Syarikat Samling Timber Sdn Bhd

A member of Samling Group of Companies

PUBLIC SUMMARY

Forest Plantation Management Plan

For KUALA BARAM Industrial Tree Plantation LPF/0004

1st February 2020 to 31st January 2030

Yap Fui Fook

Chief Operating Officer

1. Related Documents and Systems

There are numerous related documents. These are held in a document Register held in Samling Miri HQ.

2. The Company

Samling is head-quartered in Miri, the largest city in northern Sarawak, Malaysia.
Samling aims to produce an economically sustainable supply of logs from the KUALA BARAM ITP which, when combined with logs from their other ITP areas and from their natural forest licence areas, will support its downstream wood processing activities – plywood, sawn timber, fibre board, furniture components and wood pellets.

Samling is an equal opportunity employer that operates an active health and safety management system.

Samling also:

- recognises both the value and the importance of its environmental and social responsibilities; and
- minimises the risks of modern slavery and human trafficking in its operations through staff awareness and due diligence and by ensuring that the supply chain sourcing foreign workers is similarly aware of, and alert to, the risks.

2.1 Policies

Samling has a number of policies that clearly state the company's position on the various subject matters concerned. These can be seen in the Samling website.

3. Malaysian Timber Certification Scheme (MTCS)

3.1 Our Commitment

Samling is committed to develop and conform to the principle of forest plantation management sustainability on all ITP land under LPF/0004 and, in so doing, to comply with the Malaysian Criteria & Indicators of Forest Plantation Management Certification – the MC&I ST 1002:2021 (SFM) of the Malaysian Timber Certification Council (MTCC). It is intended that the ethos of MTCS compliance should be embedded in KUALA BARAM's management culture for the *whole* ITP area of the LPF and not just the area proposed for certification under the MTCS.

Certification of forest plantation management – and therefore of the plantation logs produced for in-house processing – is very important to the future of Samling. It creates potential marketing and economic advantages for its wood-based products and, more importantly, it will help ensure that the management of its resources complies with the MTCS principles which amongst other attributes embrace sustainability and compliance with environmental, social and governance standards.

3.2 Certification Requirements

The MTCS requires:

- Following the guidelines and requirements set out by the principles of the MTCS.
- Developing a sound policy base derived from the MTCS principles and ensuring that these polices are communicated to and followed in the workplace.
- Developing open lines of communication involving employees and stakeholders in the development of economically sustainable forest plantation management practices.

- Using best practice guidelines in its management regimes. This includes the implementation and continued use of sound, proven and economically viable forest plantation management, environmental, financial and social practices that help ensure the sustainability of the resources.

3.3 Certification Status

At the time of preparing this FPMP the area of KUALA BARAM LPF designated for oil palm and held under licence by Woodman Kuala Baram Estate Sdn. Bhd. was already certified under the Malaysian Sustainable Palm Oil Certification Scheme (MSPO). The area designated for ITP and held under sub-licence by Syarikat Samling Timber Sdn. Bhd. was certified under MTCS certification scheme.

KUALA BARAM was successfully audited for compliance with the MTCS by SIRIM QAS International Sdn Bhd in April 2022 with SIRIM's Certificate for Forest Management (Forest Plantation) No. FMC-FP 00119 being issued on 27 December 2022.

3.4 Area Eligible for Certification under MTCS

Under the MTCS those areas that were cleared or on or before 31 December 2010 are eligible for certification. Areas on which the forest is considered to be degraded are also eligible.

4. Forest Plantation Management

4.1 Statutory Framework

In the main the most recent legislation that effects ITP and environmental management is contained within the Forest (Planted Forests) Rules, 1997 and the Natural Resources and Environment Ordinance, 1993 (Cap. 84).

The outcomes should always adhere to the principle of sustainable ITP management and are controlled in companies such as Samling by the use of these documents as resource consents. These two pieces of legislation therefore act as a method of controlling adverse management effects.

There are numerous other Acts and Regulations that form the basis of forest plantation management practices for KUALA BARAM. These are listed in the Document Register held in the Samling HQ, Miri.

KUALA BARAM keeps "hard" copies of legislation key to its business and management practices at the Miri HQ. In some cases, the legislation is held in PDF format where hard copies are not available. However, amendments to legislation are relatively frequent and there is access to up-to-date acts of parliament through the internet.

4.2 Forest Plantation Management Objectives

The forest management's primary objective is the **economic production of logs to supply Samling's downstream**. This supply is both for solid use, i.e., peeler logs and saw logs, and for fibre. However, in achieving this primary objective there are several important supplementary objectives. These are listed below, not in any order of priority:

- maintain the ecological productivity of the ITP – thereby assisting to maintain the value of the forest services;
- ensure a sustainable level of log production at the group level;

- conduct forestry operations in a manner that does not impact negatively on the wellbeing of those people living within and nearby the LPF;
- safeguard the environment of the LPF - thereby assisting to maintain the value of the forest services; and
- maximise harvesting recovery.

4.3 Forest Plantation Management Strategy

SST uses the MTCS principles and criteria to formulate the management strategy in order for KUALA BARAM to achieve the objectives set out above.

As the history of the LPF, described in Chapter 5, indicates and as is noted in the EIA, the area has a long history of repeated harvesting that clearly left the area severely degraded in terms of forest cover. The ITP is established in clearly defined areas of this degraded area.

Special Management Zones (SMZ) have been, and continue to be, identified.

SST also recognises the importance and significance of international agreements in its management and wherever possible it cooperates with the governing authorities to enforce the regulations of such agreements.

The text of these agreements and conventions can also be accessed through some excellent websites dedicated specifically to them or through association with Sarawak government agencies such as that of the Natural Resources and Environment Board (NREB).

4.4 Special Management Zones (SMZs)

4.4.1 Zone types occurring in KUALA BARAM MTCS Area

In Sarawak, there are several possible zone types but on peat soils the number is much reduced as can be seen in Table 4.1 where those identified as occurring within KUALA BARAM to date are shown. Any R&D areas, although under special management, will be accounted for within the ITP planted area and managed accordingly.

Table 4.1: Special Management Zones (SMZs) occurring within KUALA BARAM MTCS Area

Zone Types
HCV Areas
Seasonally Flooded Areas
Continuously Swampy or Marshland

A zone type may be mandatory, e.g. a river buffer zone which must be established along permanent water courses. Elective zone types are those where, for example, at the management's discretion a wildlife corridor has been demarcated on otherwise plantable land. This would be classed as a conservation area. And there are 'Hobson's choice' zone types where the physical characteristics of the site preclude the option of planting, e.g. marshland and seasonally flooded areas. In reality all SMZs are effectively conservation areas where encroachment is prohibited. Where encroachment cannot be satisfactorily resolved by management in discussion with those involved then a report must be made to the relevant authority.

The types are not mutually exclusive: e.g., a river buffer may contain marsh land. By virtue of being demarcated on the ground, GPS-ed and mapped and then protected from most human activity, SMZs, of whatever type, do have a role in the conservation of KUALA BARAM's bio-diversity.

Table 4.2: Recommended Widths for River Buffer Zones

Width of Water Course (m)	Width of River Buffer Zone (m)
>40	50
20-40	40
10-20	20
5-10	10
<5	5

Source: Table 4.3 in KUALA BARAM EIA November 1999, Ecosol Consultancy Sdn. Bhd.
Note: Width of river buffer zone is the width of the buffer on each side of the water course.

4.4.2 Management of SMZs

Where possible the guiding management principles are applied to all SMZs that are currently identified in KUALA BARAM ITP area, regardless of whether or not they fall within the MTCS area.

The zones are first identified and then demarcated on the ground using blue paint as appropriate. The boundaries of marsh land and seasonally flooded areas are more or less self-defining whilst the boundaries of riparian buffers (RBZ) must be carefully located and marked to ensure compliance. After being clearly demarcated on the ground all SMZs are protected and, apart from the removal of any planted exotic trees and access by local people to source NTFP for traditional purposes (and such use is negligible in KUALA BARAM) there should be no invasive human activity within them. However, encroachment can and does take place but in most cases, management does not have the authority to take any action other than to make an official report to the relevant government agency.

Where an exotic ITP species was originally planted in the RBZ (in the years prior to certification) the intention is to remove it when harvesting the adjacent block. Harvesting will be undertaken with minimum damage leaving the residual vegetation to recover and to continue to develop over the ensuing years. The removal of the exotics can be considered as assisting the natural process of recovery and reversion. The use of machinery, other than chain saws, in an RBZ is prohibited. A contractor who transgresses may be fined up to RM5,000.00 should he allow machinery to enter any SMZ (other than chain saws in zones where exotics are to be removed) and RM100.00 for any non-exotic tree deemed to have been avoidably damaged within the zone.

Following demarcation and the removal of any merchantable exotic trees, no further invasive action in these SMZs is allowed. This protection should allow the SMZs vegetation to develop in structure and bio-diversity, albeit very slowly.

Table 5.4 shows that the area of SMZs although miniscule in absolute terms, still represents 0.4% of the MTCS area. It comprises swampy areas. The lack of RBZs reflects the fact that the banks of the Btg Baram are excluded from the MTCS area either because they are very prone to flooding or because the relatively fertile levees have been encroached by local farmers; and that no streams have been found in the MTCS area.

4.4.3 Natural Forest Areas

Apart from a small area of natural forest known as the Kejaman Communal Forest[1] - which is itself much degraded – there are no areas of undisturbed natural forest within LPF/0004. As noted in the EIA of 1999 page C3-23 & 26 *"…none of the phasic communities remains intact. This has been due to heavy logging for timber during the past two decades. In recent years fires have also destroyed a substantial portion of the forest in the Lower Baram FR…When timber harvesting started in the PSF in the 1970s…after being subjected to a number of cutting cycles, however, the forest is now almost totally deprived of these commercial timbers...the forest has been reduced…to one that is on the whole totally beyond recovery…"*

From the above extract from the EIA it may be assumed that any residual forest present at the start of the ITP establishment bore no resemblance to the peat swamp forest types depicted on the FDS Map C (dated August 2003 and attached to the LPF licence) which covers a part of the Lower Baram Forest Reserve within which the MTCS area is located.

For the residual vegetation within the SMZs to recover to a state approximating that of primary forest in terms of composition and structure requires not only much time but it also requires that ravages of fire and of encroachment by agricultural activity must be prevented. Unfortunately, the greater length of the true left bank of the Btg Baram, most of which is outside the MTCS area, is already under pressure from both these elements and there is little that management can do other than to report any encroachment into the MTCS and be prepared to deal with fires as they occur.

5. Resource Description

5.1 History

This history refers only to the area now known as KUALA BARAM LPF the location of which within northern Sarawak is shown in Map 5.1. The Kuala Baram Licensed Planted Forest (KUALA BARAM) is an industrial tree plantation (ITP) operating under a Sarawak government licence (LPF/0004) issued in 1998 and is valid for 60 years. By means of a sub-licence, dated 1st September 2007 and approved by the Sarawak Forest Department on 23rd September 2007, Syarikat Samling Timber Sdn. Bhd. (SST) has the right to establish an industrial tree plantation (ITP) within a designated area of the LPF. The operational work for the ITP has been contracted out by SST to Samling Reforestation (Bintulu) Sdn. Bhd. (SRB).

5.1.1 Land Status

The current land status of the area proposed for MTCS and of the LPF area immediately adjoining is shown in Map 5.2 which is based on EIA Figure 3.7. Almost the whole LPF lies within the Lower Baram Forest Reserve (FR) with the greater part within the third extension (Gazette Notification (GN) 1806 dated 24th August 1965).

The MTCS area lies entirely within the FR. All of Coupe 4B and part of Coupe 5B is within the original FR (GN 1962) and the balance is within the third extension. Rights to farm existing *temuda*, generally associated with named rivers and streams, were granted to named people and their heirs. From the above it follows that any land claim on parts of the FMU within the Lower Baram FR and extensions thereto outside of the above noted areas will be completely spurious. The status of land claims made on areas over which the GN acknowledged rights has yet to be clarified.

