



**Syarikat Samling Timber Sdn Bhd**

A member of Samling Group of Companies

## **PUBLIC SUMMARY**

### **Forest Management Plan**

### **Gerena Forest Management Unit**

**for the period**

**2018 to 2027**

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Approved by:

James Ho Yam Kuan  
Chief Operating Officer

## Introduction

This is the public summary of the Forest Management Plan (FMP) for the period of Year 2018 to Year 2027 written for the Gerenaï FMU. The changes have been made to allow any policy changes and developments to be incorporated and for revision to include the findings of the various monitoring activities.

Gerenaï FMU lies within Forest Timber Licence T/0413 which comprises the FMU and an area designated as provisional leases for agricultural development. These provisional leases will at some time be excised from the FTL and the boundaries of the FTL and the FMU will then be the same.

## Management Objectives

- Forest planning and operations based on multi-functional concept which consider the different usage of forest resources and needs of stakeholders involved.
- Forest management practices to maintain or even enhance the forest ecosystem functions as to enable its self-renewal capacity through Reduced Impact Logging (RIL), rehabilitation and silviculture treatment.
- Detailed Harvesting Plans aimed at production of high-quality timber at optimum efficiency, reduced environmental impacts and minimise wastage of resources.
- Integration of climate adaptation and mitigation plans which has a positive impact on long-term carbon sequestration capacity of forest vegetation.
- Multi-stakeholders' consultation to address issues of common interests and to monitor the operational activities.
- Continuous improvements to forest management through certification, research, collaborative partnership, updating methodologies and standards.

## The Resource

The FMU is in the Miri Division, Sarawak. The FMU's Gerenaï (previously Silat) camp lies some 156 km by road from Samling's Tuyut log pond. [\(Right click here to access Map A – FMU location\)](#). It has a gross area of 143,583 ha of which 6.1% (8,696 ha) is within the Nakan Kalulong Forest Reserve; 34.5% (49,526 ha) lies within the Tapang-Baiong Protected Forest and a further 19,694 ha lies within the proposed Ang Moh Protected Forest. The balance of the FMU is State land some of which is occupied by kampongs which have mainly been excluded from the proposed protected forest areas. As stated in Second Schedule of Tapang-Baiong Protected Forest Notification 2002, the permanent inhabitants shall have the rights to continue the traditional activities of fishing, hunting and collecting of minor jungle produce within the area for personal and domestic use only, but it shall be an offence to clear high forest except with the authority of the Director of Forest. [\(Right click here to access Map B – Legal status\)](#)

The FMU has common boundaries with the Usan Apau National Park and the Sg Moh Wildlife Sanctuary.

The total gross operable, or production, area is 100,770 ha.

The topography of the FMU ranges from river side flats that quickly grade into low undulating hills which lead to rugged mountainous terrain. The altitude ranges from 152 m to 1,716 m amsl.

About 16.9% of the FMU is classed as Terrain Class II, 72.9% as Terrain Class III with slopes between 20° and 34° and 10.2% is classed as Terrain Class IV with slopes  $\geq 35^\circ$ .

The Kapit soil series covers 71.6% of the area. The Meluan and Merit series cover about 13.2% and 13.8% respectively with the balance comprising very minor contributions from four other series. The whole of the FMU is mainly underlain by the Belaga Formation.

Hill mixed dipterocarp forest (MDF) is the dominant forest type. Sub-montane forest and kerangas forest all occur. Various stages of the shifting cultivation cycle are well represented on the more favourable terrain close to the larger rivers.

The FMU has been zoned into: **Protection:** 16,203 ha (11.28%), **Production:** 100,770 ha (70.18%), and **Community & water catchment:** 26,610 ha (18.54%). ([Right click here to access Map H – Forest zoning](#))

### Forest management

The production forest is managed on a polycyclic system based on prescribed DBH cutting limits (Selective Felling System) with the next harvest, and all subsequent harvests, provided by the residual stems (potential crop trees) and continued recruitment from natural regeneration. The production area is divided into 25 coupes averaging just over 4,000 ha, with one coupe to be harvested each year. The FORMIND<sup>1</sup> growth simulation model derives the sustainable annual cut (AAC) at an optimal cutting cycle based on the DBH cutting limits currently imposed by FDS of 45cm and 50 cm for non-dipterocarps and dipterocarps, respectively. Using the data from the FRA the optimal cutting cycle was determined as being between 25 to 30 years (see Allowable Annual Cut below).

