

Executive Summary

Kowie Bamboo Farm Management Plan

This executive summary provides an overview of the contents of the Plantation Management Plan and associated management documents for Kowie Bamboo Farm.

1. General Information

Kowie Bamboo Farm is located in the Ndlambe Municipality within the Cacadu District Municipality, Eastern Cape Province, South Africa. The farm is fully owned by EcoPlanet Bamboo Southern Africa, LLC and operated by EcoPlanet Bamboo Southern Africa (PTY) LTD. EcoPlanet Bamboo Southern Africa's (EPBSA) entities are subsidiaries of EcoPlanet Bamboo Group, LLC (EPBG), which is owned, managed and operated by its co-founders and principals, and headquartered in the United States.

EcoPlanet Bamboo Group is the largest owner and developer of commercially grown bamboo plantations globally with operations in Central America, Southern Africa and West Africa.

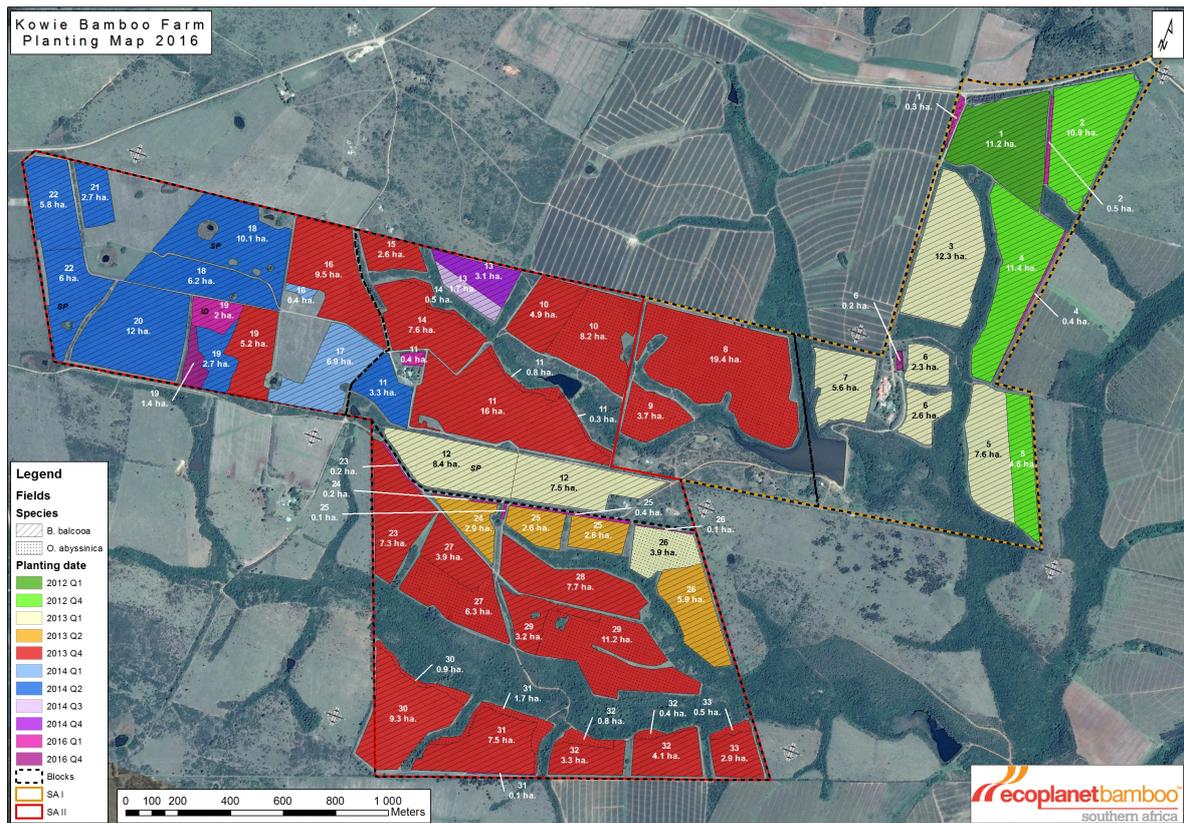
Kowie Bamboo Farm consists of 5 legal land portions from 2 former farms - Rosalyn Farm and Waldon Farm (farm portions 5/46, 174, 1/169, RE/170 and 173), which consists of 482.2 ha of former pineapple and cattle grazing lands. Between rotations, pineapple lands were left fallow for 5-15 years before being ploughed under again and replanted. During this time, grass remerged and cattle run extensively on these lands. All lands were either grazed or under pineapple in the 10 years prior to planting.

