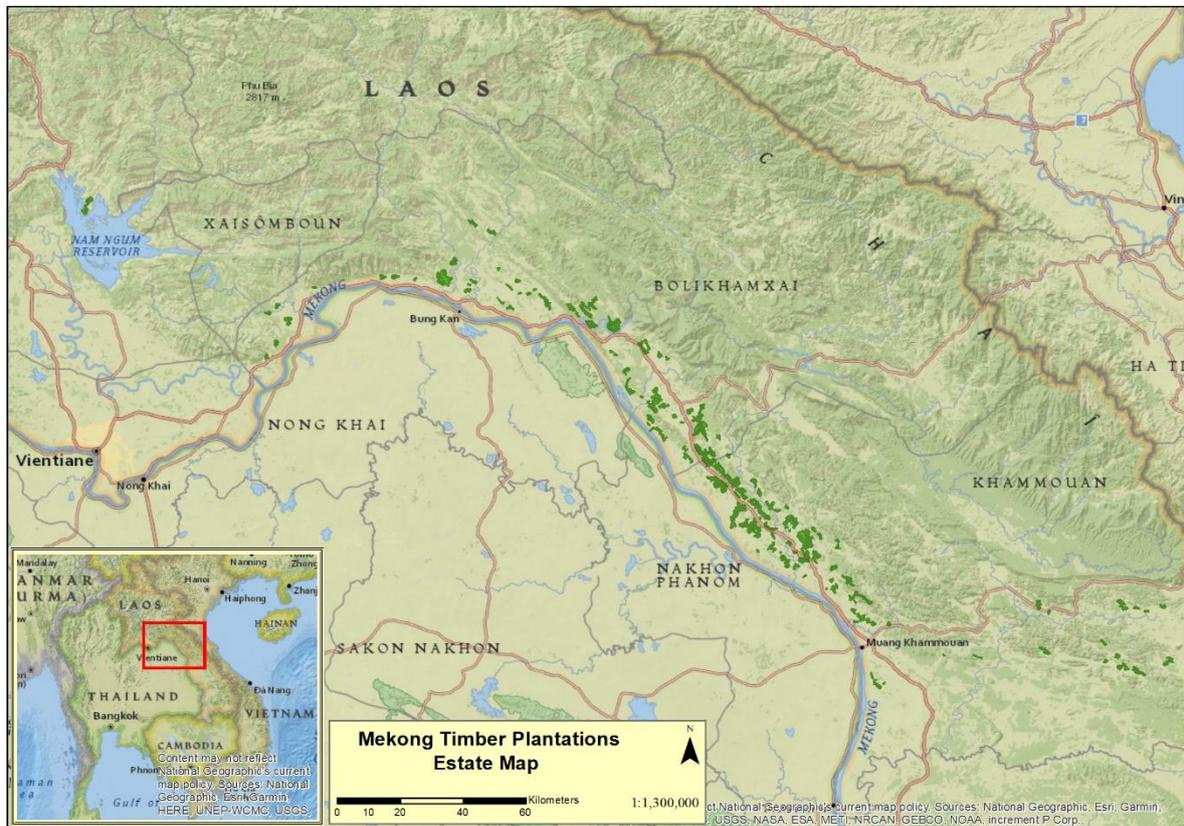


Figure 1.1 MTP

Note: For the latest map consult with the MTP Resource Department

1.4. FMP Implementation

To implement the MTP strategy, the FMP is the primary set of tools. Within the management plan, the focus is applied to the resource information collection and utilisation, FSC and Occupational Health and Safety Systems.

The FSC Principles & Criteria framework (FSC P&C) is based on a standard environmental management system structure and specifically includes:

- i. Statutory register.
- ii. Identification and assessment of the significance of environmental aspects and impacts of company activities.
- iii. Management objectives and targets.
- iv. Monitoring process for significant impacts.
- v. Operating conditions and controls in a series of Best Operating Practices.
- vi. Process for managing non-conformance and corrective actions to drive continual improvement.

How management objectives are achieved are documented within the MTP's:

- a. The Strategic and the Annual Business Plan.
- b. Resources systems (through data collection, data management, plantation and business modelling).
- c. Policies, Procedures and Operating Standards within the Standard Operating Procedures.

MTP aims to continuously develop management practices that achieve the best-balanced outcome for its business, for the environment and the adjacent community.

SOP's express the objectives, procedures and technical specifications for plantation management. They also identify responsibilities under the business, environment and community components of the stewardship program.

A clear message is conveyed about MTP's intent for each activity to all persons operating on MTP concession area. And finally, documentation for control of forest management and

harvesting operations is available to all regional operational staff through the intranet and printed copies.

The scope of SOP documents varies from broad over-arching policies such as the Environmental, Operations and OH & S Policy which are relevant to all MTP's activities, to procedures and operating standards which are specific to one aspect of the business. The SOP's are periodically internally reviewed to incorporate new knowledge or field experience from monitoring and auditing.

Best Operating Practice documents used in forest management cover the following activities:

- Operational planning and management;
- Site preparation;
- Planting;
- Weed control;
- Plantation nutrition;
- Pest management;
- Fire protection;
- Road construction and maintenance; and
- Timber harvesting SOP.

MTP's management objectives are to manage the plantation estate to deliver value to the investors in a way that ensures sustainability, and this is demonstrated through good Forest Stewardship.

The Company plans and manages its plantation operations to be economically viable, socially acceptable and environmentally responsible. It is committed to the protection of its employees, contractors and other parties legally involved with Company assets, and will take all practical steps to prevent personal injury and damage to property.

2. Sustainable Forest Management

2.1. Certification

MTP believe in sustainable forest management and aim to have our certification to the Forest Stewardship Council (FSC®) in place by 2019.

Accreditation of our forest management systems, against the FSC® standard, provides an independent third-party assessment of MTP's performance against sustainability requirements. MTP requires that all staff, contractors, consultants and visitors comply with the FSC® principles as described below.