### Harvest system

The use of reduced impact logging (RIL)<sup>2</sup>, with break out and extraction by excavator based logfisher, is intended to minimise damage to the residual stand and regeneration which, as explained above, will form the next and subsequent harvests. All trees to be harvested must be identified, measured and tagged, and their locations mapped. Tagged trees which are within approximately 60 metres of the skid trail centre line are felled. The appropriate sections of the tree number tags are nailed to both ends of the one or sometimes two logs made from the felled tree. The logs are then winched to the skid trail by logfisher and from there are skidded by tractor to the landing.

At the landing log mid-diameter and length are measured and the LPI and CB tags are affixed at both ends of every merchantable log together with the hammer imprint of the licensee's

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<sup>1</sup> FORMIND is the successor to FORMIX3 which was used to determine the AAC for Samling's Ravenscourt FMU in 2017 <sup>2</sup> Standard (RIL) harvesting is not permitted on slopes of more than 35° except on very short sections of such slopes.

property mark. The details of logs extracted are recorded on the Daily Production Return form which must be submitted to the Forest One-Stop Compliance Centre.

The logs are then trucked to the official stumping area (PORM) where the royalty assessment is undertaken by FDS. As part of the assessment the logs are hammer marked "FD" and a royalty tag is attached; this tag also identifies the log as being either for export or local use. A Removal Pass is then issued by FDS; this serves as the permit to legally transport the logs to the Tuyut log pond via the CTB stumping. It is the last link in the FMU's chain-of-custody: standing tagged tree to the official log pond.

### **Allowable Annual Cut and Yield Control**

From the net production area of 100,180 ha in the FMU with an average of 4,007 ha per Annual Coupe, the resulting preliminary Annual Allowable Cut (AAC) is **88,000.00 m<sup>3</sup>/year**.

Yield control is primarily by area with one coupe harvested each year with the actual annual production not to exceed the AAC.

### **Provisions for monitoring forest growth**

Permanent Sample Plots (PSPs) have been established. They are selected from the FRA sampling units to represent the variability of the forest condition over the production area. Samling's PSP experience from Ravenscourt indicates DBH annual increment to be relatively slow and highly variable. It is therefore planned that re-measurement will, initially, be at intervals of between three to five years. The data captured over a longer growth period should be of greater reliability and, thus, of increased usefulness.

Silviculture management of the production forest aims primarily to sustain and ideally enhance productivity – at an economically acceptable cost. Enrichment planting (EP) will be considered after diagnostic sampling of the harvested blocks, relevant findings and the overall economics.

### **Environmental Safeguards**

Two Environmental Impact Assessments (EIA) of re-entry areas have been undertaken. They were approved by the Natural Resources and Environment Board (NREB) on 15 June 2012 and 10 September 2014, respectively.

The EIA report includes the study of environmental impact considerations, conservation, water quality, use of pesticides and biological agents, mitigation measures for road construction and maintenance, tree felling and log skidding by tractors, environmental quality control and scheduled waste and non-organic waste disposal, silvicultural management, forest protection/fire prevention, wildlife protection, protection of scenic landscapes and those with recreational potential, and safety and health of workers.

All rivers and streams that flow year-round must have buffer zones (RBZs/SBRs) established the width of which is determined according to NREB specifications.

Following approval of the EIAs, Environmental Monitoring Reports (EMRs) have been undertaken by external consultants and submitted to the NREB quarterly. The main focus of the EMR is on water quality<sup>2</sup> and possible damage arising from the harvesting operations. The monitoring works for damages due to harvesting operations, as provided for under the Forest Ordinance, continues for at least a year after a block is closed.

### **Collaboration on Research**

On 26<sup>th</sup> September 2022, the Samling Group has signed a Memorandum of Understanding (MOU) with UPM Sarawak Bintulu Campus on collaborative research projects related to forest management certification.