[1] Kejaman Communal Forest is outside the current boundaries of the MTCS area.

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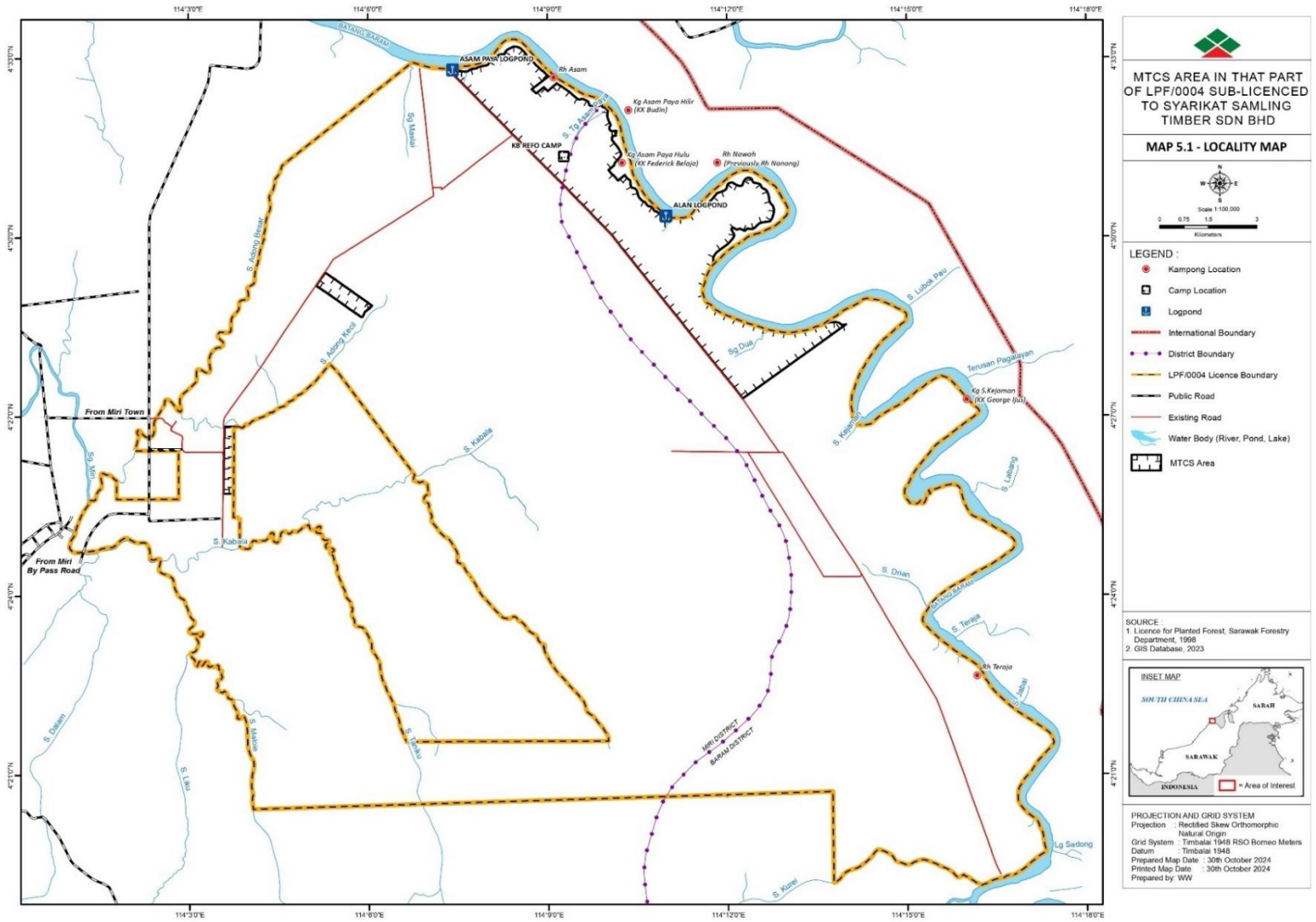
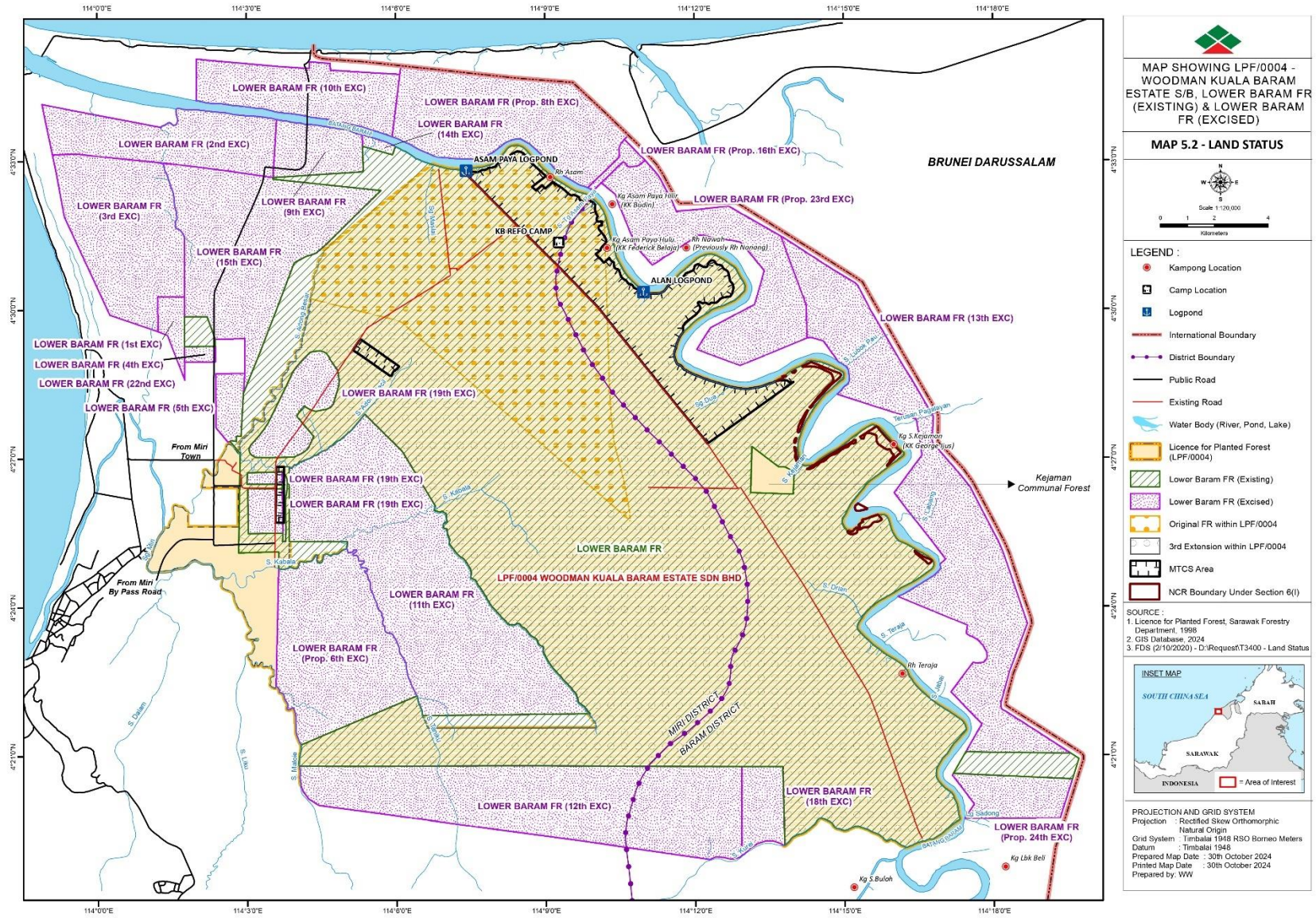
Map 5.1: Locality Map for LPF/0004



Map 5.2: Land Status



5.1.2 Expired Forest Timber Licences

All of what is now LPF/0004 has been heavily harvested under various forest timber licences (FTLs) none of which were issued to the Samling Group or related companies. Map 5.3 shows the location of the expired FTLs that have covered various parts of the LPF. The information on the licencing history is not complete. It is likely that some of the later FTLs were re-issues of much older FTLs.

5.1.3 Past Harvesting of the Forest Timber Licences

The original FTLs that covered parts of the LPF were no doubt issued with minimum DBH conditions (usually applied to FTLs operating in forest reserves). They were almost certainly harvested using the relatively forest friendly *kuda-kuda* system. This would have meant that non-dipterocarp obligatory species of 45+cm DBH OB and dipterocarps of 60+cm DBH OB that would yield one or more merchantable logs must be harvested with a penalty be paid for failure to do so. Trees below these cutting limits should not have been felled.

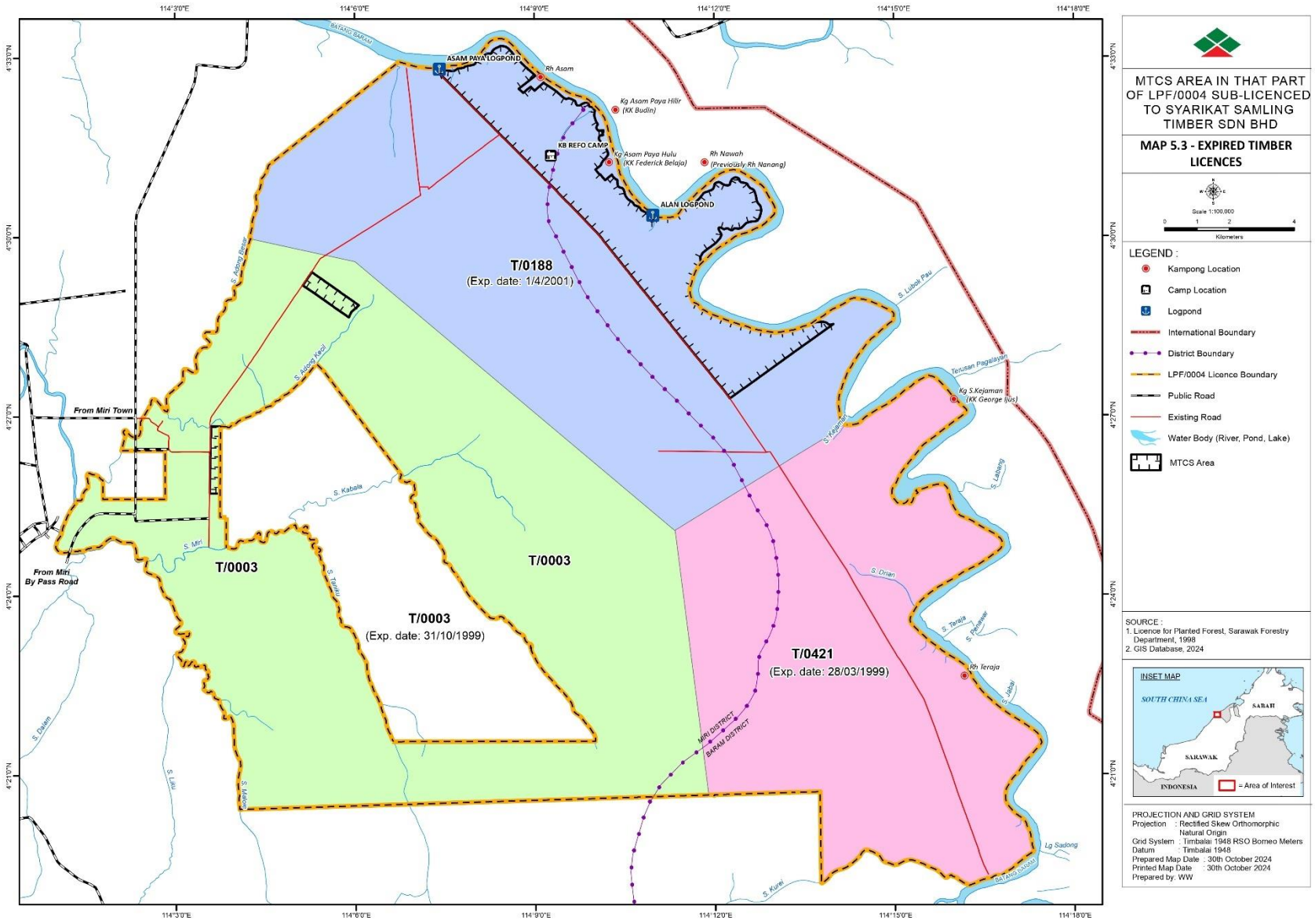
However, the subsequent harvesting history is not known to Samling. When KUALA BARAM ITP started planting in 2007 there was virtually no residual timber left although PECs were still required prior to site preparation. Given that much of the forest was of Forest Types, or Phasic Communities, 3.5 and 3.6, with presumably no minimum diameter limit being enforced, this would mean the almost complete removal of the forest cover afforded by the gregarious *Shorea albida* – with standing volumes of 400 to 500 m^3/ha, or even more, in Forest Type 3.6 – leaving a site almost totally devoid of vegetation. Map 5.4 is based on Figure 3.4 of the EIA. It shows the forest types that existed prior to the issue of the FTLs. The LPF contained Anderson's[2] basic catenary sequence from the river side mixed peat swamp forest to the padang forest of the central peat dome. All the forest types except the very central padang forest contained commercial species and FTLs were allocated over the whole LPF (Map 5.3) which, presumably, must have resulted in very heavy harvesting intensity and severe damage to the forest structure. Perhaps Coupes 7 to 10 might give some indication of their vegetative state immediately after the final timber extraction – two or three decades earlier than present – if they can be visualised without the decades of regrowth?

