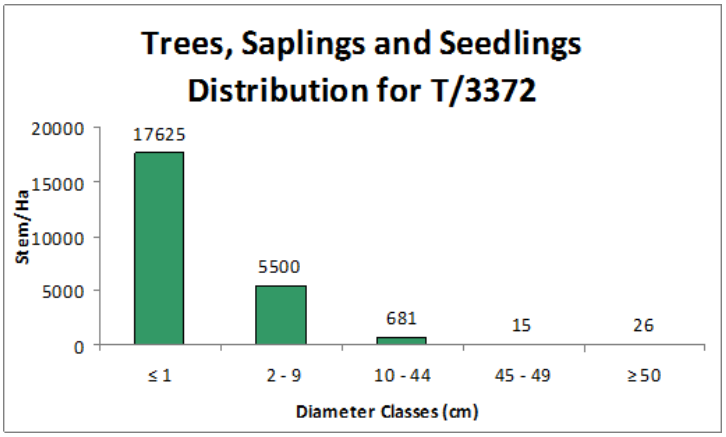
Public Summary

Mengiong Entulu FMU (T/3372)

Summary of Monitoring Results on Timber Yield and Forest Conditions

Item	Particulars	Data Source(s)	Interim Results/Remarks
1	Yield of Forest Products	Royalty Volume	• The FMU shall commence timber harvest later in 2023. • Aside from timber, there will be no commercial production of other forest products.
2	Forest Regeneration	To-date, a total of 3 Permanent Sample Plots (PSP) has been established and its number is to be increased gradually.	• Regeneration of seedlings and saplings conforms to the *Reverse J-curve* (Whitmore and Burnham, 1984) (**Figure 1**). **Figure 1:** Average stand population distribution (*n*/ha) by diameter classes at Mengiong-Entulu FMU (T/3372) – derived from the established 3 PSP. 
3	Condition of the Forest	The collected data from the 3 PSP was insufficient.	• The finding is inconclusive, as more assessment is needed to be carried out.
4	Growth Rate	Similar to Item #3.	• The MAI was determined based on cross comparison with the stand condition of Bahau-Kahei FMU (T/3236), which shared similar ecological environment. • It is reasonably presumed that there is no substantial difference in the environmental factors; therefore, FMU T/3372 shall adopt the MAI of 1.0 m^3/ha/year to project growth and yield, until more PSP are established progressively and re-assessment is carried out in the future.
	Composition and Observed Changes of Flora and Fauna	**Flora:** Sourced from 3 PSP; Chapters 2, 8 and 10 of *FMP for FMU T/3372*. **Fauna:** Sourced from HCVRNS (2017).	• Information on the composition of flora and fauna shall form the baseline at this stage paving way for future monitoring. **Flora:** • The total number of enumerated flora species (*i.e.* trees) was 179; which was further segregated into timber groups and growing conditions (**Table 1**). **Table 1:** Total number of enumerated flora species (*i.e.* trees) in FMU T/3372 and segregated into timber groups and growing conditions.

Total Number of Flora Species			
179			
Dipterocarp		Non-Dipterocarp	
32		147	
Light-demanding	Shade-tolerant	Light-demanding	Shade-tolerant
25	7	126	21

• Across all DBH classes (≥ 10.0 cm), Non-Dipterocarp is dominant than Dipterocarp (**Table 2**).

Table 2: Average stand density, basal area and gross volume by DBH classes and timber groups based on enumerated 3 PSP.

Timber Group	Parameters		
	Stems (n/ha)	Basal Area (m^2/ha)	Volume (m^3/ha)
Dipterocarp	224	14.43	145.15
Non-Dipterocarp	498	18.29	199.55
Total	**722**	**32.72**	**344.70**

Fauna:

- Mammals, avifauna and herpetofauna were enumerated using four indices at the highest level (**Table 3**).

Table 3: Population dynamics of mammals, avifauna and herpetofauna in FMU T/3372.

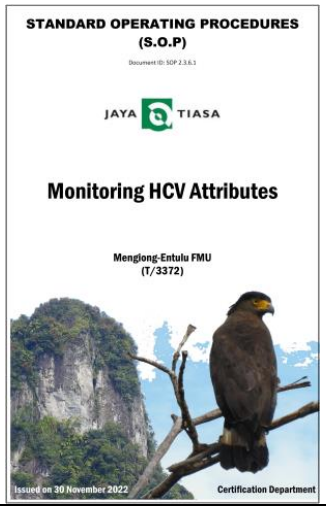
Fauna	Method			
	Shannon-Weiner Diversity Index, H'	Shannon's equitability Index (Eveness, E_H)	Simpson's Diversity Index (D_S)	Margalef Species Richness Index
Mammals (via Line transect)	1.95	0.39	0.17	2.39
Mammals (via Camera trapping)	1.53	0.31	0.28	2.01
Avifauna	3.37	0.64	0.02	10.65
Herpetofauna	2.72	0.45	0.07	3.32

- Based on the findings by rapid assessment, the current forest condition is still providing a reasonable habitat for the well diverse and rich fauna species present in the FMU (**Table 4**).