Stakeholder consultations were conducted with the neighbouring landowners and local communities at the start of the project. Additionally, EPBSA conducted a Socio-Economic Baseline Assessment at the start of Kowie Bamboo Farm. Within the Nolutkhanyo Township and the residents on Kowie Bamboo Farm, the assessment confirmed high rates of unemployment, poverty, and low levels of education or professional training.

EPBSA has prioritized employment for the residents of Kowie Bamboo Farm, with 4 residents currently employed – 3 being females and 1 males, as well as the residents of Nolutkhanyo Township. Employment is cyclical with the highest figures being in 2013/2014 during the initial planting and maintenance phases with over 120 employees. During the maintenance phase employment has fluctuated but a base of 13 permanent jobs have been maintained. Harvesting will see a further increase in both permanent and fixed term employment opportunities.

Bamboo can be found growing wild in the Eastern Cape. One of those species is called *Bambusa balcooa*, which is a giant clumping bamboo. *B. balcooa* has been naturalized in South Africa since the 1600's and is the species of choice on the Kowie Bamboo Farm. EPBSA also grows *Oxytenanthera abyssinica*, which is a drought resistant species of bamboo that is indigenous to Africa.

Figure 1: EPBSA’s Kowie Bamboo Farm Boundaries



When planted on degraded lands, bamboo’s environmental impacts are vast. Some benefits include: (1) the growth pattern of bamboo enables a sustainable form of harvesting that does not lead to clear cutting of lands and promotes ecosystem connectivity; (2) its extensive root system aids in water adsorption and acts as a watershed protector; (3) it stabilizes microclimates, contributing to climate change adaptation; and (4) it is one of the best plants for carbon sequestration, removing up to 500 tons of CO₂ from the air per ha.

Based on “a triple-bottom-line” approach, the objectives of EPBG, and thus EPBSA, are:

- To develop sustainable and commercially viable plantations of bamboo;
- To provide sustainable jobs and economic vitality in a region where more than three fifths of the population lives in poverty;
- To help combat deforestation and climate change by reducing dependence on the harvesting of natural forests and by using one of the planet’s most effective forms of natural carbon sequestration.

2. Plantation Management

EPBSA began small scale pilot planting in 2012 with the majority of the Kowie Farm planted between 2013-2014. After planting, bamboo plants are manually maintained through casing and weeding activities as well as fertilization. In 2014, plastic mulch began being laid in Blocks A, B and D. Plastic mulch offer a variety of benefits such as retaining soil moisture,

increasing soil temperature and improving weed and insect management. Once laid with plastic, plants need to be weeded around the plant and fertilized when necessary until harvest. Staff ensure the plastic mulch is properly secured and remove loose pieces.

EPBSA has a well-developed and operational Integrated Pest Management (IPM) Plan, which aims to reduce the use, and need for use, of expensive and toxic chemical inputs. Only if the action thresholds of a particular pest activities exceed the limits will chemicals, or authorized removals be employed.

Neither fertilizer nor any chemicals are applied during windy and rainy weather conditions, in order to reduce leaching and contamination of waterways.

EPBSA has in place a fire management plan, which includes a: (1) Fire Prevention Plan; (2) Fire Protection Plan; and Fire Suppression Plan. Staff have been trained in fighting veld fires and form the farm's fire crew. Fire awareness amongst the staff and local communities is a priority and fire drills are conducted 3 times a year. Additionally EPBSA's road networks serve as firebreaks for the farm and the interrow grass is mowed biannually.

3. Harvesting

B. balcooa and *O. abyssinica* reaches maturity within 7-8 years and typically reproduces and thrives for over 80 years. The harvesting of the culms will occur in a sustainable manner on an annual basis. Harvesting will utilize informed plantation productivity specifications from monitoring sites and the harvest plan as prescribed by the General Manager.