It seems reasonable to assume that, regardless of the original forest type, heavy harvesting would have resulted in the structure of the post-harvest forest rarely, probably never, approximating that of the undisturbed 'natural PSF' (which might also be called the 'native ecosystem' or 'primary PSF').

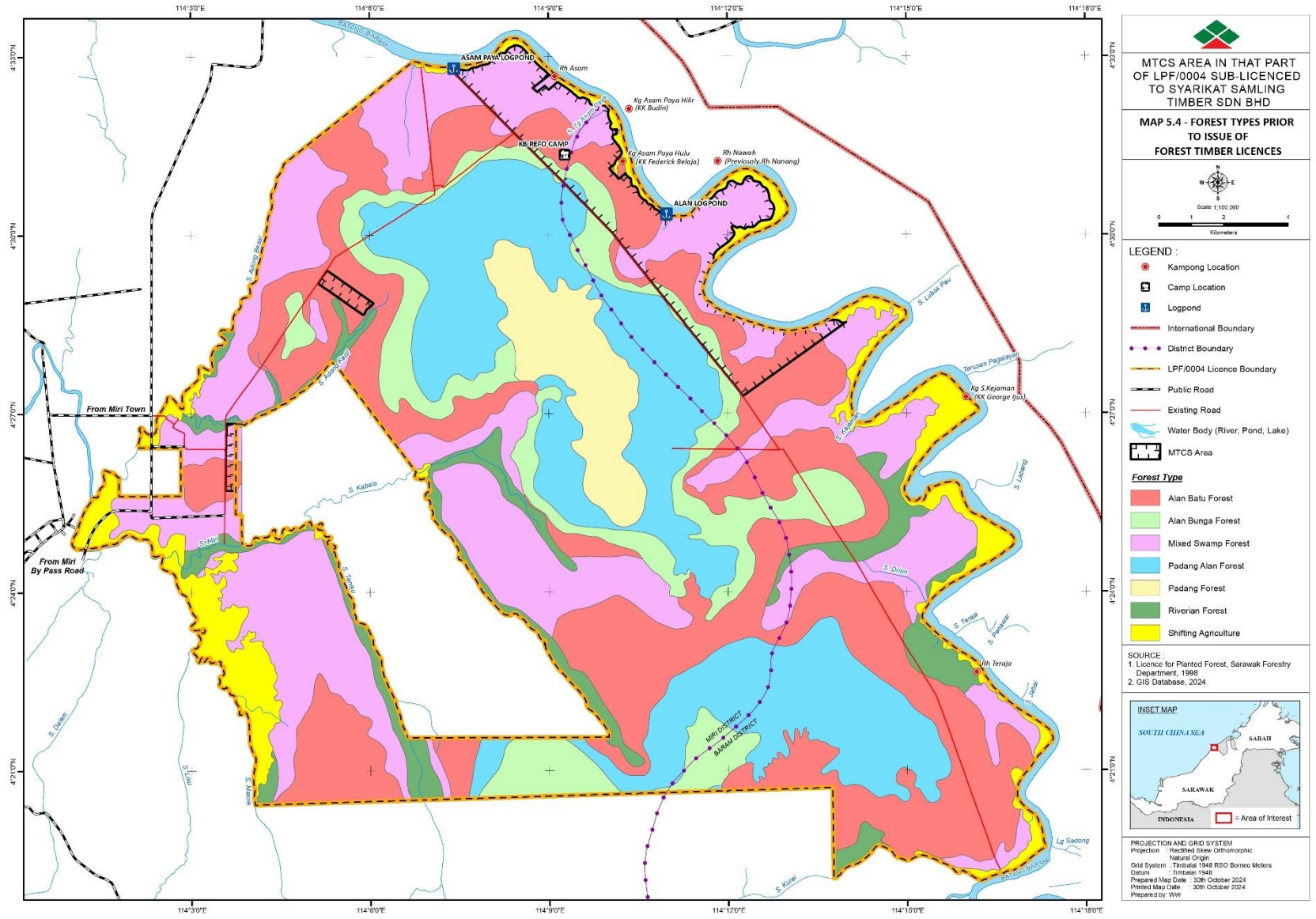
On an area designated for conversion to LPF the FTL holder, after completion of harvesting, surrenders the completed coupe, or even the entire FTL, to the LPF holder. The LPF holder then applies to FDS under the Permit to Enter Coupe system (PEC) to start operations which cover coupe and block boundary demarcation, road alignment and salvage harvesting. This allows the LPF holder to clear the area in preparation for planting. At this time any

[2]Anderson, J A R, The ecology and forest types of the peat swamp forests of Sarawak and Brunei in relation to their silviculture (1961)

Map 5.3: Expired Timber Licence



Map 5.4: Forest Types within LPF/0004



residual merchantable trees will be harvested (an operation known as 'salvage harvesting'). If the area has been subject to more than one cutting cycle or re-entry, then the residual merchantable volume will probably be very low or even non-existent.

5.1.4 Conversion of Primary Forest

As has been noted in the preceding section, the areas of natural forest within the LPF have been subjected to repeated harvesting for forty, and possibly fifty, years or more. Consequently, no undisturbed primary forest was known to remain at the time the LPF licence was issued on 8th December 1998.

This means that no primary forest has been converted to ITP within the LPF area. Furthermore, no primary forest remains for such conversion.

5.2 Determination of the Area Eligible for Certification under MTCS

5.2.1 MTCS Cut-off Date

The gross area of the LPF is 40,648 ha[3]. Table 5.1 shows the breakdown of the whole LPF by coupe. The gross ITP area of 8,497 ha is not eligible in its entirety by virtue of the 31 December 2010 cut-off date.

Because of the cut-off date the areas eligible for MTCS are restricted to those of the whole of Coupes 4B, 5B and 6B and 145.6ha of Coupe 2AP – a total gross area of 3,000.0 ha.

It may be noted that in Table 5.1 there is a very minor discrepancy between Reforestation's GIS gross area of the licence area and that from FDS's figures. There is a similar discrepancy for the area of the MTCS area. Discrepancies of this nature frequently occur and are often much larger. They arise in part because FDS and Samling work from different digitisations of the original LPF licence maps. FDS has been requested to provide the shape files that would resolve this but has yet to accede.

Table 5.1: LPF/0004 Coupe Areas, Location, Soil Type and MTCS Area

Coupe	Gross Area	Location	Soil Type	In MTCS Area	Gross Area (GIS)
01A	4,127	True left bank of Btg Baram	Peat – variable depth	No	4,139
02A	5,493		Peat – variable depth	Part: 2AP (145.6 ha)	5,491
03A	5,564		Peat – variable depth	No	5,183
04A	5,236		Peat – variable depth	No	5,082
04B	1,151		Peat – variable depth	1,005.1 ha	1,152
05A	6,528		Peat – variable depth	No	6,863
05B	1,015		Peat – variable depth	882.6 ha	1,014
06A	5,370		Peat – variable depth	No	5,539

[3] This is the revised licence area figure shown in the Approved GHP dated 27th June 2007.

06B	1,114		Peat – variable depth	966.7 ha	1,114
07B	1,481		Peat – variable depth	No	1,477
08B	1,109		Peat – variable depth	No	1,115
09B	1,263		Peat – variable depth	No	1,268
10B	1,199		Peat – variable depth	No	1,211
LPF 1-10	40,650	Total of Coupe Areas – from LPF licence.			
LPF 1-10		LPF Gross Area – from Samling GIS			40,648
ITP	8,477	ITP Gross Area			8,497
MTCS	3,425	MTCS Gross Area		**3,000**	

Source: LPF/0004 licence; Samling GIS September 2020.

5.2.2 Carbon Stock

The previous MC&I Forest Plantation.v2 did not mention any requirements regarding forest carbon stock. The revised version, the MC&I SFM which came into force 1st January 2021, does mention forest carbon stock under Indicator 6.1.2 in terms of the EIA and under Indicator 6.12. This last is not applicable as it refers to afforestation of non-forest lands.

5.2.3 The Eligible MTCS Area

The eligible area for MTCS was determined through the application of the FDS's operational control system known as Permit to Enter Coupe (PEC). Table 5.2 lists the blocks and the dates they were endorsed by FDS. An area of just under 2,983 ha of notionally operable area was endorsed for clearing (The GIS area is slightly larger than the PEC approved area because the former is based on Samling's GPS survey of the individual blocks). The endorsed area is considered to be only notionally operable as there are areas of river buffer zones, seasonal flood areas etc. that are unplantable. The boundary of the MTCS area is shown on **Map 5.5.**

Map 5.5: Kuala Baram LPF/0004 basemap shows MTCS boundaries.