Table 4: The recorded number of families and species of fauna in FMU T/3372.

Fauna	Number of Families	Number of Species
Mammal	12	18
Avifauna	25	64
Herpetofauna	9	22

- The abundance of fauna in FMU T/3372 could be due to the availability of food sources in the still intact forest landscape and less pressure from hunting.
- However, the level of hunting by outsiders is expected to increase due to the ease of road accessibility to the FMU and its adjacent neighbors.

6	Environmental Impacts of Forest Operations	At FMU level → *HCVF Assessment Report*. At operational level → Terms and Conditions of the EIA Report approval by NREB.	• HCV attributes 1 – 4 identify the environmental aspects complete with appropriate mitigation measures (**Figure 2**) and their levels of implementation are been described in the HCV monitoring report. It also follows *Guideline 5* of *The Green Book* (FDS, 2019). **Figure 2:** The '*SOP on Monitoring HCV Attributes*' at FMU level. 

			• Internal Audit for FMU T/3372 – against *MC&I SFM* – has been conducted on 11th – 13th January 2023 (**Figure 3**). The summary of audit findings is as shown in **Table 5**; and follow-up actions shall be taken to address the non-compliances. **Figure 3:** The front page of the Internal Audit report for T/3372.  CONFIDENTIAL JAYA TIASA HOLDINGS BERHAD FOREST CERTIFICATION DEPARTMENT No.1-9, Pusat Suria Permata, Lorong Upper Lanang 10A, 96000 Sibu, Sarawak, Malaysia. SUMMARY FOREST MANAGEMENT CERTIFICATION AUDIT REPORT FMU : Mengiong-Entulu FMU (T/3372) LOCATION OF FMU : Kapit District, Kapit Division, Sarawak FILE REF: : JTH-IA-T3372-00001 AUDIT DATE : 11-13 January 2023 STANDARD : MC&I SFM (MTCS ST 1002:2021) SCOPE OF CERTIFICATION : Management of Natural Forest within the Mengiong-Entulu Forest Management Unit T/3372 (64,974 Hectares). MEMBERS OF AUDIT TEAM i.) Audit Team Leader: Alkison Anak Christy Endawie ii.) Auditor: Tony Tiang Hook Wei iii.) Auditor: Raymond Wong Kiong Ing iv.) Auditor: Lionel Daan Anak Joannes v.) Auditor: Fellycia Ida Anak Christopher REPORT BY AUDIT TEAM LEADER Name : Alkison Anak Christy Endawie Signature : Date : 03rd February 2023 ACKNOWLEDGEMENT BY FMU'S REPRESENTATIVE Name : Ling Liong Chin Signature : Date : 03rd February 2023 FILE REF: JTH-IA-T3372-00001 Issue 1 Rev: 0 Page 1 of 27 **Table 5:** The summary of audit findings for FMU T/3372. | Type of Audit	Compliance	Non-compliance
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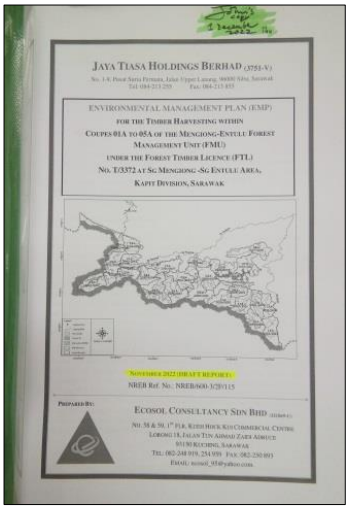
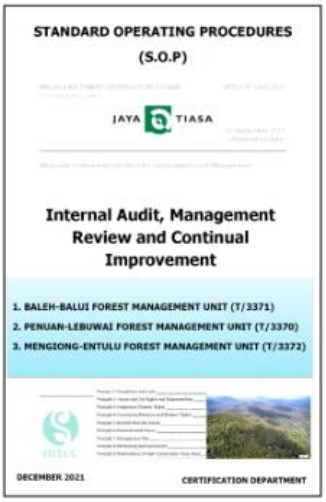
First Internal Audit (January 2023)	83%	17%	 • The '*Environmental Monitoring Plan (EMP)*' covering Coupes 01A – 05A have been drafted and pending approval (**Figure 4**). **Figure 4:** The draft copy of EMP for FMU T/3372 (Coupes 01A – 05A).  JAYA TIASA HOLDINGS BERHAD (XXXX-X) ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR THE TIMBER HARVESTING WITHIN COUPES 01A TO 05A OF THE MENGIONG-ENTULU FOREST MANAGEMENT UNIT (FMU) UNDER THE FOREST TIMBER LICENCE (FTL) NO. T/3372 AT SG. MENGIONG -SG ENTULU AREA, KAPIT DIVISION, SARAWAK NREB Ref. No.: NREB/600-3/2/115 PREPARED BY: ECOSOL CONSULTANCY SDN BHD
7	Social Impacts of Forest Operations	At the FMU level: • HCVF Assessment Report; and • Social Impact Assessment (SIA) Report At the operational level: • Terms and Conditions of the EIA Report approval by NREB. • Internal audit.	• HCV attributes 5 – 6 identifying the basic needs and cultural values of the local community of Rh. Lawan. • In the SIA report, four key impacts comprising water supply and qualities, livelihood, air and noise pollution and social cultural life were studied. • Since Rh. Lawan is outside of the FMU, impacts such as water supply and quality; air and noise pollution and socio-cultural life is less to be affected by forest operations. However, their livelihood might be affected, in terms of diminished area for hunting, fishing and collection of NTFP. • The FMU, however, shall monitor the major impacts once in every five years, *i.e.* based on the '*SOP on SIA*' (**Figure 5**).