### **Wildlife**

The objectives of wildlife management include recognising the importance of 'CAN': this is the triple concept of "Culture, Adventure and Nature" and embraces how wildlife impacts the cultures of Sarawak's peoples, nature tourism, wildlife as a natural resource for rural peoples and wildlife as requirement to help sustain healthy forest ecosystems.

*"A Master Plan for Wild Life in Sarawak"* was approved by the Cabinet as official policy in January 1997. The Master Plan dealt with the immediate issue of stopping over-exploitation by hunting and the provision of more protected natural habitats in which wildlife could continue to live. The principal ordinance relevant to the protection, management and conservation of wildlife in Sarawak is the Wild Life Protection Ordinance 1990. Additional measures are the responsibility of the FMU holder, in line with SFC Circular No. 2/2021 dated 21 April 2021.

Following the recommendations of the Master Plan, the headmen and the camp managers are appointed as honorary wildlife rangers who assist the government agencies in implementing the Master Plan. The wildlife rangers also act as facilitators to promote awareness on the need for wildlife protection in their respective areas of responsibility.

Gerena FMU (48% within the HoB), along with Samling's adjoining Suling-Sela'an and Tama Abu FMUs, plays a role in the Heart of Borneo Corridor Project through provision of a wildlife corridor between Sabah to the north-east, Brunei to the west, via the Mulu National Park, and Buda National Park and Indonesian conservation areas to the south-east.

### **Rainfall**

The rainfall is analysed based on the data of 2010-2020 from three DID rainfall stations, Long Akah, Long Moh and Lio Mato.

The mean monthly rainfall is the highest of 217.5 mm at Long Akah in November to the lowest of 80.4 mm at Lio Mato in July. The wettest months seem to fall in April-May and October-December.

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<sup>2</sup> Water monitoring results are shown on the website.

The highest annual total rainfall was 6,057.0 mm recorded at Long Akah in 2010 whereas the lowest annual total rainfall is 2,659.0 mm recorded at Lio Mato in 2014. Overall, the wettest year in the region was in 2017 whereas the driest year was in 2014.

### **Local population and the impact of the FMU's forest operations**

In the Social Impact Assessment Report<sup>3</sup> (SIAR) the population within and nearby the FMU is estimated to be around 11,400. However, the basis of the estimate is not recorded and neither the actual *resident* population nor the number of occupied doors is stated. The SIAR makes several references to the fact that those of working age and the better educated, particularly those of the Kenyah community (which represents more than 90% of the population), tend to migrate to the larger towns. Whilst many of these migrants do return from time to time for festivals this tendency means that the very young, the very old, and sometimes the newly retired, can form a significant proportion of a village's occupants. ([Right click here to access Map F - Localities of the Settlements \(SIAR\)](#))

There are four Penan communities the largest of which is Lg Jekitan with more than 100 doors. The Penan, many of whom are unschooled and effectively illiterate, are less likely to migrate to the towns and are more dependent on the forest as a resource. This dependence is decreasing as farming is increasingly being practised.

Interviews undertaken during the SIA identified three main aspects of the FMU operation that have an impact on the local population: (a) water supply and quality, (b) local economy and (c) socio-cultural life. On all three the operation of the FMU has both positive and negative impacts.

The following extract from the SIAR's conclusion (6.0 on Page 63) gives a flavour of the pros and cons of these impacts:

*"...forest management operations have provided impacts to the communities. These are through job employment which eventually improves household income and economic status while timber roads provided shorter access to nearby townships or urban areas. The detrimental effects due to the easy access are the villagers will have to compete with outsiders for forest resources especially hunting for game animals. Furthermore, this prompted outward migration from rural to urban areas.....the decline in water supply and quality... those that seek employment have helped to improve their overall household income...increase in their purchasing power...changes also stimulate the changes in their socio-economic life..."*

It should be noted that hill paddy is an important economic activity. However, it was observed by the SIA team that those with family members in the larger towns *"... purchase their household needs and transport them back to the villagers. Hence, the impact of the reduced forest area would not be a significant impact on their livelihood..."*

Under HCV 5 (Page 63) the HCVA has this to say: *"...the [HCV] assessment reveals that the dependency on the jungle produces is in moderation as they are adapting to modern lifestyle... most of the local communities are getting into stable means of earnings... however some households still depend very much on the forest resources for their livelihood..."*

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<sup>3</sup> Social Impact Assessment for Gerenui FMU Kueh, J. H., Ong, K.H., James Geruau, G. October 2018

The growing of hill rice under a traditional shifting cultivation cycle is an economic activity widely practised by both the Kenyah and the Penan. Households that engage in this activity fell and burn *temuda*, but very rarely old secondary forest, on the slopes along the logging roads and in the traditional swidden areas near streams and rivers. Whilst the growing of hill rice is currently still an important economic, and indeed cultural, activity the indications are that more and more areas that were once farmed as hill rice will fall out of the shifting cultivation cycle, revert to *temuda* and become secondary forest.