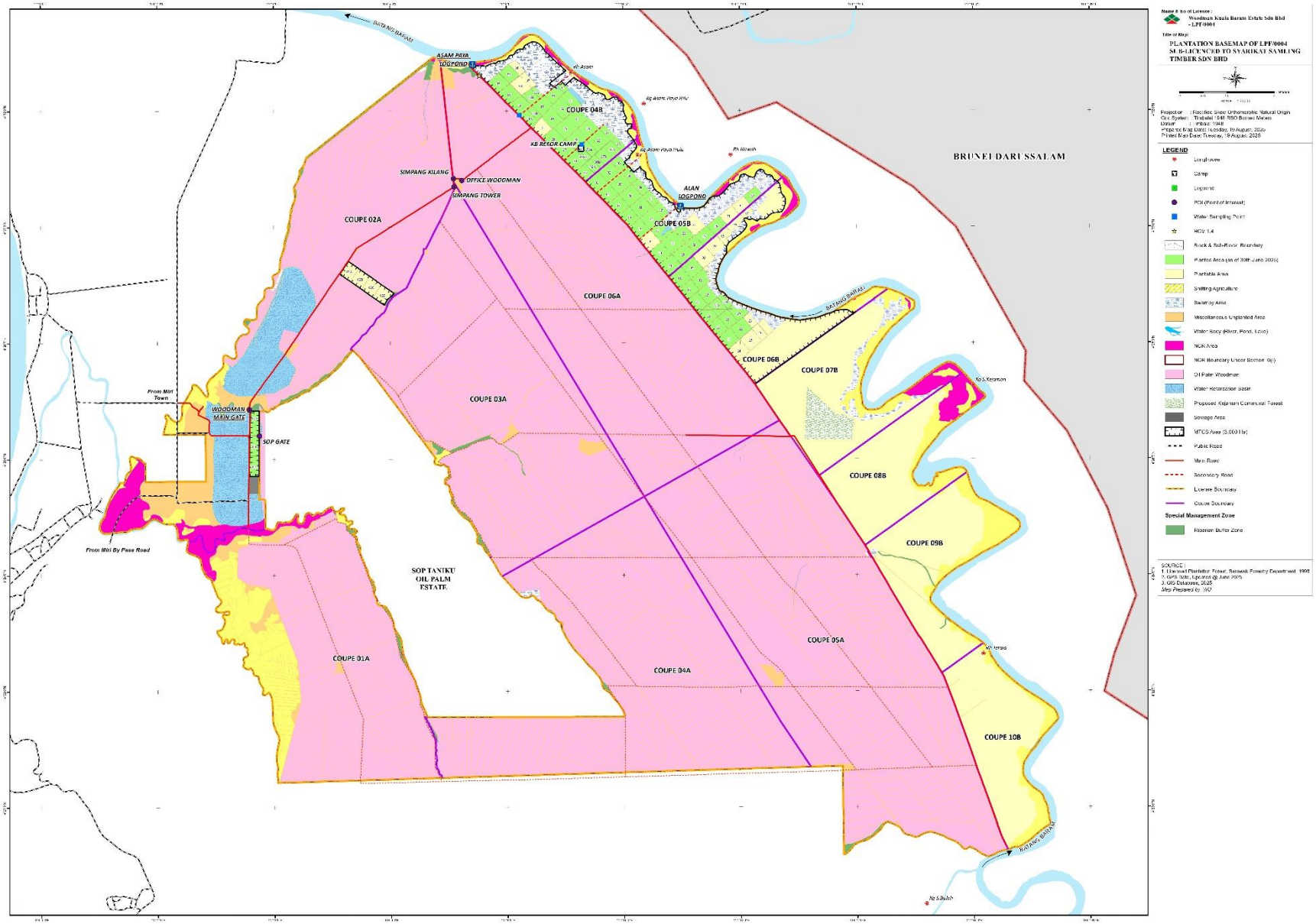


Table 5.2: Register of Coupes and Blocks endorsed[4] by Forest Department Sarawak for KUALA BARAM LPF for PEC for ITP

PEC Ref. and Coupe No.	Block No.	No. of Blocks	Date of Endorsement	PEC Area	GIS Area
LPF0004/08/2AP	1-3	3	29/10/2008	150	146
LPF0004/07/4B	1-38	38	15/02/2007	973	973
LPF0004/08/5B	1, 4, 8, 12, 14-15, 17-18, 21-22	10	07/05/2009	251	251
	2-3, 5-7, 9-11, 13, 16, 19-20, 23-36	26	18/11/2008	642	643
LPF0004/09/6B	1-23	23	30/07/2009	553	567
	30-32, 35-39	8	13/08/2010	210	210
	24-29, 33-34	8	30/07/2009	188	192
Total Area Endorsed				**2,967**	**2,983**

This register includes all those areas of potentially plantable land that comply with the MC&I cut-off date of 31 December 2010 (Principle 6, Criterion 6.10 as interpreted following the MTCC guidelines - GD-FP 2/2016) and which are therefore eligible for certification under the MTCS.

In Table 5.3 it can be seen how the area of the three coupes together with 145.6 ha of Coupe 2AP that comprise the gross MTCS area is reduced, step by step, from gross coupe area to net production area.

Table 5.3: LPF/0004 Gross and Net Areas of the Coupes that Comprise the MTCS Area

Item	Coupes 2AP, 4B-6B	Description
1	3,425	Gross FDS area of the three coupes + 145.6 ha (Table 5.1) that comprise the MTCS area; of which
2	3,000	is in the MTCS gross GIS area (Table 5.4); of which
3	2,983	was the gross GIS area approved for (Table 5.2) before cut off; of which
4	1,841	is the MTCS net production area (Table 5.4); of which
5	1,443	was planted at 9th October 2023 (Table 5.4);
6	399	was the plantable balance at 9th October 2023 (Table 5.4)

[4] It was SFC that actually endorsed the PECs as agent for FDS.

5.3 Geology and Soils

Reference should be made to the EIA which gives a very concise overview of the geology of the LPF. In geological terms the peat soils are very, very recent. The results of C_{14} dating of peat soils near Kuala Baram are shown below[5]. The ages of the KUALA BARAM peat soils will be considerably younger.

Years	Depth (m)
2,255±60	5
3,850±55	10
4,270±70	12

The riverside levees have muck soils with a much higher mineral content than the peat that lies immediately behind it. The muck comprises of relatively infertile soils eroded in the interior and brought down by the Btg Baram to be deposited on the levee during periods of flooding. The fertility of the muck soils, whilst low, is considerably higher than that of the peat – hence the encroachment for farming.

The LPF licence includes a soil map (D2) at 1:50,000 which is less detailed than that in the EIA and which to some extent disagrees with that provided in the EIA.

5.4 Land Use

LPF/0004 became effective on 8th December 1998 for a period of 60 years. The LPF is located in the Miri and Baram Districts of the Miri Division. (See Map 5.1). However, the MTCS area is entirely within the Baram District. The greater part of the LPF is under MSPO certified oil palm with an area sub-licenced to SST for ITP (see Section 5.1). A statement of land types and land use for the MTCS area is given in Table 5.4 where the total MTCS area is given as 3,000 ha. This might be increased at a later date following the evaluation of the status of the balance of the unplanted area outside of the MTCS area.

About 300 ha of cleared area still remains to be planted. (In the early days of establishment, clearance of residual areas under the PEC system could – and usually did – run well ahead of planting. The regulation and system of control for the issue of PECs has changed and it should no longer be possible for this to happen). It should also be noted that labour problems in 2009 through to 2014 slowed, and at times halted, the rate of site preparation, planting and maintenance.

5.5 Industrial Tree Plantation (ITP) Resource of the MTCS

5.5.1 Resource utilisation – current status

The ITP area is now in production. Harvesting started in October 2017 and stopped in Aug 2019 when the planned harvesting of the eligible blocks was completed. Barging was not completed until December 2019. The harvested area is recorded as 819.8 ha and is approximately half of the first rotation area planted to date (Table 8.1). Harvesting re-started in November 2022.

[5] Idem, page C 5-2

5.5.2 Species distribution

Table 5.5 shows the distribution of the major species by year of planting **(**YOP) for the MTCS ITP resource at 21st October 2024 as extracted from the Block Master at that date. In financial years 2017 onwards, the areas shown are a combination of first and second rotations.

Table 5.4: Area Statement for MTCS Area within Kuala Baram (LPF/0004) as of 30th June 2025

Land Type	Gross Area ha %	Non-Productive[5] Area										ITP Productive Area				
		Non-Forested Areas					Protected Forested Area									
		SA	Water	Road line	Others[1]	Total Non-Forested Area	Conservation [6]	Buffer Zone	Gully	Steep	Total Protected Area	Total	1) Planted [2]	2) Plantable [3]	3) TUP	4) Potential [4]	Total
Peat	3,000	0	0	68	1,096	1,164	0	11	0	0	11	1,175	1,419	0	406	0	1,825
Total	***3,000***	***0***	***0***	***68***	***1,096***	***1,164***	***0***	***11***	***0***	***0***	***11***	***1,175***	***1,419***	***0***	***406***	***0***	***1,825***
% Distribution - Certification Area		0%	0%	2%	37%	39%	0%	0%	0%	0%	0%	39%	47%	0%	14%	0%	61%
% Distribution - Non-productive [5] & Productive Area		0%	0%	6%	93%	99%	0%	1%	0%	0%	1%	100%	78%	0%	22%	0%	100%

Sources: LPF Licence, Block Master; Block Update As of: 08/07/2025; Layer used: Z:\Mapping\Temp\2025\07_July\Ceo Office\Shp\l04_block_update_20250630_mtcs.shp

1) Rocky Area, Swampy Area, Proposed Nursery, Temuda Claim Area, Sandy Area & Others

2) See Note in Chapter 5, re-discrepancy between this figure & that in Table 1

3) Cleared under PEC Opt5 on or before 31st December 2010; assessed as plantable but still not recorded as planted at map record date

4) Cleared under PEC Opt5 on or before 31st December 2010; but status & capability not yet confirmed by ground survey

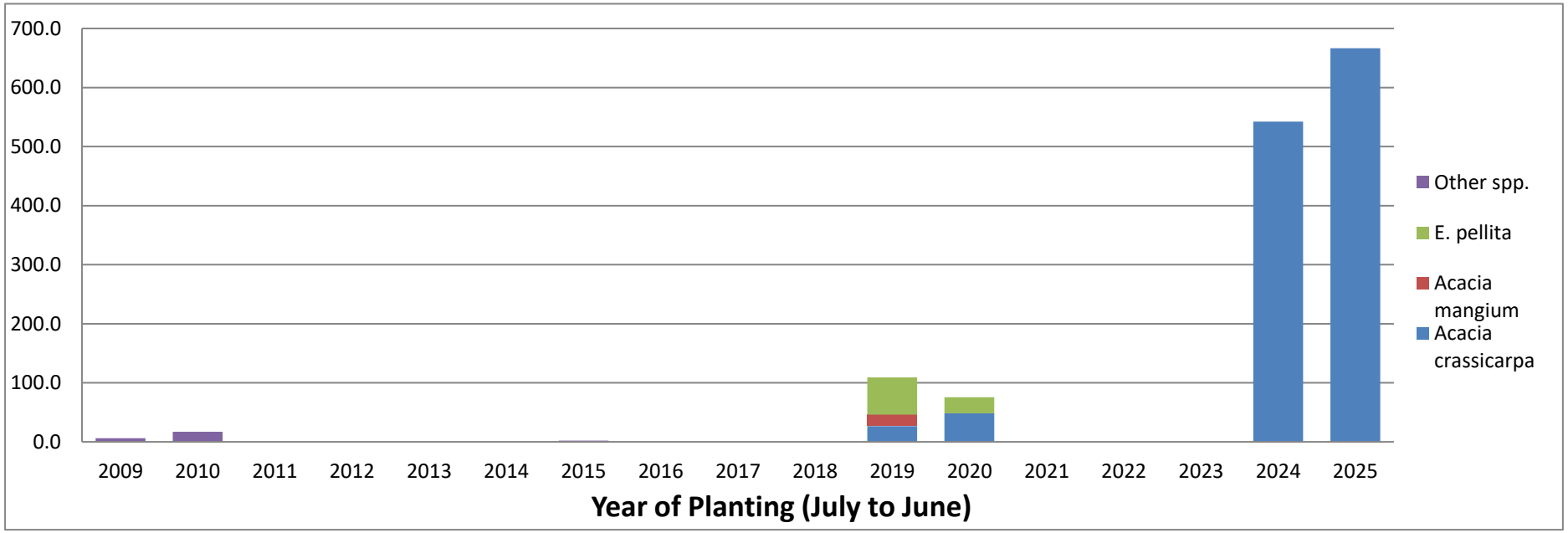
5) Non-productive as in not producing industrial timber

6) International Buffer Zone, Kerangas Forest, Green Belt & Water Catchment

Table 5.5: Species Distribution by Year of Planting (in hectares) for KUALA BARAM MTCS Area as of 30th June 2025

	Year of Planting (YOP)																	*Grand Total*	*%*
Species	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***	***2022***	***2023***	***2024***	***2025***		
Acacia crassicarpa	-	-	-	-	-	-	-	-	-	-	26.6	48.4	-	-	-	542.4	666.6	1,284.0	90.5
Acacia mangium	-	-	-	-	-	-	-	-	-	-	19.4	-	-	-	-	-	-	19.4	1.4
E. pellita	-	-	-	-	-	-	-	-	-	-	63.2	27.3	-	-	-	-	-	90.5	6.4
Other spp.	6.0	16.9	-	-	-	-	2.3	-	-	-	-	-	-	-	-	-	-	25.2	1.8
Grand Total	**6.0**	**16.9**	**0.0**	**0.0**	**0.0**	**0.0**	**2.3**	**0.0**	**0.0**	**0.0**	**109.2**	**75.7**	**0.0**	**0.0**	**0.0**	**542.4**	**666.6**	1,419.2	**100**

Figure 5.1: Age Class Distribution of the Major Species in KUALA BARAM MTCS Area as of 30th June 2025



The age class distribution of the ITP resource in the MTCS area, for six named species and all other species combined[6], is shown graphically in Figure 5.1 where the highly skewed distribution of the age classes is clearly evident. If the MTCS area had a normal age class distribution then, with an average rotation age of 5.8[7] years, the annual harvest area would be about 317 ha (1,841ha/5.8yrs). However the economics of operating such a small area dictate that harvesting will not be a continuous operation. This means that in terms of production, there is no requirement to achieve a normal distribution.