Principle 1 - MTP shall comply with all applicable laws, regulations and nationally ratified international treaties, conventions and agreements.

Principle 2 - MTP shall maintain or enhance the social and economic well-being of workers.

Principle 3 - MTP shall identify and uphold Indigenous Peoples' legal and customary rights of ownership, use and management of land, territories and resources affected by management activities.

Principle 4 - MTP shall contribute to maintaining or enhancing the social and economic well-being of local communities.

Principle 5 - MTP shall efficiently manage the range of multiple products and services of the forestry asset to maintain or enhance the long-term economic viability and the range of environmental and social benefits.

Principle 6 - MTP shall maintain, conserve and restore ecosystem services and environmental values of the forestry asset, and shall avoid, repair or mitigate adverse environmental impacts.

Principle 7 - MTP shall have an FMP consistent with its policies and objectives and proportionate to the scale, intensity and risks of its management activities. The FMP shall be implemented and kept up to date based on monitoring information to promote adaptive management. The associated planning and procedural documentation shall be sufficient to

guide staff, inform affected stakeholders and interested stakeholders and to justify management decisions.

Principle 8 - MTP shall demonstrate that progress towards achieving the management objectives, the impacts of management activities and the condition of the Management Unit, are monitored and evaluated proportionate to the scale, intensity and risk of management activities, to implement adaptive management.

Principle 9 - MTP shall maintain and enhance the High Conservation Values Forest (HCVF) in the forestry asset by applying the precautionary approach.

Principle 10 - Management activities conducted by or for MTP shall be selected and implemented consistent with MTP's economic, environmental and social policies, objectives and in compliance with the FSC® principles and criteria collectively.

2.2. Operating Rules

Natural and plantation forests in Laos PDR are managed according to the Forestry Law No 6 of 2007. The Forestry Law determines the basic principles, regulations and measures on sustainable management, preservation, development, utilisation and inspection of forest resources and forestland, promotion of regeneration and tree planting, and increase of forest resources in the Lao PDR aiming at maintaining a balance of nature, making forest and forestland stable sources of living and use for the people, ensuring a sustainable condition and protection of the environment, water resources, protection from soil erosion and maintenance of soil quality, protecting plants, tree species wildlife and aquatic life, as well as contributing gradually to national socio-economic development.

2.3. Forestry Strategy 2020 Lao PDR (FS 2020)

The Lao PDR Government (GOL) has developed an integrated approach of conservation and sustainable forest management.

FS 2020, which is endorsed by the GOL, is the official document guiding the development of the forestry sector in accordance with national socio-economic development plans and environmental conservation measures. It is the foundation for the formulation of annual and medium-term forestry related work plans of both the Government and cooperation programs

and projects. Owing to socio-economic development dynamics and environmental condition changes, FS 2020 will be regularly reviewed and updated accordingly.

The objectives of the Forestry Strategy 2020 (FS2020) are to define and agree on a set of policy and institutional arrangements and to allocate relevant roles and responsibilities among the main stakeholders to achieve sector objectives and targets through implementation of the chosen strategies, policies and actions.

More directly, the strategy provides guidelines to strengthen the management within the forestry sector, so those sector objectives are efficiently achieved. In doing so, a further aim of FS2020 is to attract and focus donor support and to provide a framework for the coordination of donor activities.

2.4. Legal Framework

The company acknowledges that it must work within the legal parameters set by the legal system at all levels of Government.

In managing the area, MTP will operate in accordance with the legal framework and the [Lao PDR Official Gazette site](#). The website of The Official Gazette is the official source for all legally enforceable primary and subsidiary legislation of general application for Lao PDR at the national, provincial and capital levels. Districts/Municipalities and villages have the option to publish legislation on the Official Gazette but may also post legislation in other local media or post it in a way that people can access it easily.

A description of the website and legal processes are provided in both Lao and English language, but to date, only Lao language versions of legislation are published in the Official Gazette. The [Lao Trade Portal](#) provides unofficial English translations for some of the legislation, and the [National Assembly website](#) includes unofficial English translations of some laws.

MTP recognise that our plan for sustainable forest management is not a fixed one, but a journey. What constitutes a sustainably managed forest today will change over time as science improves, the market evolves, and stakeholder values change.

For MTP, sustainable forest management means looking after our environment, respecting our heritage and culture, considering our neighbours and stakeholders in our activities, keeping our people safe and growing a sustainable timber crop.

2.5 MTP Approach

MTP will take the following approach with all requirements for FSC certification:

- *identify which risks are present, potentially present or currently absent in the area in which MTP operates;*
- *identifying risk mitigation strategies and developing plans to mitigate these risks; and*
- *ensure changes to risks are monitored through specific monitoring indicators so that management plans can be updated or improved, ensuring the long-term sustainability of MTP.*

3. Policy Statement and Objectives

3.1. MTP Vision and Mission

Vision

To be the recognised leader in responsible, sustainable, and value-added plantation forestry in Laos.

Mission

MTP is a socially, environmentally responsible and sustainable plantation forestry company.

MTP provides employment and brings development in remote areas of Laos.

MTP provides direct foreign investment, foreign exchange income, international forestry knowledge and technical skills.

MTP expect to be judged on our social, environmental and economic performance, by our stakeholders, employees, customers and the communities in which we operate.

Objective

Our objective is to increase the value of the forestry asset under our control.

Firstly, through using superior silvicultural practices and secondly through the ongoing establishment by using improved clonal Eucalyptus material.

MTP will achieve the vision and objective by:

1. Maximising productive land area.
2. Optimising biological growth.
3. Optimising operational costs and revenue.
4. Managing legal, commercial and physical risks.
5. Accurately describing and modelling our forest asset.
6. Operating sustainably and ethically.