Shifting cultivation has not been recorded as encroaching into operational commercial forest for many years. Satellite imagery is used to monitor possible encroachment of the operable forest areas (and of the FMU's licence boundary.)

Other crops planted at subsistence level include maize and tapioca. Durian, *langsats*, rambutan and other fruit trees are grown in and around the villages as are pineapple and bananas. Such produce is mainly for the villagers' own consumption with very modest sales made to the timber camps. Very limited, small scale free-range rearing of pigs and poultry is practised around the settlements providing both income and protein.

The importance of hunting has diminished in recent years. This is in part as a result of the reduction of larger wildlife in the nearby, accessible forest areas and in part due to hunting by outsiders who can make use of the logging roads for easier access. However, it is still a regular activity for many, especially the Penan (who still uses blowpipes, dogs, traps and snares but increasingly, it seems, shotguns). The enforcement of the Wildlife Protection Ordinance, restrictions by Samling together with the control of firearms has further curtailed hunting activity in the FMU. Wild meat is for the hunter's own consumption and its sale is, in theory, prohibited.

Fishing is not an important activity in the FMU. It serves to supplement the diet and, other than the highly prized *empurau*, only excess catch, which is rare, is sold.

The practice of collecting jungle produce from the adjacent older *temuda* to supply the daily needs is common. The jungle produce includes timber, wild fruits and wild vegetables all of which are for own use and direct consumption. Wild sago retains traditional but decreasing importance for the Penan. Rattan, bamboo and palm are gathered and made into handicrafts such as floor mats, trays, baskets and hats. Again, these are mainly for own use with limited *ad hoc* sales in the timber camps. The introduction of modern household utensils further reduces the dependence on forest produce.

Bird nest (swiftlet) collection from caves located outside the FMU provides income for some families of Lg Silat, Lg Jeeh, Lg Sewaan and Lg Belaong.

A large number of the Kenyah villages in or near the FMU were only established in the midtwentieth century when they moved from the Usan Apau. Consequently, there are relatively few known old burial grounds and sites of historic interest within the FMU. Of historic interest is the Bali Tanah near Lg Palai which is noted in the HCVA report (see next section). The SIAR mentions an ancestral graveyard at Lg Taan and the HCVA mentions several other, both old and new, burial grounds. The HCVA goes on to say: "*...Most of these burial grounds are within their shifting agriculture area and nearby their settlements...*".

Apart from these burial grounds and the Bali Tanah no sites of cultural and historical interest are located within the FMU and known to the FMU management. (See map in the HCV section.)

The potential activities for recreation include mountain climbing, jungle trekking, bird watching, white water rafting, longhouse visits and observing traditional festive events.

The *Conflict Resolution Guidelines for Sustainable Forest Management*<sup>4</sup> is followed for the resolution of any conflicts that might arise. Conflict Resolution Guidelines is available @: <https://www.samling.com/sites/default/files/Forest%20Management%20Certification%20Procedure%20for%20Conflict%20Resolution%20-%20English%20Version.pdf>

### High Conservation Value Areas

A High Conservation Value (HCV) assessment was completed by external consultants in early 2019 and is the subject of a separate report<sup>6</sup>. ([Right click here to access HCVR Map 6](#)). As determined from the zoning in the FMU's general harvesting plan about 70.2% of the gross area of the FMU is classed as production forest. A further 18.5% is occupied by areas for community use including shifting and settled agriculture leaving about 11.3% in various forms of protected areas (including water catchments) and conservation areas.

Some salient points from the HCV assessment report are noted below.