5.5.3 Sustainability of production

When considering sustainability of production, it should be kept in mind that Samling's downstream is also supported by log production from Samling's other ITPs. In order to ensure a more or less regular log flow to the mills it is, therefore, Samling's total log flow that must be sustainable and not necessarily that of any individual LPF. (See also Ch.10). Furthermore, as noted in the previous paragraph, the area that might be harvested on an annual basis is far too small for economic annual production.

5.5.4 Risks faced by the resource

Disease

A *Ceratocystis* sp. has been present in KUALA BARAM LPF for some time and has resulted in the death of a number of *A. mangium*. Management must always be aware of the possibility that the incidence of damage and death will reach the epidemic proportions already experienced in Sumatra and, to a lesser extent, in Sabah and of the impact that this will have on the AAC – and on future species selection.

Fire

All forest plantations are at serious risk to fire at some stage in their development. The risk is even greater when, as at KUALA BARAM, the ITP is established on peat soils where the soil itself is also a fire hazard when dry. A serious fire can result not only in the loss of the trees but also of the peat soil. This release massive amounts of CO_2 into the atmosphere, and also, in some cases, makes replanting impossible.

Flood

The MTCS area lies on the true left bank of the Btg Baram with the downriver boundary of Coupe 4B less than 20km from the *kuala* of this very large river. Most of the MTCS area is within 2km of the river bank and consequently almost 800 ha is now classed as 'wetland' (Table 5.4). Some of this wetland area was initially planted but subsequent flooding and death of the seedlings showed this to be a mistake. The failures to date have clearly shown the areas that should not be planted under 'normal' seasonal flooding.

However, at some time there will probably be a major event when a period of very high rainfall coincides with an exceptional spring tide. This will result in the flooding of planted areas. Mechanical damage can result when the Btg Baram is no longer confined by its banks and river,

[6] *Melaleuca* spp. is the major component of Other species.

[7] Weighted rotation age of the growing stock at 9th October 2023.

carrying floating logs and debris from upstream which could sweep over the planted areas and push over the trees.

Widespread death of the trees will certainly result from extended of full waterlogging of the rooting zone above the normal level of the water table. The indications are that 2-3 days of water logging are sufficient to cause the death of mangium; crassicarpa is said to be “more tolerant”.

Wind blow

Experience on the peat at Segan has shown that wind blow can be quite severe. Mangium and hybrid might be more prone: a stark example of this was observed with two adjacent blocks one of pellita and the other of mangium: the latter was flattened but the former remained standing. Elsewhere pellita is seen to suffer but, perhaps surprisingly, not from uprooting but from both stem break and the stems bending something from which they did not recover. However, if the water table is too high then blow may occur.

The damage, whilst severe, is rarely wide spread. It gives the impression that the trees have been struck by a strong wind on a very a narrow front – a line squall. But, of course, the damage is accumulative over the rotation period and can have a significant effect on yield.

6. Environmental Considerations

6.1 Environmental Limitations

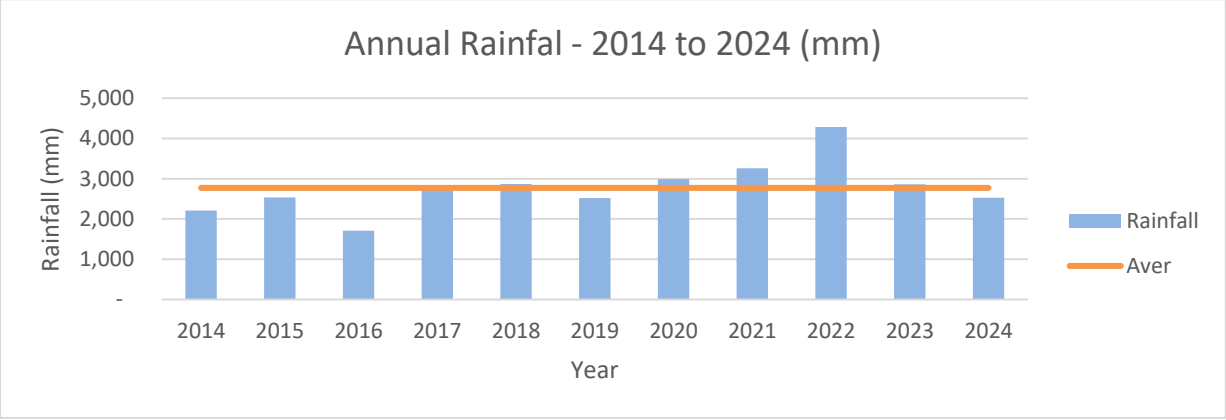
6.1.1 Introduction

There are no environmental limitations for the ITP in the LPF area other than that imposed by being on peat soils of varying depths – which limits the species choice, and by the proximity of the Btg Baram – which means that some areas are subject to intermittent flooding and cannot be planted.

6.1.2 Rainfall

The annual rainfall recorded over 2014 to 2023 at KUALA BARAM is shown in Figure 6.1. The average for 10 years is 2,797mm and has ranged from 1,708mm (2016) to 4,284mm (2022).

Figure 6.1: KUALA BARAM LPF – Annual Rainfall – 2014 to 2024 (in mm)



Source: Rainfall report to Dec 2024

Table 6.1: KUALA BARAM Average Annual Rainfall and Rain Day Distribution by Month for the ten years 2014 to 2024

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave	Annual
mm	289	191	131	167	204	193	168	218	179	300	331	402	231	2,772
days	14	9	8	10	11	10	11	13	10	15	16	17	12	143

Source: Rainfall report to Dec 2024

Although the amount of rainfall and its frequency are significantly lower than for Samling's other LPFs, they are still relatively high and will have some effect on labour productivity and hence on cost of certain operations. The nine-year rainfall record indicates a distinct wetter season from October to January and a drier season from February to September. Whilst there is no truly distinct seasonality the indication of a probable drier period around March has implications for fire management planning.

6.1.3 Access

Access is relatively easy both to and within the MTCS area and year-round operation is possible.

6.1.4 Harvesting

Harvesting is predominantly by excavator-based Log Fisher with pre-bunching using a Cat 313D.

6.2 The Environmental Management Plan (EMP)

The Environmental Impact Assessment (DOC(ASSMNT)01) is a study used as a planning tool during the plan of a project to predict the likely environmental consequences of proposed development project. The objective of Environmental Impact Assessment is in line with Section 11A of Natural Resources and Environment Ordinance 1958, where the prescribed activities (forest plantation) is required to carry out environmental impact assessment so that the environmental issues are addressed and appropriate abatement and mitigating measures are identified. The recommended mitigation measure in EIA is summaries in Table 6.2.

The EMP (DOC(PLAN)02) is a stand-alone document to which reference should be made for details. Elements of the EMP are referred to in various sections of this FPMP. Some of the essential points regarding environmental impact mitigation measures are restated in Section 6.3.

6.3 The Environmental Impact Mitigation

6.3.1 Soil erosion

Direct erosion, as caused by rainfall on sloping terrain, does not occur on peat soils where the terrain is essentially flat. Except in the case of heavy rain that leads to temporary flooding, surface water in the peat swamp tends to move vertically into the peat soil rather than horizontally across the surface when the water will carry a degree of vegetative material load.

6.3.2 Water quality

The target set by the State Government is for river water quality to be maintained at least to Class IIB1[8] of the National Water Quality Standards of Malaysia (NWQSM). Maintenance of water quality

[8] Meaning that the river water is safe for recreational use with body contact.

is normally achieved in part by minimising soil erosion (see 6.3.1 Soil erosion) and by keeping fertiliser leaching and herbicide run off to the minimum.

Fertiliser use is exceptionally low – less than 70kg/ha. Herbicide is normally only used in site preparation and in the first year of establishment. The herbicide load is also low with 4 to 5 litres/ha applied each round. The active ingredient of the main herbicide used is glyphosate which is generally considered to be toxicologically and environmentally more benign than most of the other herbicides currently available.

To date KUALA BARAM has not used pesticides other than herbicides in the field. However, experience in other ITPs indicates that there might be the occasional need for very restricted use of a termiticide but given this is peat swamp this seems to be unlikely. It would only be used in response to an attack and not pre-emptively.

Sewage disposal in the camp is by means of prefabricated cess pits.

Previously, water quality is monitored by means of water sampling whereby samples are taken quarterly from sampling points identified by the EIA and EMP. These samples are analysed by an external laboratory with the results submitted to NREB and presented within the external consultant's quarterly Environmental Monitoring Report (EMR). Reference to these reports will confirm that, to date, the results have almost always been within NREB acceptable parameters or in other ways compliant with the standards set in the EIA bearing in mind the highly acidic nature of peat soil. (The most recent monitoring results appear in the Samling website).

In Environmental Compliance Audit, the water sample result (environmental status) will be incorporated in Chapter 5 of audit report. The water sample will be forwarded to an accredited laboratory registered with NREB for analysis.

6.3.3 River buffer zones (also known as riparian buffer zones) – RBZ

Although some maps indicate the presence of, presumably small, streams within the MTCS area it has not been possible to locate them on the ground – possibly because the deforestation that took place prior to the issue of the LPF licence changed the drainage patterns. For this reason, no RBZs have been established within the MTCS area.

As mentioned previously the drainage of the KUALA BARAM MTCS area is dominated by the Btg Baram, the true left bank of which lies close to the north and north-east boundaries of the MTCS area. However, much of the area that should be the RBZ for the Btg Baram is severely compromised by the encroachment of local agricultural practices.

6.3.4 Zero burning

There is a 'zero burn policy' for the preparation of sites for planting.

6.3.5 Integrated pest management (Use of chemicals)

Apart from the insecticides and fungicides used, unavoidably, in the nursery only herbicides and fertiliser are used in the plantation. As stated in 6.3.2, both are used at low, or very low, rates of application. To review its use of chemicals in ITP, and in an attempt to further reduce such usage, Samling recently commissioned an Integrated Pest Management Framework; this is in the process of being finalised (March 2022).

Table 6.2: List of issues and mitigating measures recommended in the EIA report for the proposed Kuala Baram Forest Plantation, Miri Division, Sarawak.