3.2. Management Goals

In support of our vision, mission and objectives, MTP management will pursue the following management goals:

1. Abide by the applicable Lao PDR laws, regulations and nationally-ratified international treaties, conventions and agreements.
2. Provide a flow of timber and agricultural products within specification and promptly to meet commitments and the requirements of the business plan.
3. Provide and maintain a safe working environment for staff, contractors and visitors.
4. Maintain and where possible, improve site productivity through better management practices and a tree improvement program.
5. Identify and help protect threatened species and threatened ecological communities located on or adjacent to a company managed to land and where possible help local communities protect areas of significant value.
6. Maintain water quality, identify and manage well any wetlands and riparian zones on or adjacent to managed lands.
7. Maintain a balance of plantation age classes to provide a sustainable dividend to investors as well as maintaining long term social and economic benefits to the local community.
8. Limit adverse impacts of plantation operations to the managed lands.
9. Maintain or enhance environmental values on or adjacent to managed lands; with specific reference to wildlife corridors, pockets of native vegetation of significant local value, such as spiritual forests within and adjacent to the plantations.
10. Continually improve the timber and agricultural resource and its management through directed research.
11. Protect the assets from damaging agents such as fire, insect attack and diseases.
12. Develop and manage good relationships with stakeholders and the community
13. Implement and maintain sustainable forest management practices according to the principles and criteria of the FSC®.
14. Implement good risk management principles that will reduce the impact of extreme or high-risk events.

15. Harvest the mature timber using environment-friendly harvesting systems.
16. Optimise costs by developing and implementing efficient systems and incorporating best practice.
17. Minimise the use of chemical pesticides and fertilisers in the forest operations.
18. Diversify timber products and markets.
19. Support local communities by encouraging their participation in activities which complement those of the company and facilitate activities and programmes which improve their well-being.

3.3. Scope and the tenure of the FMP

This FMP meets the requirements of Principle 7 (Management Planning) of the FSC® principles which state *“The Organisation shall have a management plan consistent with its policies and objectives and proportionate to scale, intensity and risks of its management activities. The management plan shall be implemented and kept up to date based on monitoring information to promote adaptive management. The associated planning and procedural documentation shall be sufficient to guide staff, inform affected stakeholders and interested stakeholders and to justify management decisions.”*

The tenure of this FMP is from 1st July 2019 to 30 June 2029.

An annual review is undertaken to ensure the FMP is executed accordingly to plan and a full review will be undertaken in 2024.

4. General Information

4.1. Name, Location and Legal status

The MTP resource is located across central Laos in the provinces of Khammoune, Bolikhamxai, Vientiane and Xengkuang. It consists of about 24,099ha, of which 11,256 ha are stocked with a viable tree crop, consisting of mainly eucalyptus and acacia species. A further 2,400 ha are considered suitable for establishment. The remaining areas have been mostly previously planted but have failed due to flood and fire damage. For the latest area statement contact the Resource Department.

4.2. Climate

The climate can be described as tropical savanna with distinct wet and dry seasons. A reasonable level of climatic variation can be observed within the area covered by the plantations with the Bolikhamxai province receiving slightly more rainfall and cooler temperatures compared to Khammouane province.

Typically, the dry season runs from December to March with rainfall less than 100mm. During the wet season, rainfall varies between 2,500mm near the Mekong River to 3,000mm per year at higher altitudes. The average daily temperatures range between 24°C to 29°C and minimum temperatures are between 13°C and 15°C in December and January.

MTP has three weather stations which continuously measure weather conditions and store the history to the cloud.

- Houaysiat (Paksan);
- Namkhou; and
- Song Hong (Hinboun).

The climate is considered to be Aw ([tropical savanna climate](#)) to the north and Am ([tropical monsoon climate](#)) to the south according to the [Köppen-Geiger](#) climate classification.

The above climatic conditions are satisfactory for growing Eucalyptus hybrids, but moisture stress could affect growth rates from February to April each year.

4.3. Geology and Soils

The lowland soils are developed from ancient uplifted flood plains where the nutrients have been leached out. The soils are classified as yellow-brown [podzols](#), a common soil in the tropics. They are sandy clay loams 30 to 50 centimetres deep over red-brown [laterite](#) subsoils. The soils are free draining, except in flood zones and allow good tree root development but will dry out quickly.

There is only a small amount of organic matter at the soil surface, soils are [acidic](#) (pH 4-5) and generally low fertility, particularly in phosphate.

4.4. Topography

Most of the plantation development is located within a zone approximately 200km long and 15km wide situated on flat or undulating topography at 150 to 200m above sea level along the Mekong River. The forest area is predominantly flat with 90% of the productive forest area located on slopes less than 5%.

4.5. Land Use and Vegetation

The flood area of the Mekong River, some of the lowlands and foothill positions throughout the region have been utilised for agriculture for many generations. Within the last 50 years, most of the semi-evergreen dipterocarp forest was harvested in this region and has mostly been replaced with a host of crops, including upland/paddy rice, sugar cane, [cassava](#), banana, rubber, eucalyptus, etc.

4.6. Infrastructure

The road network is made up of the following types of roads:

- Public roads – Route 13 is the most important road within the forest area. It follows the Mekong River from Vientiane to Cambodia. The road network is currently a major constraint on the socio-economic development of Laos, but progress is made to update the road infrastructure.

- Gravelled main roads - There are gravelled roads that start from Route 13 to various villages within the area. These are the main extraction routes and built to all-weather standards;
- Un-gravelled main roads - There are un-gravelled main roads which are currently active. These give access to the established plantation areas and provide dry-weather access for non-timber extraction activities; and
- Un-gravelled spur roads - spur roads exist within the forest area. They were built for past logging operations and now provide limited access.

MTP has a site office, nursery and staff accommodation at Hinboun and a site office at Paksan.

The primary facilities of the nursery include the following:

- Greenhouse and acclimatising areas;
- Holding areas – holding bays for clones following rooting;
- Mother plant area – the mother plant area will provide material for clonal production; and
- A Pumphouse, chemical storage room, road infrastructure, stormwater channels and water holding ponds.

4.7. Forest Zoning

The total concession area is approximately 50,000ha, but the GOL has no obligation to provide the full area. Currently, the area under concession is 24,099ha.