Thirty-nine species of fauna and fifty-six of flora were identified as rare or threatened or endangered (RTE) (HCV 1.2). Only eight species of fauna were identified that are endemic to Borneo – of which four are categorised as of Least Concern by IUCN. Fifty-nine tree species endemics to Borneo were recorded but only three of them are endemic to Sarawak. (HCV 1.3).

Areas of critical temporal use were also identified (HCV 1.4). These included a wallow, a big bird roosting area, hollow tree as a potential bird nest site and one salt lick.

About 48% of the FMU lies within the HoB. The FMU has common boundaries with Usan Apau N.P. in the west and Sg Moh Wildlife Sanctuary in the south. To the north the FMU has a common boundary (Btg Baram) with Samling's Suling-Sela'an FMU and to the north-east with Samling's Tama Abu FMU through both of which there is linkage to Pulong Tau N. P. (HCV 2).

Mixed dipterocarp forest, most of it harvested at least once, covers approximately 75% of the gross FMU area. This forest type is very well represented in the 220,000 km<sup>2</sup> of the HoB and cannot be considered as endangered (HCV3). The upland kerangas forest has been accorded HCV status.

Just less than 12% of the FMU is classed as TCIV - with slopes of more than 35° (HCV 4.1).

To help protect the river systems buffer zones (RBZs/SBRs) are mandatory for all permanent water ways. The width of the buffer is determined by the width of the river or stream and is prescribed by NREB (HCV 4.2). Harvesting and any other mechanical activity are prohibited within RBZs/SBRs.

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<sup>4</sup> Guideline 12 The GREEN BOOK, FDS 2019. At the time of writing this is not yet an MC&I (Natural Forest) verifier for the MTCS. <sup>6</sup> High Conservation Value Assessment Report, Gerena FMU, Demies, M., *et al* February 2019



The HCV report suggested that HCV 5 is present primarily in the provision of water catchment protection to safeguard a supply of clean water for domestic use. Most of the other services – provision of a supply of firewood, wild fruits and vegetables, building and handicraft materials – are sourced from areas of old temuda and secondary forest. Thus, provided that any water catchments within the active coupes are protected, the negative externalities of harvesting (and of any other forest management operation) carried out in the FMU should be negligible.

The FMU also provides employment for those with the relevant skills or who wish to be trained to obtain such skills.

The HCV report gives recommendations for the maintenance of the HCV attributes; some of these are listed below:

- Buffer zones should be maintained along the boundaries of TPAs.
- The “No Hunting” policy should be maintained and enforced to the extent possible (although local residents are allowed to hunt for their own use.)
- The DF Circular No. 6/99 should be prominently posted to help reinforce the above.
- Any critical temporal use areas and salt licks should be excluded from the operation area. Buffer zones must be established round such areas.
- The FMU is to be managed in such a manner that enables wildlife to move from one part of the forest to another as operations progress from coupe to coupe.
- Boundaries of the conservation zones, terrain class IV and shifting cultivation area should be clearly demarcated on the management maps.
- RIL harvesting techniques should be used.

About 34% of the FMU lies outside of the production area; and about half of this nonproduction area serves a designated protective function e.g., RBZs, border buffer zones, conservation and steep areas, etc. An ever-increasing percentage of the area classed as shifting agriculture (SA) ceases to be in the shifting cultivation cycle as a result of the continued decline in the able-bodied resident population who might wish to farm. That such a significant percentage of the FMU is outside the production area together with the strictly enforced 25 years harvest cycle should help to ensure that, within the FMU, the existing diversity of both the fauna and the flora will be maintained.

### **Community Liaison and Development**

The FMU Conservation and Community Development (CCD) Committee, Forest Management Certification Liaison Committee and Community Representative Committee (CRC) serve as platforms for achieving a balance between the economic, environmental and social interests. The formation of Community Representative Committee (CRC) is at the wishes of the community. The membership of CRC should comprise community representatives, female gender representatives and the FMU community liaison officer to mitigate all socio - economic issues between the local communities and FMU management. Any local dispute arises between the community and FMU management shall be resolved amicably at the level of CRC.

For community development projects, the “help for self-help” principle is applied. Accordingly, the local community participate in, and are responsible for, those functions and activities of development measures that they can provide by their own means. Assistance for

the community development project might come from FDS, the FMU holder and any agency (whether government or non-government) able to provide know-how and/or funds that are not otherwise available to the community.