4. Human Resources

All staff are employed through EcoPlanet Bamboo Southern Africa (PTY) LTD, which is registered for Unemployment Insurance Fund (UIF) and Workman's Compensation Fund. Letters of good standing are available at the farm office. EPBSA works with an HR Consultant, to ensure compliance with all aspects of the national labour requirements.

EPBSA is an equal opportunity employee and does not discriminate on the basis of race, gender, sexual orientation, colour, ethnic origin, religion, marital status, family status, age or disability. No applicant or employee receives a less favourable treatment. To ensure equality for employment of women, we aim to have 25% of our workforce as female. There is no wage discrimination between males and females.

EPBSA promotes within its workforce creating opportunities for advancement of unskilled workers. When positions such as supervisors and management become available, positions are advertised amongst the staff. Only if positions cannot be filled within the workforce are positions filled from outside.

5. Health & Safety

EPBSA has in place a detailed EHS Manual that outlines the companies' health and safety policies and procedures, as well as incorporates EPBG's EHS procedures. The Manual is

updated annually to include mitigation measures for any new risks or hazards. Furthermore and in line with the Occupational Health & Safety Act (OSHA) of 1993, EPBSA has trained employees as safety, health and environment (SHE) reps for the farm. They are responsible for carrying out monthly checks on the farm and reporting their findings to the Plantation Manager, who undertakes the necessary corrective actions.

6. Infrastructure

Kowie Bamboo Farm is equipped with a number of infrastructure and equipment ranging from roads, buildings, pick-up trucks (bakkies), tractors, implements, trailers, ATVs/UTVs and other equipment such as tools and office equipment. EPBSA has in place a maintenance plan to ensure the safe working order of its infrastructure.

7. Monitoring & Evaluation

The Company monitors various elements of its operations, which allows for regular assessments of impacts. Any potentially negative impacts are therefore mitigated early. EPBSA's monitoring activities include:

1. Plant & Growth Monitoring: regular monitoring of plant health and pest action are used to guide IPM techniques. Periodic bamboo plant monitoring is carried out and the results are used to guide plantation management practices.
2. Stream Flow Reduction: Prof CS. Everson from PMB University is carrying out a long term study to determine the evapotranspiration levels and stream flow reduction caused by bamboo.
3. Production Monitoring: employee work rates are monitored to ensure timely completion of projects.
4. Health & Safety Monitoring: monthly health and safety checks are done by the SHE representatives and reported to management.
5. Biodiversity Monitoring: quarterly monitoring of conservation areas as well as biennial invasive species and species of concern population assessments.
6. Community Engagement Monitoring: a Kowie Bamboo Farm census and company/social impact study are conducted and reported periodically.

8. Biodiversity

All watercourses, perennially humid areas, and riparian buffers within ten meters of all watercourses are dedicated as riparian corridor conservation areas. All large remnant pasture trees of ecological value are left to increase the project's overall forest cover and to enhance the carbon sequestration benefits of the plantations.

Conservation areas have been diligently identified and surveyed during the plantation establishment stages. An Ecological Baseline Assessment was conducted at the start of the project, which found some potential High Value Conservation Forests (HVCFs). These are high bio diversity thicket areas. They are to have minimal disturbance and may not be harvested or cleared for establishing plantations.

EPBSA has established a Biodiversity Action Plan to guide its environmental education, rehabilitation and invasive species removal projects as well as monitor its conservation areas. Maps indicating conservation areas and species of concern locations are posted on the farm. Signs have been erected across the farm stating “Conservation Area: No Disturbance, No Hunting, No Fires”.

9. Community Engagement

EPBSA is committed to regularly engaging stakeholders about project objectives, commitment to certification, social and environmental policies as well as possible grievances or complaints. EPBSA’s social impact is focused on the generation of secure and long-term employment, with preference given to the communities surrounding Kowie Bamboo Farm. Additional community development projects are undertaken each year as identified through consultation with the local communities.

10. Finance

EPBSA anticipates the future generation of company income from revenue streams generated through the harvesting of bamboo and integrated manufacturing. Harvesting has not yet begun on the Kowie Bamboo Farm.