The Concession area is divided into two units (forest) for administrative convenience (Song-Hong and Paksan).

The area is divided into four principal zones, namely conservation, seasonally flooded areas, infrastructure and production areas. Some of the other open areas are earmarked to be converted into production areas in the future, e.g. some fallow land.

The principal zones shall be protected from illegal harvesting, settlement and other unauthorised activities. The protection measures are contained within MTP Standard Operating Procedures. Table 4.1 shows the current area of the four principal zones.



Table 4.1 MTP Principle Zones

Principle Zone	Area (ha)
Conservation	0
Seasonally Flooded Areas	4,741
Infrastructure and other areas	2,937
Production	16,421

¹The above area numbers are as off 30 June 2019. For the latest area numbers refer to the Resource Department.

5. Harvesting

MTP depends on logs sales to generate revenue as a contribution towards its ongoing plantation development activities. The current market is dominated by the sale of veneer, veneer logs and chip logs, to local and clients in Vietnam. At this stage, no Acacia logs will be exported due to the [log ban](#) implemented in 2016.

The total production per annum from 2019 is predicted to start at 61,000 m³ per annum and will increase after that until a sustainable volume is harvested.

5.1. Forest Harvesting

Timber harvesting is contracted out to timber harvesting contractors. Two systems will initially be employed until volumes warrant a fully mechanised system.

Good stands with a high stocking of trees per hectare will be harvested via a simple mechanical method and stand with a low stocking per hectare will be manually harvested.

Harvesting SOP's are in place for all contractors and MTP staff involved in timber harvesting, extraction and haulage activities. The key objectives of the standards are as follows:

- Ensure the highest level of safety is achieved during operations. MTP uses the "[Environmental, Health and Safety Guidelines for Forest Harvesting Operations](#)" from the IFC as safety recommendations;
- Maximising the value of standing timber;
- Protecting the environmental value of the forest; and
- Ensuring no loss of productivity to the site.

Detailed harvesting plans are prepared on an annual basis addressing planning requirements, roading provision and transport planning. The annual harvesting area starts around 400 ha per annum and will increase over the next few years.

The harvesting of logs will produce an estimated 60% sawlogs from the annually harvested areas, while the remaining will be pulp logs. However, this is subject to change depending on the specific site, which is harvested, and some stands may yield very low sawlog volumes. All

logs will be processed by a third-party, with the end products intended to include veneer, saw logs and pulp.

5.2. Supply Chain

The chain of custody for MTP logs starts at the block (stand level). The define forest area ends before the log depot.

The logs are graded into the following grades:

- Veneer logs; and
- Pulp logs.

Any quality or other complaints from the clients are recorded into Event Management System (EVMS) and are thoroughly investigated according to the SOP to ensure a non-recurrence of the issue.

6. Plantation Development and Management

6.1. Objectives

The primary objective is to provide the highest quality Eucalyptus veneer and saw logs at the lowest cost to maximise economic returns.

Secondary objectives are to provide employment opportunities for local people, [including youth](#), local contracting companies, and to maintain or enhance environmental quality by safeguarding biodiversity and protecting soil and water resources.

6.2. Species and site matching

The matching of species to planting sites is an essential consideration in the successful establishment of commercial forest plantations.

MTP Research and Development (R&D) continues their effort to search for suitable species conducive to the site in the concession area.

The growth performance and timber quality of these species are tested by the R&D team on different sites within the concession area. Following a thorough evaluation of the overall species suitability, particularly regarding growth, quality, and market, value decisions will be made on the inclusion of some of these species into the reforestation scheme.

6.3. Planting Materials

It is MTP's policy to use the best quality planting materials for its plantations. Currently, the following clones are planted with the estimated percentage in brackets:

- PC1-15 (45%)
- CP10-1 (12.5%)
- CP1-6 (12.5%)
- PC4-9 (12.5%)
- HB20946-2 (11.5%)
- E. pellita (5%)
- Gondwana selection (1%)

6.4. Nursery

MTP has a central nursery located close to the Song-Hong office. This is used to raise planting stock from cuttings. Current practice is to sow, germinate and grow seedlings over a 10 to 12 week before despatch to the field for planting.

Currently, high-quality genetic stock is sourced from [Sabah Softwoods](#) and [VAFS](#) in Vietnam.

The nursery management is documented in a series of SOP's covering each operation undertaken in the nursery.

The nursery was rebuilt during 2017 so that MTP could accommodate the growth of cuttings. The infield planting window is limited to two months per year (May/June).

To ensure "fresh" plants are sent to the field, stocking/bulking up of plants must be restricted to a minimal. Plants that are stocked for too long in the nursery overgrow in terms of top growth and difficult to control plant growth for plants older than 5 to 6 months.

Older plants lose their vigour and ability to establish infield due to rootbound/moribund root systems and reduction of white roots.

Increased risk of diseases in the nursery with the stocking of older plants. Canopies are denser, which reduces airflow, and in combination with the shedding of older leaves, this creates conditions favourable to fungal diseases.

The following practices will be implemented to widen the planting window:

- Limit the production to four crops in the nursery, starting propagation Mid-November and despatching last stock at the end of the planting season. Following this crop production schedule will minimise the stocking/bulking period to a minimum and ensure plants are as fresh as possible when despatched to the field.
- Implement growing systems and best practices which will ensure the propagation of plants within a 10-week growing period. Currently, the propagation periods are as follows:
 - Rooting/Germination – 3 weeks
 - Acclimatising – 1 week

- Grow-out and hardening – 6 weeks

6.5. Size of the plantation area

The plan is to establish the maximum area of the concession area consistent with the need to protect environmental and social values. It is anticipated that this will result in the total plantation of about 16,421 ha.

6.6. Plantation Establishment and Maintenance

The forest asset area will be managed with the objective of producing high-quality sawlogs on a 12-year rotation. Silviculture practices are followed so that wood production is maximised.

6.7. Pests and Diseases

The major pests and diseases that are threatening the productivity of MTP's Eucalyptus plantations can be categorised into five diseases, namely, leaf disease, wilt, stem canker and heart rot.