Issue	Recommended Mitigation Measures
1. Plantation Development	a) In areas where the riparian vegetation has not been cleared by shifting cultivators, a riverine buffer zone shall be established. b) Preservation of all unsuitable areas, buffer zones and "Green Belts" would conserve some of natural vegetation within the proposed site. c) The land preparation activities can be planned and executed systematically to ensure that the mobile animals have a better chance of moving into green belts or adjacent forest. All hunting activities should be banned in the plantation. d) In the event that burning of the biomass accounted during the clearing of peat swamp forest is sanctioned, the burning exercise should be carried out before the collection and field drains are excavated. e) Burning of the peat should be prohibited and avoided at all cost. In the event of a fire, the fire could be quickly contained and swiftly put out by closing the drainage control structures and "flooding" the block concerned. f) Natural ground cover should be established and maintained as soon as possible after land clearing. g) Avoiding over-drainage of peat, a drainage management plan should be implemented to keep the water table not more than 90 cm below the surface.
2.	a) Fertilizer and agrochemical should not be applied during the wet season or when a heavy downpour. b) No prophylactic spraying of fungicide and insecticide should be practiced. c) Empty pesticide containers and fertilizers bags should never be thrown indiscriminately into the drains or streams; these should be collected and buried at a suitable disposal site. d) Provide proper septic tanks at the quarters, labour lines and offices for the treatment of sewage. Direct discharge of raw sewage into a stream is prohibited. e) Proper storage must be provided for fuel, oil and grease. At the workshop, spent oil and grease should be collected and appropriately stored and disposed off.
3. Control of Hydrological Changes	a) The Proponent must ensure that field planting is carried out immediately after the green wastes in the clear-felled areas have burned or stacked. b) When necessary, the major streams in the areas should be cleared so as to provide unimpeded flow at all times.

	c) Drain and culvert size must be adequate to cater for the peak discharge, and drains must be maintained in order to avoid blockage and localized flooding. d) The areas earmarked for the water reservoir/flood retarding basins should not be developed. e) As proposed in revised development plan (Chapter 2 of EIA Report), drainage of areas with poor long-term drainability should be avoided.
4. Public Health and Safety	a) Construction wastes must be collected and buried in deep pits at a suitable site within the boundaries of the proposed site. b) The areas around the living quarters must be kept clean and tidy at all times. c) The Occupational Safety and Health Act 1994 must be strictly followed by the Proponent and all the sub-contractors. d) The workers should be advised to wear safety helmets, proper footwear and gloves, wherever and whenever appropriate. e) The Proponent should provide basic medical kits to be kept at the base camp and temporary camps. f) All the machinery and equipment used should be well maintained so that accidents attributable to faulty machinery and equipment can be prevented.

Source: Environmental Impact Assessment Report.

6.4 The Environmental Safeguards

6.4.1 Environmental Monitoring Report (EMR)

Previously, Environmental Monitoring Report (EMR), which was submitted quarterly to NREB reports on the environmental status of a project. With the full implementation of the NRE (Audit) Rules 2008, EMR will be migrated to Environmental Compliance Audit, Chapter 5: Environmental Status. Table below showing the result of water quality analysis as of April 2025.

Table 6.3: Water Quality analysis result as of April 2025

Parameter	Unit	Compliance Limits (Class IIB of NWQS)	1st IECA	
			15 April 2025	
			SKB1	SKB2
Dissolved Oxygen*	mg/l	5 – 7	4.0	4.5
Temperature*	°C	-	22.8	22.1
Turbidity*	NTU	50	42.8	39.9
Biochemical Oxygen Demand	mg/l	3	15	13
Chemical Oxygen Demand	mg/l	25	77	65
Total Suspended Solid	mg/l	50	5	6
Total Dissolved Solids	mg/l	-	48.9	41.9
Ammoniacal-Nitrogen	mg/l	3	1.96	2.24
Oil & Grease	mg/l	0.4	N.D(<1)	N.D(<1)
Total Coliform Count	MPN/100ml	5000	350	170
Faecal Coliform Count	MPN/100ml	400	130	79

6.4.2 Use of chemicals

As stated in 6.3.5 Use of chemicals, chemicals in the form of herbicides and fertilisers, are used in the plantation but these are at very low rates of application. However, despite the already low rates of chemical usage the aim is to keep the chemical pesticides use at a low a rate as possible as described in the Samling's *Implementation Plan for the Reduced Use of Chemical Pesticides in its ITPs and Nurseries* (11 Oct 2020; Rev. 3 Jan 2022)

KUALA BARAM acknowledges that under current best practice, applications of herbicides are necessary to ensure an acceptable survival rate as well as prevent loss of increment through the competitive effects of weeds. The ERP (Enterprise Resource Planning) system records the type and quantity of chemicals used in forest operations and the rate of application is recorded on a block by block basis with the results reported monthly in the Block Consumption Report.

However, KUALA BARAM will always actively seek management practices that reduce the amount of chemical entering the environment of its ITP. This is of benefit not only to the environment but also to SST as chemicals are expensive to procure and apply. Reducing these activities will have a substantial financial as well as environmental benefit to KUALA BARAM.

Training also provides best practice guidelines and protocols for the proper use of chemicals in terms of human and environmental safety and economic application.

Triple rinsing for re-use or safe disposal of the containers in which chemicals were supplied is standard practice.

6.4.3 Water course quality

As mentioned in 6.3.2 Water quality under the LPF licence conditions, KUALA BARAM is required to monitor water quality of the permanent water courses passing through the LPF area. This is done four times a year with analysis undertaken by an independent laboratory and the results reported in the EMR.

6.4.4 Invasion by exotic plant species

KUALA BARAM's management is aware of the potential problems that might arise from the introduction of exotic species. However, no exotic species grown by Samling has been identified and declared as an invasive plant pest by any Sarawak government agency. Furthermore, only two exotic species, of single genera (*Acacia*), are currently planted commercially (as opposed to trialled) in KUALA BARAM LPF. Both species are known to regenerate naturally under KUALA BARAM's conditions but this is not necessarily an adverse environmental impact. *E. pellita* has also been noted regenerating in KUALA BARAM but it is certainly not invasive.

In KUALA BARAM LPF the designated area for ITP is bordered on the one side by the Btg Baram and on the other by a large oil palm estate. This effectively creates very significant barriers for limiting the 'escape' of exotic ITP species

Monitoring of exotic plant invasion (inward and outward) is by observation during the course of regular security patrols and by *ad hoc* comment from management staff made in the course of their duties.

6.5 Fire Prevention and Control

Effective fire prevention and control strategies are essential for safeguarding the area. The following are the key measures are implemented to mitigate fire risks:

a) Signage of No Open Burning: Clear and visible signage is crucial in preventing accidental fires caused by open burning. The signage is strategically placed in community use zone (Shifting Agriculture), license boundaries and species management zone (SMZ).
b) Patrolling activities: Scheduled patrolling team will conduct twice a month patrolling within Kuala Baram FPMU area and adjust the patrolling frequency based on FDRS indicator.
c) Awareness and Training: the NREB Poster on *Hentikan Pembakaran Terbuka* and is displayed at Camp notice board and Forest Fire Training is conducted by Forest Fire personnel of Kuala Baram FPMU.

6.5.1 Forest Fire Plan

The KUALA BARAM FPMU has a detailed fire plan covering fire prevention and control. Sections 3 & 4 cover the description of the FPMU, rainfall records and trends and vegetation and boundaries and neighbours. Sections 5 and 6 cover the prescription for firebreaks and the potential fire risk areas and the fire danger rating system. Sections 8 and 9 cover vehicles and equipment. Sections

12, 13 and 14 cover the management of the situation should a fire occur with 11 and 15 covering post fire activities.

6.6 Conservation of Bio-diversity

Whilst acknowledging the findings and comments of the HCV 2020 assessment carried out in July 2020 it should be noted that conservation of the bio-diversity as represented by the gene pools of KUALA BARAM's flora and fauna, and of the ecosystems in which they are found, is very much dependent on the residual natural vegetation in the swampy areas or wetlands that cannot be planted. These wetlands represent 26% of the gross area of the MTCS area. There will be, as yet unidentified, contributions to bio-diversity from the *planted* forest areas. Indeed, even shifting agriculture (SA) in its various stages has a part to play in contributing to the overall bio-diversity of an area – although it should be noted that whilst SA does occur within the LPF there is none in the MTCS area.

It is recorded in Chapter 3 of the EIA report that the harvesting of the natural forest has been very wide spread and intense. Para 3.2.1 of the EIA states:

"… None of the other phasic communities remains ecologically intact. This has been due to heavy logging for timber during the past two decades. In recent years fires have also destroyed a substantial portion of the forest of the Lower Baram FR…logging is still going on in parts of the Alan Batu further inland…"

Undertaken more than twenty years after the EIA, the HCV (2020) assessment has shown that there are some endangered species within the KUALA BARAM MTCS area. The HCV report states that these species can be found in the [widespread] similar habitats elsewhere in the Sarawak.

Map 5.3 in the Chapter 5 shows that timber licences have at some time covered the whole LPF. This harvesting has occurred at varying degrees of intensity over several decades. No natural forest of any type has been identified within KUALA BARAM MTCS area or, indeed, within the LPF. The very limited areas of Special Management Zones (SMZs) – see Table 4.1 – are protected to the extent that Samling's LPF management has the authority to do so.

Before a block is released for harvesting or a new block is prepared for planting, any SMZ areas are identified and then demarcated or re-demarcated on the ground. The subsequent GPS tracking is now carried out with far greater diligence than was the case in the early years of clearing and establishing the planted areas. This in part due to the wide spread availability of GPS devices and in part to the awareness of the requirements of operating under the MTCS. As harvesting proceeds through the balance of the first rotation of the MTCS area the re-survey of the coupes and blocks should result in a small increase in the area wetland - in particular seasonally flooded areas.

6.7 Residual Natural Forest

The history of the ITP area clearly shows that the PSF was subjected to repeated harvesting in the past. In areas of the ITP area comprising pure stands of *Shorea albida* harvesting would have been basically a clear fell. After harvesting, the site would have amounted to little more than bare peat soil with some residual scrub and scattered, undersized *S. albida* that would eventually succumb to bark scorch and die. The result of this can be seen in the scrub regrowth in parts of Coupes 7, 8 and 9. Without a nearby source of seed it is impossible for these areas to revert to the original *S. albida* forest types – and it seems that the heavy seeded *S. albida* is no more extent in the LPF or nearby. Continued protection of the wetlands might, over many, many decades, allow forest to re-establish

but it would be very different in species composition, structure and diversity to the primary forest that occupied the area prior to the start of natural forest harvesting in the 1960s and 1970s.

6.8 Adjacent Land

The greater part of the north and north-eastern boundary of the MTCS area is formed by the true left bank of the Btg Baram. A road running approximately north-south between Woodman's oil palm estate and the ITP area forms the western boundary of the MTCS area.

Consequently, the MTCS area has no neighbouring or nearby suburban or residential developments which require the consideration of environmental and aesthetic values or of additional safety considerations during forest operations.

7. Socio-economic Context

7.1 Contribution by Current and Future Forest Operations

The ITP productive area within the MTCS area is just over 1,841 ha. This is absolutely negligible when viewed against the State's ITP planting target of one million hectares or even against the area currently planted state wide. However, small as this area might appear the KUALA BARAM resource is important to Samling and to the regional economies of both Miri and Bintulu. All the log production will go to Samling's own downstream operations at either Kuala Baram or Bintulu: peeler logs for Samling's plywood mills and saw logs to Samling Housing Products Sdn. Bhd. Chip logs will go either to Samling's JV partner - Daiken Sdn. Bhd., also at Kuala Baram – for the manufacture of fibreboard. Or they will go to Samling's mills in Bintulu. Thus, the entire log production from KUALA BARAM ITP will be processed locally, i.e., within either the Bintulu or the Miri region.

7.2 Employment and Provision of Services

Table 7.1 shows the breakdown of the in-house workforce by origin and by sex: In 2024' none was local, 31% Malaysian and 7% were women. All the workers are Indonesians on two-year contracts. KUALA BARAM is an equal opportunity employer but currently there are only two women in the workforce. In part this reflects the absence of a tree nursery and in part the nature of tree plantation work – the 3Ds or difficult, dangerous and/or dirty - rather than any form of discrimination.

The competition for local workers from offshore oil and gas and the perceived unattractiveness of work in the ITP industry are in great part the cause of low participation rates of locals and other Malaysians as workers. For those with some education and skills and able to work in the grade of supervisor or higher the local and Malaysian participation rates are higher.