Figure 5: The '*SOP on SIA plus Monitoring from Harvesting and Management Operations*' at FMU level.

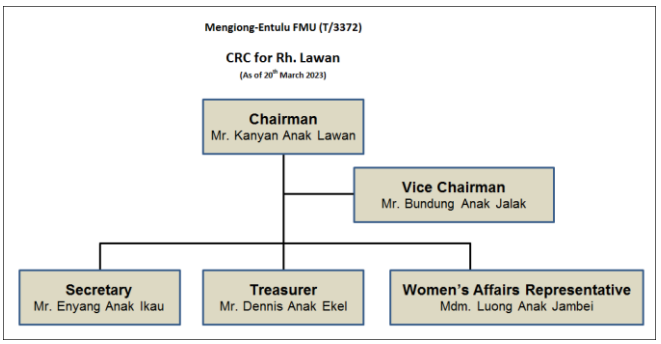
- In addition, the annual internal audit shall be conducted, *i.e.* based on the '*SOP on Internal Audit, Management Review and Continual Improvement*' (**Figure 6).**

Figure 6: The '*SOP on Internal Audit, Management Review and Continual Improvement*' at FMU level.



- To safeguard the basic needs of the local community of Rh. Lawan, the FMU will implement RIL practices in the near future.
- The CRC has been established on 20th March 2023 (**Figure 7**) and yet to be endorsed by FDS.

Figure 7: The CRC for Rh. Lawan.



- The FMU has strived to prioritize the employment for the local community of Rh. Lawan. To-date, none of them have applied to be employed by the FMU.

			• The FMU has met all of the OSH as stipulated under OSHA, 1994: o Health, Safety and Environment (HSE) Policy has been communicated to all employees through training and displayed the policy at notice board at several designated locations; o risk assessment has been conducted for all main and support operations in the FMU and documented in the HIRARC register; o Safety Operation Procedures (SOP) and training programs for all type of works have been disseminated to forest workers; o Safety and Health Committee (SHC) has been set up to discuss on HSE-related matters regularly; o Emergency Response Team (ERT) has been established to assist and prepare for any unforeseen circumstances; and o hazardous areas with proper signages at the work sites have been identified and demarcated.
8	Forest Protection		• The demarcation of the FMU Production Area shall be implemented in stages.
9	Productivity and Efficiency of Forest Management		• The FMU is yet to commence timber harvest; however, the productivity of Pre-harvest team is between 6 – 7 mandays/ha. • The FMU shall extend similar study into other areas such as PSP and DSP establishment and assessment; including boundary demarcation and/or monitoring, *etc.*; and to produce useful figures for more accurate cost control.
10	Cost of Forest Management		• Operational cost is at its lower point at this juncture. The projected production cost for Financial Year 2022 (and beyond) is about RM561.00/m^3 – when timber harvesting commences later in 2023. • In addition to the harvesting and transport cost, the total production cost has also factored in the cost of R&D, RIL, training, protection, monitoring and other key activities. • Bottom line is slim with tighter budget on more prudent spending. • Measures to improve log production are pertinent, coupled with better productivity and efficiency.

References

FDS. 2019. Guideline 5: Guidelines for monitoring of High Conservation values. Pp. 127 – 133. In *The Green Book: Manuals, Procedures and Guidelines for Forest Management Certification in Sarawak (Natural Forest)*. Management and Planning Division, Forest Department Sarawak. 284 p.

HCVRNS. 2017. *Report on Baseline Information on Status and Population Dynamics of Mammals, Avifauna and Herpetofauna Species (at) Timber License No. T/3372, Mengiong-Entulu Area, Kapit Division, Sarawak*. November 2017. High Conservation Value Resource Network, Sarawak. 52 p.

Whitmore, T.C. and C.P. Burnham. 1984. *Tropical Rain Forests of the Far East*. Second Edition. ELBS. 352 p.

This document has been updated on 23rd March 2023 (Thursday).