### Safety, Health and Environment

The FMU operates under Samling’s Health, Safety and Environment Policy and follows the Safe Practices and Procedures for Forest Activities. In addition to receiving their work instructions and toolbox talks, the workers are either sent for training courses or trained within the FMU in the prescribed activities (directional felling, the proper usage of chainsaws and safety aspects, log extraction and log loading) by designated trainers. This is periodically reviewed. There is in-house training of occupational safety and health practices for the workers. A Safety and Health Committee ensures compliance with the Occupational Safety and Health Act 1994, and the relevant legislative regulations and guidelines that are applicable to the respective workplaces.

Gerena FMU has a policy<sup>5</sup> that states that pesticides will not be used.

### Monitoring

Monitoring is required to ensure that the environmental protection measures are implemented, are effective and comply with mitigation requirements. The FMU has formulated an Environmental Policy (EP) in compliance with the PEFC endorsed Malaysian Timber Certification Scheme (MTCS) for well-managed natural forests.

**Environmental Monitoring Report** results of river water quality as at 2<sup>nd</sup> Quarter 2023 concluded that the water qualities of Sg. Julan and Sg. Silat in the locality of the project area were found to be good with all the results comparable to Class I of the NWQSM.

**Social Impact Monitoring (SIM)** was carried out in the year 2022, January 2023 and June 2023 at the 24-community cluster within and adjacent to Gerena FMU. Below is the summary of June 2023 SIM trip and the number of respondents interviewed: [\(Right click here to access Map F - Localities of the Settlements \(SIM\)\)](#).

No.	Date for June 2023	Villages	No. of respondent/ Households		
			Jan-22	Jan-23	Jun-23
1	8-Jun-23	Lio Mato	0	7	0
2		Long Siut	-	9	0
3	9-Jun-23	Long Tungan	5	17	0
4		Long Semiang	5	12	0
5		Long Selaan	6	14	0
6	10-Jun-23	Long Selatong Tanjung Tepalit	4	8	0
7		Long Selatong Dikan	5	6	0
8	21-Jun-23	Long Apu	2	4	3
9	22-Jun-23	Long Palai	2	10	0
10		Long Anap	6	6	0
11	23-Jun-23	Long Jeeh /Long Belaong	3	8	0
12		Long Selawan	5	12	6

<sup>5</sup> Samling Policy No. 10

No.	Date for June 2023	Villages	No. of respondent/ Households		
			Jan-22	Jan-23	Jun-23
13	24-Jun-23	Long Moh	6	6	0
14	25-Jun-23	Long Bee	7	13	5
15		Ba'Purau	7	20	0
16		Long Be'tao	3	8	8
17		Long Jekitan	5	5	3
18		Long Tikan	0	1	1
19		Long Kemilong	1	5	1
20	26-Jun-23	Long Silat	1	3	1
21		Long Mekaba	1	3	3
22	27-Jun-23	Long Julan Pelutan	1	3	3
23		Long Julan Asal	3	5	3
24	10-Jul-23	Ba'jawi	3	3	3
			<b>81</b>	<b>188</b>	<b>40</b>

The SIM concluded that forest management operations have provided positive impacts to the communities:

- Job opportunity at the logging camp has improve household income and economic status.
- There are also positive feedbacks from the respondents which related to logging roads and land use or ownership.
- Logging road has given the opportunity for the village to have new development either from the government or NGO and also for the villagers to improve their longhouses by having the materials such as cement, tiles and zinc to be delivered to their doorstep.
- The local communities are very depending on logging road for shorter access to nearby township or urban areas.

Furthermore, this has been one of the causes of migration from rural to urban areas. However, there are negative impacts on:

- Water quality by the adjacent forest activity in provisional lease (PL) area
- Forest resources and traditional economic activities such as hunting, fishing and collecting jungle and river produces still remain.
- The locals will have to compete with the outsiders for forest resources as the road access have caused easier access for outsiders to enter the area.
- Most of the respondents had their traditional agricultural land affected by the forest activities but that was the past experience.

More studies need to be done to determine suitable courses of action to mitigate these issues.