MTP uses a combination of practices and control measures to manage pests and diseases, which includes regular monitoring and implementing research results in conjunction with external parties.

Other pests and disease controls include:

- Hygiene at the nursery to reduce the risk of pest and disease issues;
- Good quality seedlings to ensure tree vigour and reasonable weed control;
- Selecting species and clones with resistance to pests and diseases in collaboration with the; and
- Limited use of chemical control through the application of fungicides or insecticides.

6.8. Fire Prevention and Control

The fire management plan divides the forest area into eight areas for effective fire control and suppression. Road networks are identified for accessibility, and permanent water bodies such as ponds and streams, or rivers have been identified across the plantation.

The Fire Danger Rating (FDR) is used daily to manage fire management activities. Fire prevention and control is detailed in the MTP Fire Management Plan.

7. Plantation Research and Development

7.1. Objectives

The R&D programs are designed to create a more valuable forest asset and sustainable business through improving planting material, silvicultural practices, and reducing biological risks.

7.2. Research and Development Objectives

R&D will be focused on achieving the following outcomes:

- a. To increase positive returns on investment to the shareholders through growing a tree crop primarily to produce larger dimension saw and veneer timber.
- b. To ensure social and environmental parameters set by the FSC® and IFC are abides by.
- c. To minimise exposure to extreme and high risks to the plantation.

This is to be achieved through the following specific criteria:

1. Genetic improvements to the main crop (Eucalyptus genus), capturing the first exponential genetic gains in both growth rate and timber properties within the next 5-10 years.
2. Developing on a more limited scale a second genus (or eucalypt species/hybrids) that give the company some flexibility in the event of disease outbreak and better use of some of the poorer (sand/wet) sites.
3. Developing more cost-effective silvicultural techniques alongside genetic improvements.

7.3. Collaboration

To leverage MTP's exposure to R&D, the company will look to collaborate with other similar companies, and organisations, to maximise its opportunity in shared costs, information, and germplasm.

This includes the following:

1. Godwana Genomics

Gondwana Genomics is the world's only provider of advanced genetic screening techniques, which have been developed in Australia. They specialise in accelerating plantation performance through long-awaited genetic marker-assisted selection (MAS). The advanced MAS screening technology, developed through 10 years of plantation research, will assist [MTP to unlock the genetic potential of trees](#). This newly developed next-generation genotyping platform allows for cost-effective implementation of a testing program, fast turnaround and high accuracy. The genetic markers have been proven to predict tree performance highly accurately, deliver substantial gains in tree growth, density, pulp yield, energy value and disease resistance in trees.

2. Forestry Specialists

[Paul Warburton](#) – Tree Breeding

[Colin Smith](#) – Silviculture

[Heinz Reinstorf](#) – Nursery Practices

3. Other

Working with and sharing genetic material with other [New Forests](#) investment companies, e.g. Acacia Forests Industries ([AFI](#)) in Malaysia.

7.4. R&D Prioritisation

R&D projects are evaluated and ranked using the following criteria:

- a. Ease of implementation.
- b. The time before value can be realised.
- c. Potential value gain or loss to the company.
- d. Cost of implementing the project.

The R&D program is detailed in the MTP Research and Development Strategy document.

8. Environment, Social, Wildlife and High Conservation Value Forests

8.1. Environmental and Social Impact Assessments

An Environmental and Social Impact Assessment (ESIA) and an Environmental Social Management Plan were compiled by Chareun & Associates during 2010 with an Environmental Compliance Certificate granted by the Government of Lao. An update of the ESIA was completed in 2018 by Earth Systems.

The focus of the updated ESIA was to assess:

- the current baseline conditions across MTP's concession and to focus on current and potential future physical, biological, and social impacts and potential benefits; and
- to identify likely residual impacts given the implementation of management and mitigation measures provided in the Environmental and Social Management and Monitoring Plan (ESMMP).

The ESIA identifies several key aspects that will require careful management to ensure impacts are minimised for the Project:

- The Farmer Extension Program will have to be changed to ensure sustainability and relevance;
- Control of fire risk including appropriate planning and preparation;
- Careful evaluation of the seasonally inundated areas;
- Ensuring UXO risk management in Moderate to High-risk areas to minimise OHS risks;
- Management of road infrastructure and key operational areas to protect from erosion and general water quality impacts;
- Careful management of the "Community Work Contract and Incentive Scheme";
- Ongoing consultation and engagement with affected communities; and
- Planning for decommissioning to ensure that Eucalyptus does not dominate that landscape upon cessation of the concession period, and restoration to the natural habitat or alternative productive purposes is achieved.

8.2. High Conservation Value Forests (HCVF)

HCVF are defined as having the biological, ecological, social, or cultural value of outstanding significance or critical importance (HCVRN, 2013), which is comprised of one or more of six High Conservation Values as per Table 9.2.

As part of the requirements for certification, MTP is required to:

- identify if High Conservation Values (HCV) are present, potentially present or absent in an area where development takes place;
- manage identified HCVs in collaboration with local stakeholders, identify threats to HCVs and develop plans to address them; and
- monitor changes in HCV's and HCV areas by setting indicators to assess the status of HCV's and HCV areas. MTP will then be responsible for monitoring to ensure management practices are effective.

There are various types of high conservation value forest (HCVF) which need to be identified, and a summary of this is given in Table 8.1.

Table: 8.1 HCVF Classification

HCVF Code	Description
1	Forest containing globally, regionally or nationally significant concentrations of biodiversity values 1.1 Protect areas 1.2 Threatened and endangered species 1.3 Endemic species 1.4 Critical temporal use
2	Globally, regionally or nationally significant landscape-level forests
3	Forests that are in or contain rare threatened or endangered ecosystems

4	Forest areas that provide essential services of nature in critical circumstances 4.1 Forests critical to water catchments 4.2 Forests critical to erosion control 4.3 Forests providing barriers to a destructive fire
5	Forest areas fundamental to meeting basic needs of local communities (E.g. subsistence, health)
6	Forest areas that are critical to local communities' traditional cultural identity

During 2018 a multi-disciplinary team from Earth Systems conducted a HCVF and HCV assessment based on the “Common Guidance for the Identification of HCV” and “Common Guidance for the Management and Monitoring of High Conservation Values”.