The establishment, maintenance and harvesting work in KUALA BARAM is done using in-house workers and contractors. Logistical support, e.g. engineering, spares and supplies, is sourced from Miri.

7.2.1 Grievance Resolution Management – Worker

The Procedure for Grievance Resolution, Edition July 2023 is produced to address grievances raised by workers and for conflict resolution. The Grievance Form (*Borang Keluhan*) is made known to Kuala Baram FPMU worker and the forms is made available at the LPF's office entrance.

7.2.2 Roles and Responsibilities

The overall management of the project are headed by Plantation Manager and supported by the sections of Administration, Store, Quality Control, Survey, Silviculture, Workshop, Nursery, Enumeration, Harvesting and Research & Development (R&D) department (Centralised at Segan). Figure 7.1 showing the organizational structure of Kuala Baram FPMU.

7.3 The Value of Forest Services

The EIA of LPF/0004 was undertaken in 1999. At that time, more than 30 years ago, no communities were identified within what is now the MTCS area but there was an eleven-door longhouse, Rh Masam[9], seemingly just outside the MTCS area. It was located where the Asam Paya log pond is now located. Figure 3.8 in the EIA shows four other communities that the EIA deemed to be associated with the LPF by virtue of their 'proximity' – albeit across the Btg Baram, for all four are located on the true right bank of the Btg Baram.

The following extracts from the 1999 EIA (C3-42) indicate that even more than *twenty years* ago there was no longer any real dependence on the residual forest and the natural resources that might be found either in the LPF in general or in the MTCS area in particular:

Agriculture: "…Like in other parts of rural Sarawak, most of the younger people of working age have left for the towns where better paying jobs can be found while the elderly and the children remain in the longhouses. The people currently residing in the longhouses and settlements along the Baram River are mainly subsistence and smallholder farmers…Permanent crops are found only in scattered patches, mostly near the longhouses along the banks…"

Fishing: "Fishing in Batang Baram and its tributaries is not commercially orientated, being carried out by the locals mainly to supplement their diet. Only excess catch is sold for extra cash…"

Hunting: "…Hunting activity has diminished greatly since the arrival of the loggers. The disturbed forests…do not support a large population of wild game. Game meat, if any, is mainly for the hunters' own consumption."

Jungle produce: no mention was made in the 1999 EIA.

[9] According to TR Asam Paya there was a four longhouse at the Asam Paya log pond site – but "*they moved sometime back*".

Table 7.1: Kuala Baram LPF – Social and economic monitoring – employment

Category	Year	2020		2021		2022		2023		2024		2025	
		n	%	n	%	n	%	n	%	n	%	n	%
Staff													
Sarawakian *local	m	0	0	0	0	0	0	0	0	0	0	0	0
	f	0	0	0	0	0	0	0	0	0	0	0	0
	m+f	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	**0**	**0**	**0**	**0**
Sarawakian - other	m	4	0	9	0	3	0	5	42	6	14	8	21
	f	2	0	2	0	1	0	1	8	1	2	1	3
	m+f	**6**	**29**	**11**	**37**	**4**	**40**	**6**	**50**	**7**	**17**	**9**	**23**
Malaysian - other	m	1	0	0	0	0	0	0	0	0	0	0	0
	f	0	0	0	0	0	0	0	0	0	0	0	0
	m+f	**1**	**5**	**0**	**0**	**0**	**0**	**0**	0	**0**	**0**	**0**	**0**
Foreign	m	0	0	0	0	0	0	0	0	0	0	0	0
	f	0	0	0	0	0	0	0	0	0	0	0	0
	m+f	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	**0**	**0**	**0**	**0**
Staff total Malaysian & foreign		**7**	**33**	**11**	**37**	**4**	**40**	**6**	**50**	**7**	**17**	**9**	**23**
Worker													
Sarawakian - *local	m	0	0	0	0	0	0	0	0	0	0	0	0
	f	0	0	0	0	0	0	0	0	0	0	0	0
	m+f	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Sarawakian - other	m	0	0	0	0	5	0	4	0	4	10	4	10
	f	0	0	0	0	0	0	1	0	2	5	1	3
	m+f	**0**	**0**	**0**	**0**	**5**	**50**	**5**	**42**	**6**	**14**	**5**	**13**
Foreign	m	13	0	19	0	1	0	1	0	29	69	25	64
	f	1	0	0	0	0	0	0	0	0	0	0	0
	m+f	**14**	**67**	**19**	**63**	**1**	**10**	**1**	**8**	**29**	**69**	**25**	**64**
Worker total Malaysian & foreign		**14**	**67**	**19**	**63**	**6**	**60**	**6**	**50**	**35**	**83**	**30**	**77**
All employees	m	18	86	28	93	9	90	10	83	39	93	37	95
	f	3	14	2	7	1	10	2	17	3	7	2	5
	m+f	**21**	**100**	**30**	**100**	**10**	**100**	**12**	**100**	**42**	**100**	**39**	**100**
All employees	*local	0	0	0	0	0	0	0	0	0	0	0	0
	other Mal	7	33	11	37	9	90	11	92	13	31	14	36
	foreign	14	67	19	63	1	10	1	8	29	69	25	64
	All	**21**	**100**	**30**	**100**	**10**	**100**	**12**	**100**	**42**	**100**	**39**	**100**

*local – within and adjacent KB FPMU (SIA)

7.4 Social Impact Assessment

7.4.1 Impacts from ITP operations

From the results of the Social Impact Assessment undertaken by UPM (DOC022), it is abundantly clear that the negative social impact of the KUALA BARAM ITP on the community has not been, and is unlikely ever to be, significant.

An identifiable positive economic impact results from the accessibility provided by the LPF road networks. As most of the younger generations now have access to education, they are afforded better opportunities in terms of work outside of the LPF meaning that ever-larger proportion of the community will work away from the area, and some will move right away (outward migration). This

coupled with the existing aging population, what impact there has been – whether positive or negative – will continue to lessen.

7.5 Stakeholder Consultation

7.5.1 Introduction

Stakeholder consultation, perhaps better termed as '*engagement*', should assist in the development of constructive and productive relationships over the long term. It should result in a relationship with mutual benefits. It helps to identify trends and emerging challenges which are currently, or which will in the future, the management of the FMU in some way.

Table 7.2: Communities adjacent to Kuala Baram LPF/0004 MTCS Area.

NO	AREA	NAME OF TUAI RUMAH		ETHNICITY	NO. OF DOORS
		PREVIOUS	CURRENT		
Within					
-	-	-	-	-	-
Adjacent					
1	Asam Paya	-	Asam Anak Manggong	Iban	14
2	Asam Paya Hulu	-	Fredrick Belaja Anak Kasim	Iban	21
3	Sungai Teraja	-	Ngelingkong Anak Entuba	Iban	32
4	Sungai Kejaman	-	George Ijus Anak Jawa	Iban	77
5	Asam Paya Hilir	-	Budin Anak Sandai	Iban	23
6	Sungai Tudan Ujong Daun	Nanang Anak Duyun	Nawah Anak Lopeng	Iban	36

7.5.2 Communities

Consultation, or engagement, is usually in the form meetings to ensure the FMU's compliance with the various requirements of the MC&I SFM. E.g., awareness of the FMU's operations that might affect the community and dissemination of the relevant results of social and wildlife monitoring.

Community engagement also takes place when:

(a) a grievance arises and a *Borang Aduan* is completed and submitted to the FMU manager for further action - which should include community consultation and discussion as an aid to resolution; or

(b) a community wants to request some form of assistance that would trigger a CSR response. For this a *Borang Memohon Bantuan* should be completed and submitted to the FMU manager or put in the box provided outside the office.

The conflict resolution mechanism is available on Samling's website for ease of the public access to the complaint / request form using mobile phone.

The formation of Community Representative Committee (CRC) is voluntary decision made by the community to act as a platform for engagement on social issues related to the development and operation activities by the LPF.

7.5.3 Government departments and agencies

Engagement and consultations with FDS, SFC and other government departments and agencies take place on an *ad hoc* basis - as and when required by ether party.

7.5.4 Non-government organisations

Samling, through the AGM Refor, engages regularly with the STA's Plantation Committee.

Samling Refor, as a member, also engages fully with the Borneo Forestry Cooperative (BFC). Other NGOs are engaged from time to time as they or Samling might require; e.g. WWF, Mighty Earth, Aidenvironment.

7.6 Social Impact Monitoring (SIM)

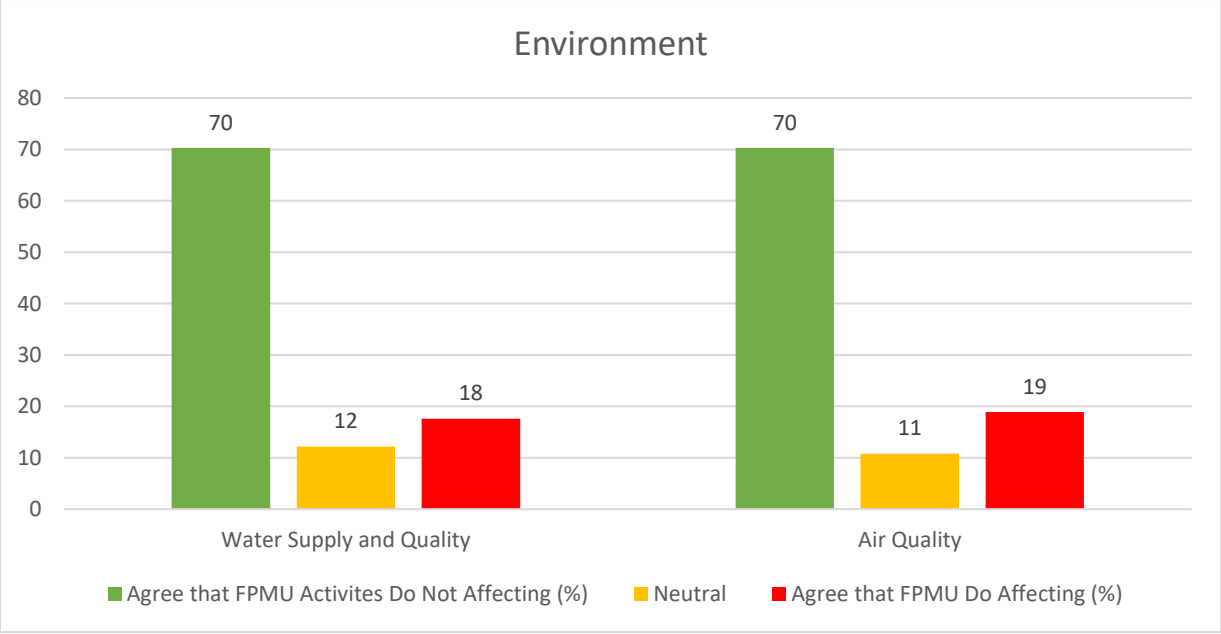
7.6.1 Introduction

Social Impact Monitoring is undertaken once a year. The main findings of SIM September 2024 are set out below.