- The Community Representative Committee (CRC) platform should be utilized actively in order to mitigate issues between FMU and villagers efficiently and effectively.
- These changes eventually caused changes in their socio-cultural life especially their traditional knowledge and skills.
- Various co-joint programs can be proposed and implemented to enhance and maximise the benefits from forest management operations.

There are not many respondents willing to complete the questionnaire. Some mentioned feeling bored as they claimed to have already completed it in January 2023. Additionally, some respondents stated that there have been no logging operations in the Gerena FMU, which is

why they see no need to participate. Hence, the SIM data might be inaccurate as individual household opinions may vary. While some households may view logging as beneficial, others may hold a different perspective.

Therefore, understanding the social needs and impacts on them and its environment directly or indirectly can help in harmonizing the efforts between local communities, Gerena FMU and the environment in a more synergistic approach.

**HCV Monitoring** was conducted during the community engagement on 11<sup>th</sup> – 21<sup>th</sup> January 2022 and social impact monitoring in April/May/July 2022. In conclusion, as prescribed in Indicator 2.2.2, the sites of special cultural and religious significance to the local people shall be clearly identified, recognised and protected by the management of FMU. Demarcation of a negotiable boundary around each HCV sites located within Gerena FMU will be conducted and shall be deliberated through consultation with the local communities with priority given to the affected villages of operation in Gerena FMU. All identified HCV1.4, HCV 5 and HCV 6 are shown in map HCV 1.4, HCV 5 and HCV 6.

[\(Right click here to access Map HCV 1.4 – Critical Temporal Use\).](#)

[\(Right click here to access Map HCV 5 – Basic Needs of Local Communities\).](#)

[\(Right click here to access Map HCV 6 – Cultural Identity of Local Communities\).](#)

**Biodiversity – Establishment of Bindang (Agathis sp.) Plot** was done in March 2022 with the objective to observed the distribution of Bindang in the mixed dipterocarp forest (MDF).

The HCV areas of the affected communities especially those HCVs that are located in the operable area will be managed and monitored by the FMU while the HCVs that are located inside the shifting agriculture/inoperable area will be managed by the local community. Any suggestion to maintain or enhance their HCV areas whether in operable area or inoperable area can be voiced out to the FMU through grievance form and CRC platform. The “Grievance Form/Borang Keluhan” is available @ <https://samling.com/node/207>.

As recommended by Sarawak Forestry Corporation (SFC) in the HCV assessment report of Gerena FMU (2019), periodical monitoring and maintenance of the community water catchment areas are to be carried out by the representatives from every longhouse to ensure the water quality is well maintained.

As mentioned under the section **Provisions for monitoring forest growth** a system of permanent sample plots (PSPs) will, after some years, start to provide data that allows monitoring of the composition and observed changes in the flora and to a lesser extent the fauna. The PSP data will also provide for the monitoring of forest growth and dynamics in terms of growth rates, recruitment, regeneration and general condition of the forest; these data will provide a basis for refining the AAC.

The PSP re-measurement was carried for six PSPs in October 2020 concluded that the total number of species by DBH class between dipterocarp against the non-dipterocarp was in balance. Therefore, the enrichment planting is required to be implemented.

Progress of **forest landscape restoration** as at 2<sup>nd</sup> Quarter 2023, a total number of 1,886 seedlings have been planted at the ex-landing and degraded area in Gerena FMU.

For **wildlife monitoring**, one camera trap was installed in Coupe 02A from March to June 2022. Its recorded eight (8) species which comprises of seven (7) species of mammals and one (1) species of bird. Whereas in Coupe 22, 23 and 24, a total of 25 units of camera traps were installed by Forest Department Sarawak from October 2021 to February 2022 and obtained 36 species which comprises 29 species of mammals, six (6) species of birds and one (1) species of reptile. The other 42 species of birds were recorded by Incidental Wildlife Sighting where five (5) species were recorded at Coupe 02A.

Data analysis for Coupe 02A (after harvesting); Species Diversity  $H = 1.74$  indicates that *Species diversity value is more than 1 indicates high diversity* and Species Evenness  $E = 0.661$  indicates that *Species evenness indicates similar distribution of species*.