This HCV Assessment has been undertaken to:

- Identify HCV and HCVF within MTP’s current landholdings;
- Recommend management measures to maintain or enhance significant and critical environmental and social values throughout the greater MTP Concession Area;
- Identify threats to the persistence or rehabilitation of HCVs; and
- Develop a management and monitoring framework for high-value habitat that occurs within or adjacent current operational areas.

The results from the assessment found that no HCVF occurs within the MTP concession although some plantations on the western edge of the [Annamite Mountain Range](#) are adjacent to high-value habitats.

A risk assessment that has been conducted for the MTP Project ESIA, which considers the likelihood and consequences in determining a risk ranking for all parameters of concern for

ongoing management of the Project. The following threat assessment considers high risks for HCV only:

HCV1

- Fire Volatile eucalypt plantations enhancing the potential for wildfire (either escape from controlled burn for plantation establishment adjacent agricultural preparation, or hunting), with potential for spread to neighbouring higher value habitat in protection/conservation area or buffer zone.

HCV2

- Allocation of Protected Areas to concessions for other industrial activity by District or Provincial authorities;
- Continued practice of shifting cultivation within protected areas; and
- Illegal logging activities by outside entities.

HCV3

- Outside parties may log adjacent high-value forest areas with improved access.

HCV4

- Ignition of volatile Eucalyptus impacting adjacent high-value habitat.

HCV5

- Loss of Timber and Non-Timber Forest Products in plantation areas increasing pressure for resources on remnant habitat.

While MTP has no HCV, it has policies for habitat retention and enhancement. These policies are detailed in their ESIA. In summary, habitat restoration/enhancement includes:

- Restoring 2,500 ha within their current FMU to native habitat;
- Retaining natural forest buffers adjacent streams (10 m for perennial streams, 50 m for rivers); and
- Retention of large native trees and the contiguous forested area within plantation boundaries.

While the 2,500-ha restoration area will not qualify as HCVF until it has established successfully (if then), MTP will consider active restoration to enhance the likelihood these areas will successfully regenerate to Deciduous Dipterocarp Forest (or other vegetative community historically logged pending location). The development of 2,500-ha of Deciduous Dipterocarp Forest would provide habitat that has mostly disappeared in the region, essentially creating HCV. Restoration planning should include:

- Careful evaluation of the approximately 4,776-ha from which the 2,500-ha restoration area will be selected, to expand moderate to high-value habitat or provide connectivity between moderate to high-value habitat, to the extent practicable;
- The conduct of intensive, invasive species management for at least three years during restoration activities; and
- Planting suitable native tree species of local provenance that will eventually dominate the canopy.

High-value forest adjacent MTP landholding at the edge of the Annamite Range will also require more robust management planning. For these plantations, it is recommended that:

- MTP implement more robust firebreaks/fire prevention and response measures, which also includes routine monthly monitoring to evaluate the status of the firebreaks;
- Prohibit further road development/extension in these plantations to limit access for resource collection;
- MTP, in consultation with village / District authorities, investigate the potential for blocking road access to the higher elevation areas in the Ban Phalaem plantation to prohibit access for large vehicles that can haul high value and potentially RTE tree species from the region.

MTP will need to continue to consult with residents of villages whose boundaries they operate within and should include HCV identification and management as part of these engagements. This is particularly important given that some of the villagers comprise the casual workforce who are employed to clear vegetation, and thus must understand MTP protection and conservation requirements.

The following are recommended for inclusion in community engagement, to account for HCV:

- MTP will need to communicate the volatility of Eucalyptus species, and inform communities of the danger regarding burning for agricultural site preparation or hunting near plantations;
- Habitat retention policy materials should be presented, and community members informed of the importance of preservation, conservation, or other appropriate management;
- Communities should have a stake in resource protection (e.g. staffing to protect resources); and
- MTP should specify the prohibition of land clearing activities/agriculture in their habitat restoration areas and require rehabilitation for unauthorised vegetation clearance in vegetation retention areas.

9. Risk Management

MTP makes use of the [ISO31000](#) risk management framework to manage its risks. As part of the risk management process at MTP, risks and mitigating controls are monitored and reviewed regularly to ensure that:

- Assumptions about risks remain valid;
- Assumptions on which risks are assessments are based remain valid;
- Expected results are achieved;
- Risk assessments techniques are properly applied; and
- Risk mitigation actions are effective.

MTP update and review all risks for the company on an ongoing basis. The risk register is used for this purpose and assist management in reducing the anticipated residual level of overall risks for the majority of identified risks. The extreme and high risks are reviewed by the board every quarter to mitigating controls are in place.

The ESIA (section 5), using the [ISO3100](#) methodology identified 56 potential environmental and social risks to the MTP project, which included one extreme, 22 high, 24 moderate and nine low risks before any mitigation. Also, MTP identified further general, forestry operations, finance, human resource and forestry resources risks. These risks and their mitigating control are managed through the risk register.