Data analysis for Coupe 22A, 23A and 24A by FDS; Species Diversity  $H = 2.663$  indicates that *Species diversity value is more than 1 indicates high diversity* and Species Evenness  $E = 0.722$  indicates that *Species evenness indicates similar distribution of species*.

**Ten camera-trap** stations were established inside the proposed **Mujan-Julan National Park (NP)** from **May through June 2019 by WWF**. The total sampling effort was 572 camera-trap days, with over 3,180 “independent” images collected and 24 species of wildlife positively identified. The most frequently photographed species was the pig-tailed macaque, followed by the muntjacs, bearded pig, and the Malayan porcupine. Also recorded were threatened species such as the Sunda pangolin, and Bornean endemics such as the Hose’s langur and the Bulwer’s pheasant. The occupancy probabilities of some species were considerably high in relation with the sites’ elevation and canopy cover. In addition, the detection probabilities for some species were poor due to the lack of detection.

**Yield** of forest products (logs) harvested as below:

Coupe	Total Block	Total Area (Ha)	No. of Block Harvested	Total Area Harvested (Ha)	Total Production (m <sup>3</sup> )	Yield (m <sup>3</sup> /Ha)
01A	46	3,218	36	2,022	31,935.56	15.79
02A	45	3,283	29	2,109	42,139.25	19.98
		6,501		4,131	74,074.81	17.93

**Growth Rates, Regeneration and Condition of the Forest:** The re-measurement was carried out in October 2020 for six (6) PSPs, namely PSPs 6, 8, 9, 10, 14 and 15. The MAI for Class A dipterocarp >30cm is 0.9 cm dbh compared to non-dipterocarp of 0.6cm dbh. In Class B, the MAI for dipterocarp is lower than non-dipterocarp having the dbh of 0.2cm and 0.4cm respectively. The Class C dipterocarp, where its MAI =0.4cm dbh is higher than MAI=0.3cm dbh of non-dipterocarps. This initial data shows that growth spurts of dipterocarp species begins when it reaches >30.0cm dbh. The overall recruitment in the dipterocarp for Class A, Class B and Class C were significantly lower at 18.9% as compared to non-dipterocarp for all class at 81.1%.

The total number of species by DBH Class shows that dipterocarp was significant lower by 17% as compared to non-dipterocarp 83%.

The **Post-Harvest Inventory (PHI) Assessment** for Coupe 01A Block 01, Block 16 and Block 03 were carried out during the year 2023. The findings are as below:

**PHI Assessment for Coupe 01A Block 01 and Block 16:** A total number of 521 trees were assessed during PHI assessment in Coupe 1A Block 01 and Block 16 of Gerena FMU. Among 521 trees assessed, a total number of 49 tree species were identified, which includes 5 tree species of dipterocarp trees and 54 tree species of non-dipterocarp trees. Dipterocarp trees makes up 11% of overall tree species, which makes 89% of other trees are non-dipterocarp tree species. The majority of both dipterocarp and non-dipterocarp trees are of Tree B, followed by Tree C, Tree A, and Seedling. Last but not least, the majority of both tree groups are of Potential crop trees, followed by Fruit trees, Mother trees, and Protected trees.

**PHI Assessment for Coupe 01A Block 03:** A total number of 336 trees were assessed during PHI assessment in Coupe 1A Block 03 Ulu Trusan FMU. Among 336 trees assessed, a total number of 49 tree species were identified, which includes 5 tree species of dipterocarp trees and 44 tree species of non-dipterocarp trees. Dipterocarp trees makes up 6% of overall tree species, which makes 94% of other trees are non-dipterocarp tree species. The majority of both dipterocarp and non-dipterocarp trees are of Tree B, followed by Tree A, Tree C, and Seedling. Last but not least, the majority of both tree groups are of Potential crop trees, followed by Fruit trees, Mother trees, and Protected trees.

Conclusion, based on the growth rates, regeneration and condition of the forest results above, the enrichment planting is required to be implemented to ensure the balance of dipterocarp versus non-dipterocarp.

**RIL compliance assessment** was conducted in June 2022, a total of 12 blocks of Coupe 01A has undergo the assessment and the scores are **75.3%** compliance with RIL Guideline.

**Costs, Productivity and Forest management efficiency:** Harvesting suspended since September 2022.

June 2023