MTP manages the following extreme, high and moderate risks (after mitigation):

Risk	Mitigation	Residual Risk
Land use and community dissatisfaction leading to reduced availability of land for natural resource collection and agricultural expansion	a. Provision of employment programs b. Grievance procedure mechanism c. Community investment program	High

Adverse impacts on downstream quality	a. Implementation of stormwater, erosion and sediment control programs	Moderate
Loss of plantations due to flooding	a. Avoid planting in areas identified as flood plains b. Plant species tolerant of occasional flooding	Moderate
Wildfire impacting plantations, the environment and community	a. Implementation of the fire management plan and Emergency Response and Preparedness Plans b. Grievance procedure mechanism	Moderate
Loss of habitat for terrestrial biodiversity	a. Biodiversity offset of 2,500ha of native habitat b. Incorporate 5m buffers on each side of seasonal streams	Moderate
Serious injury due to high-risk forestry work	a. Workers trained in safe operating procedures, including high-risk activities b. ERPP training to all workers c. First aid equipment and training d. Provision and use of PPE e. Injury and accident management	Moderate
Injury or death from UXO	a. Risk assessment for each plantation b. UXO Survey and removal by a certified operator	Moderate
Community health, nutrition and safety issues	a. Transport safety issues b. Safety policies c. Community engagement d. Child labour policy	Moderate

10. Stakeholders

The overall objective of stakeholder consultation for MTP is to improve decision-making through build understanding of the expectations of stakeholders. This means that MTP will:

- Identify, prioritise stakeholders and assess their interests and concerns;
- Communicate information to stakeholders early in the decision-making process;
- Consult inclusively, document the process and communicate follow-up;
- Negotiate and build partnerships with stakeholders;
- Establish an accessible, responsive internal and external grievance mechanism;
- Involve directly affected stakeholders in monitoring project impacts;
- Report back to stakeholders on environmental, social and economic performance;
- Build and maintain sufficient capacity within MTP to manage stakeholder engagement.

10.1. Primary Stakeholders

The primary stakeholders for MTP are:

- TAFF and applicable lenders;
- Government of [Lao PDR](#);
- 133 Villages and Village authorities within the MTP concession area;
- Farmers participating in the OGS;
- Communities close to the MTP concession area;
- Bolikhamxay and Khammouane Provincial and District authorities;
- Environmental and social non-government organisations;
- Wood processing facilities;
- Suppliers, contractors and service providers; and
- FSC, [ILO](#) and NGO's.

10.2. ILO Conventions

Legally required personal protection equipment for persons involved in plantation activities and safety requirements to machinery used. Legally required safety requirements with the use of chemicals. The health and safety requirements that shall be considered relate to operations on the plantation. Risk refers to situations/areas where health and safety regulations are consistently violated to such a degree that puts the health and safety of plantation workers at significant risk throughout plantation establishment and management operations.

Laos has ratified five of the eight fundamental ILO conventions. Conventions on freedom of expression (C087), Right to Organise (C098) and Abolition of Forced Labour (C105) has not been ratified.

11. Financial Management and Resources

MTP has a financial and resources plan, and it is reviewed on an annual basis.

The objective of this plan is to:

- To understand the long-term financial impacts of current management practices;
- To understand the long-term financial demands on cash resources; and
- To understand the long-term demand for contracting resources.

The plan incorporates the following:

- Anticipated tree growth;
- Planned planting areas;
- Planned silvicultural operations;
- Harvesting yields;
- Sales and logistics plan;
- Road building activities;
- Contractor resource requirements, including productivity; and
- Long term assumptions, e.g. exchange rates, inflation, etc.

The long term financial and resources plan form the basis for the annual budget, which is submitted to the Board of Directors for approval. The actual results are monitored against budget every month, and relevant mitigations are implemented.

Furthermore, MTP engages independent consultants on an annual basis to complete a “Fair Value” valuation on the company in compliance with International Financial Reporting Standards (IFRS). The definition of “Fair Value” contained in IFRS 13, clause 9 is:

“...the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.”

A series of policies, SOP's and audits are used to ensure financial compliance.

12. Implementation and Monitoring

MTP conducts a comprehensive monitoring program to understand and improve our management practices across environmental, social and economic disciplines. This includes a monitoring and reporting checklist to ensure that all items addressed in the FMP are reviewed and updated.

Key objectives of the monitoring program are to:

- Ensure MTP complies with relevant environmental legislation and licensing commitments;
- Ensure the timber resource is managed sustainably;
- Reduce the impact of extreme and high risks through effective recommendations;
- Identify and measure environmental and social trends or changes in a manner that enables analysis of their cause;
- Early warning of potential impacts, the extent of predicted impacts and any unforeseen impacts associated with MTP's activities; and
- Evaluate the adequacy of all management measures (e.g. policies and SOP's) are implemented to ensure continuous improvement of management measures and practices.

The above leads to the development of strategies to ensure that the company continues to manage its activities sustainably and meets our continual improvement aspirations. Monitoring undertaken by MTP is consistent with our commitments to FSC and follows the criteria listed in the Montreal Protocol. This includes monitoring of:

12.1. Log production

Harvesting operations are managed through the harvesting SOP and the road development SOP.

12.2. Markets

The Marketing and Business Development Manager manages current market demands and associated client relationships.

12.3. Growth Rates

All commercial stands are enumerated as per the Enumeration SOP and data collected in captured in Microforest, where volume predictions are calculated using MTP growth models.

12.4. Nursery Seedling Quality

Seedling growth and quality are managed through the Nursery SOP's, which is currently been drafted.

12.5. Age class and distribution

The Resource Information System ([Microforest](#)) accumulate resource data, volume availability and spatial data, model plantation growth and provide the basis for valuation, for the business plan and the harvesting and forest management operational plans.

12.6. Potential HCV sites

At this stage, MTP has no HCV sites but is actively managing the process to limit the exposure to potential HCV sites adjacent to MTP concession areas.

12.7. Environmental incidents

All environmental incidents are managed through the Incidents and Accidents Management and Reporting SOP and are recorded in PeopleTray.

12.8. High-risk operations

a. UXO

All personnel, contractors or visitors are prohibited from entering areas designated as being affected by UXO.

b. Fire Protection

The fire management and prevention plan draw together all the relevant information and procedures for preventing and containing fires.

12.9. Resource Consents

Before any operations take place, consultation takes place with the specific community and stakeholders. All records of consultations are recorded in the Community Consulting Register.

12.10. Stream quality

Stream quality is measured regularly and monitoring records updated.

12.11. Complaints and disputes

MTP actively manages an external and internal grievance and complaints system.

12.12. Illegal activities

Illegal activities are captured in the EVMS system for investigation and follow-up.

12.13. Recreation and forest use

At this stage, the recreational use of forests policy is under development.

12.14. Socio-economic values

The Child Labour Prevention SOP address zero tolerance “No Child Labour” policy in place for MTP.

12.15. Financial performance

Financial performance is managed through a series of procedures and the MTP Budget and Management Plan.

12.16. Operational quality

To ensure functional quality, various SOP’s are in place to manage the process.

12.17. Forest health and pest control

Each incident involving forest health are captured in the EVMS and Microforest for investigation and follow-up.

12.18. Nutrient levels

The SOP on fertiliser application guides the risks, procedure and equipment associated with the operation.

12.19. Pesticide use

In understanding the risks associated with chemicals, a MSDS register contains all the hazards and first aid measures if exposed to the particular chemical. Furthermore, the SOP on chemical weed control guides the usage and application of herbicides.

12.20. Health and safety

The Occupational Health and Safety System ([PeopleTray](#)) is focused risk assessment, the mitigation thereof, recording of hazards, incidents, accidents and the use of that data to help reduce impacts to people, assets and very important to the general environment. The MTP Health and Safety Policy assists MTP to operate a safe operation.

Workcamps and staff accommodation are regularly inspected to ensure that standards are met.

12.21. Weather and fire risk

MTP has three weather stations which constantly measure current weather conditions and stores history via the cloud.

- [Houaysiat](#) (Paksan);
- [Namkhou](#); and
- [Song Hong](#) (Hinboun).

12.22. Community Forestry

The community engagement process is an ongoing process which includes a dedicated MTP manager and a community team which engages with the community regularly.

12.23. Harvesting operations

Each harvesting operation has at least one MTP staff member who is responsible for supervising the activities in both contract and own operations. These MTP staff members are responsible for monitoring the daily production and assessing all harvesting operations monthly using the MTP General Checklists, and detailed corrective actions in a Corrective Action Required (CAR) report are drafted. It is given to the contractor and the Forest Operations Manager. CARs are monitored until resolved or “closed”.

12.24. Monitoring of silvicultural operations

As part of the contract administration procedures of the Company, all establishment and maintenance operations must be supervised by an MTP staff member who is responsible for ensuring that the workers understand the all the requirements (operational, environmental and safety and health) and these are implemented in the field. The MTP supervisor will assess the operation monthly using the MTP General Checklist following the same procedure as detailed in the previous section. Before a contract can be certified for payment, it must be inspected by the Plantation Manager who will sample the area to assess compliance with the requirements as set out in the SOP or work instruction.

12.25. Monitoring of environmental performance

MTP has an environmental section managed by the Head of Sustainability who is responsible for ensuring that operations comply with the requirements of the EIA and meet the environmental standards that are required for forest certification as set out in the Criteria and Indicators (C&I) published by FSC®.

MTP staff are required to visit each harvesting site in the Concession area during the preparation of a harvesting plan and during the compartment closure to ensure all the environmental mitigation has been adhered to.

MTP submits an EIA report to GOL every six months to ensure compliance with the recommendations in the EIA.

12.26. Resource Monitoring

MTP forest inventory strategy covers five possible types of sampling:

1. Six-month Vigor Survey (5% sample) to obtain stocking, tree health and growth performance data for recently planted stands. The purpose of collecting this information is to determine whether the establishment has been deemed successful, identify poorly performing areas and to ensure effective plantation management is being implemented.
2. Early-rotation at (5% sample) to give an estimate of stand growth parameters used for ascribing a set of silvicultural prescriptions for that compartment. These are conducted in unthinned stands at the age of three to four years.
3. Pre or Post-thinning check-inventory (5% sample) to test for the quality of marking for thinning and to provide data for volume projections.
4. Mid-rotation at (5% sample) to provide data on a compartment's standing volume and data used for projecting future volumes. These are conducted in thinned stands at the age of five to six years. Pre-harvest cruising (5% sample) to provide data on a compartment's standing volume prior to the final cut.
5. Pre-harvest cruising (5% sample) to provide data on a compartment's standing volume prior to the final cut.

Damage assessment enumerations. These are similar to thinning checks, but require the collection of additional data. This data depends on the type and severity of the damage. The sampling intensity may vary according to the distribution and intensity of the damage.

Other enumeration tasks will include the measuring of growth and yield research plots, i.e. permanent sample plots (PSP) on an ad-hoc basis. In these plots, all trees are measured for diameter (DBH) and height.

12.27. Compartment Records

The records of each compartment area are maintained by MTP until it is fully harvested through its GIS database and Microforest.

12.28. Forest Protection

The main contributor to forest fires is mainly caused by humans and to a lesser degree by lightning. Controlling access and educating communities, contractors, and employees about the dangers of fire and generally increasing awareness about the causes of forest fires are the most effective ways of preventing fire.

Measures to be taken by contractors and MTP personnel living and operating in the Concession area are as follows:

- No open burning;
- Spark arrestors to be fitted to equipment working in the forest;
- Work to cease when fire danger is extreme;
- No smoking during work. Smoking is only allowed during specified breaks in an area away from, or cleared of inflammable debris; and
- Annual fire training to be given to all persons working in the forest. Fire drills to be held when fire danger is extreme.

Those who are working in the forests and from communities living in the neighbouring state land or private land is the main risk of a fire incident. These risks are mitigated by training and awareness programmes conducted on an annual basis for all forest workers (both direct employees and contractors and their employees) An annual campaign to explain the dangers of fire to residents of the villages surrounding the Concession area will be conducted by the Sustainability department with the hope that they are aware of the threat of forest fire.

MTP plans to implement a forest certification team responsible for the forest certification activities. The team will be conducting a periodic internal audit to ensure the operation

comply with the requirement for FSC® certification and other legal requirements. As per the previous paragraph, all non-compliances are captured in PeopleTray for action.

12.29. Staff Training

All staff training needs are identified annually, provision is made in the budget, and once training is completed are then recorded in the Training Register.