7.6.2 Water Supply and Quality and Air Quality

As can be seen in Figure 7.1, the majority of the local communities agree that their water supply and quality are not affected by LPF's activities with 70% of the assessed local communities agreeing with the statement that the '*LPF activity does not negatively affect river water quality*'.
As for air quality, the 70% of the assessed local communities agree that '*the air quality is not affected by the LPF's activities'.*

Figure 7.1: Water Supply and Quality and Air Quality

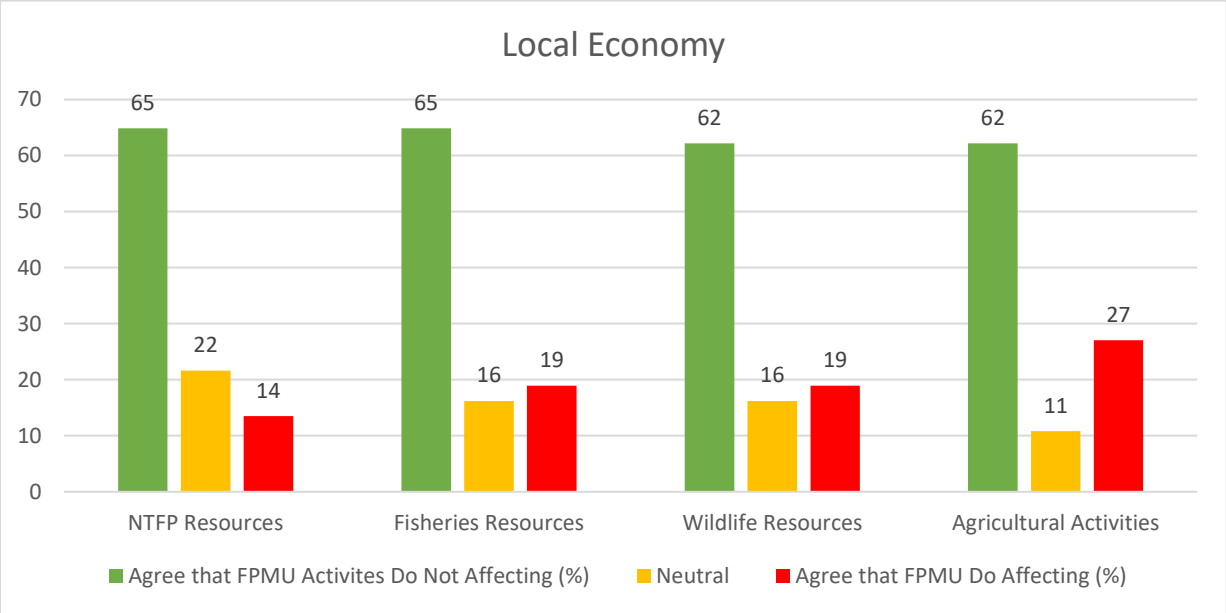


7.6.3 Local Community

The SIM (September 2025) result revealed that 65% of local communities agree that '*the LPF's activities have no negative impact on the availability of NTFPs'.* The SIM (September 2025) results also showed that the local communities who agree with the statement that the Kuala Baram LPF's

activities do not affect the fisheries resources, wildlife resources, and agricultural activities are 65%, 62%, 26% respectively [shown in Figure 7.2].

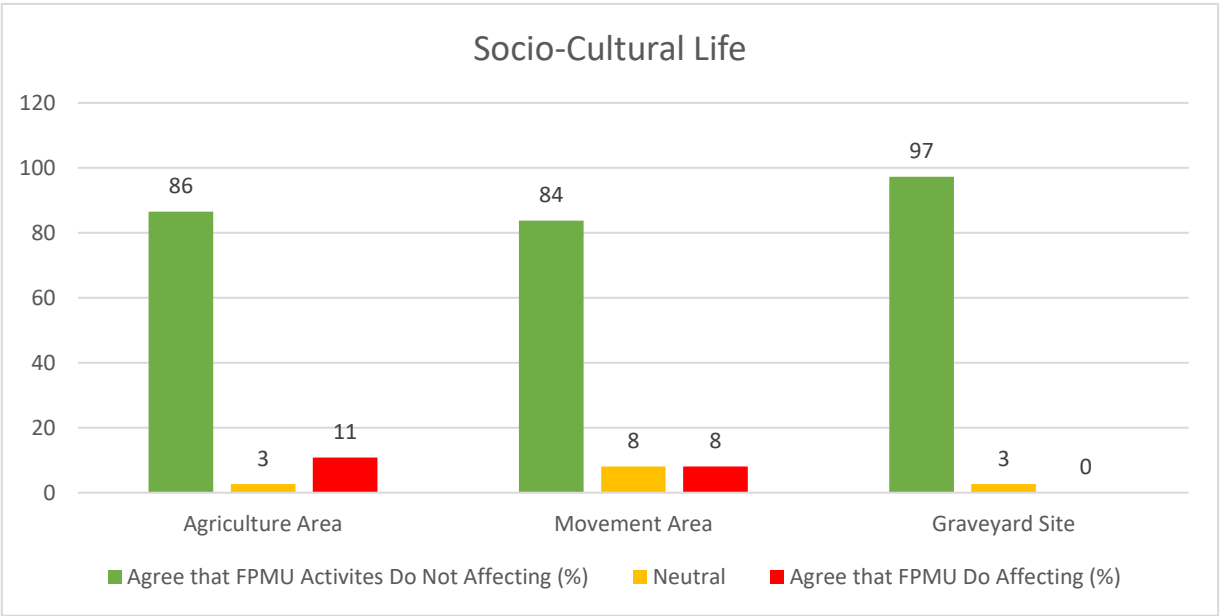
Figure 7.2: Local Community



7.6.4 Socio-Cultural Life

From socio-cultural life aspect of the local communities, results of the social monitoring shows that there are higher percentage on the respondents who agree that FPMU activities does not affected them negatively on agricultural area, their movement area and graveyard site which gives the percentage of 86%, 84% and 97% respectively.

Figure 7.3: Socio-cultural life



8.1 Introduction

8.1.1 Background

The Sarawak Timber Association (STA) has a Plantation Committee on which SST is represented. This committee is charged primarily with representing the industry in meetings with government to discuss, improve and resolve technical and management issues common to ITP in Sarawak. It also provides a valuable forum for discussion and exchange of ideas and practices. STA also organises overseas study tours that present a useful opportunity to learn from longer established ITP based industries.

However, all this work was on mineral soil where establishment regime for mangium is well known – although the most appropriate silvicultural regime required for solid wood products, as opposed to chip logs, has yet to be proven. There is little information available in terms of the methodologies and economics of such practice from either the private sector or government agencies[10]. Even less was known regarding which species might perform reasonably well on the peat soils of KUALA BARAM LPF when planting started in 2006/2007.

8.2 Choice of Species

8.2.1 Background

When Samling started planting in Segan in 2000, the management objective was to produce only chip wood. This objective was revised 3-4 years later to the Samling objective of producing for solid wood applications. (This objective was revised again in late 2019 to include chip logs for both fibre – high density fibreboard – and wood pellets). Before the start of the 21st century mangium was already the species of choice throughout Malaysia. The perceived wisdom then was that mangium would '*grow well - anywhere'*. Time has clearly shown that this is not correct. Samling's experience with mangium has ranged from large scale and almost complete failure to moderately good MAIs. (Some of the other larger ITP operators in Sarawak have also experienced extensive failed areas – and not only of mangium.)

Several species were planted up to 30th April 2018. This is now only of historical interest as about half of the area had been harvested by the end of August 2019. But it does show that relatively significant areas of the four species had been planted in the early years of the first rotation. This allows some assessment to be made of a species' suitability and performance to planting on peat soil.

Mangium suffers from high early mortality. This is in great part due to a high susceptibility to root rot (*Ganoderma* spp.) which experience elsewhere indicates increases in severity with each succeeding rotation.

The early promise of *Acacia* hybrid has not been realised. Whilst the form and branching habit of the hybrid planted operationally in KUALA BARAM has been generally good, growth has not.

8.2.2 Site-species matching

There will no doubt be subtleties provided by differing chemical characteristics of the peat soil along the catenary sequence of the peat dome. But Samling's ability to recognise any such

[10] "Silviculture and Management of *Acacia mangium* for solid wood products." by Boden, D. and Molony, K. (August 2015) was commissioned by SFC. It contains little factual information that is applicable to Sarawak regarding growing mangium for solid wood use. The authors conclude that growing mangium for this use cannot be recommended at present.

subtleties, and the ability to make use of them for ITP, is a long way off. And neither the EIA nor any other source is particularly revealing in terms of site-species matching for trees on peat soils.

8.2.3 Planting of native species

The Sarawak Forest Department has long extolled kelampayan **(***Neolamarckia cadamba*) as an ITP species. Without doubt the form, growth rate and peeling qualities are all positive attributes of individuals of this species. However, in Sarawak to date there is insufficient knowledge of seed sources and related genetics and of nursery practice through to ITP silviculture, for this species to be widely planted – especially on peat soil. It has yet to be trialled in KUALA BARAM.

There has been at least one relatively large-scale failure of kelampayan in Sarawak and success at an operational ITP level seems to be unknown – to Samling at least. Samling has planted kelampayan in mineral soil LPFs but with no success. It has yet to be trialled in KUALA BARAM.

Similarly, with *Alstonia spatulata*[11] where the good early day performance was also not sustained. In 2013 *Endospermum malaccense* and *Dyera costulata* were *brought* in as tissue culture ramets but did not progress beyond the Segan nursery. Trials of other species of Alstonia have been failures, as was that of *Octomeles sumatrana.*

Three species of *Melaleuca* have been planted at operational level in KUALA BARAM. Survival has generally been only fair – around 54% at 5.8 years and growth was poor. It does not warrant further planting for the current objectives.

Samling has spent much time and money on trials of native species. However, at the present time neither Samling nor – so it would appear – FDS, nor any other company in Sarawak, has obtained sufficient and reliable information on the economic use of Sarawak native species in ITPs.

8.2.4 Utilisation of species selected

Logs harvested from all the species planted can be used by Samling's mills for ply wood, sawn timber (furniture), MDF (door skins) or wood pellets. It can be seen from the range of end uses that Samling is able to maximises both the value and the utilisation of the felled tree.

8.2.5 BORNEOTEAK®

Samling has successfully registered mangium with the Registry of Malaysian Trade Marks under Classes 19 and 31 as BORNEOTEAK®. It is sold under this name to Samling's downstream.

8.3 Current Establishment and Silvicultural Regimes

8.3.1 *Acacia mangium* and *A. crassicarpa*

The intention is to produce logs that will be suitable for several end uses. The determinant of suitability for end use is primarily small-end diameter with grading for roundness, straightness and internal defect (centre rot and hollow) undertaken after felling.

Good quality stock

As a matter of course, KUALA BARAM will only plant selected stock with good genetic characteristics with preference given to seedlings from in-house collections from plus trees or from Samling's clonal seed orchard which comprises clone material of elite trees.

[11] Actual species trialled to be confirmed

Site preparation and establishment
Before planting takes place, some site preparation is necessary. This usually involves a herbicide application to kill any emergent weeds, particularly natural regeneration of mangium, thereby reducing competition to newly planted seedlings. Labour shortage often results in the time elapsed between completion of harvest and the commencement of site preparation being overly long. This means that prior to spraying, the site must be slashed and time allowed for new growth to flush so that spraying can be more effective.

Maintenance
Sarawak's climatic conditions are generally very conducive to vigorous weed growth. Circle weeding, slashing and herbicide spray are all used at a frequency that is determined by the rate of weed growth relative to that of the trees.

Silviculture
A single pruning lift is intended to produce trees with "clear wood" in the butt log. Knots, mainly live, will be restricted to a small DOS core along the pruned length. With the mills' lathes now able to peel down to a 5cm core there should be further improvements in both total and grade recovery.

8.3.2 Other species
At present only *A. crassicarpa* is planted. In the event that another, additional, species is to be planted the appropriate schedule will be implemented.

8.4 Nursery Management
The Kuala Baram FPMU nursery function as holding nursery, serving as temporary facility for seedlings that have completed the hardening process at Segan FPMU. Once the seedlings are adequately acclimatized, they are transported to Kuala Baram FPMU for interim maintenance prior to field planting. The activity at the holding nursery focus on maintenance, including watering regimes, pest and disease monitoring and control and routine weeding to minimize competition and reduce pathogen risks.

9. Monitoring Plantation Forest Dynamics

9.1 Permanent Sample Plots
The first permanent sample plots (PSPs) in KUALA BARAM were only established in 2015, when the first plantings were about five years old and re-measurement therefore only started in 2016. Whilst on Samling's larger mineral LPFs, PSPs are established when trees are 24 months old, this was not practical at KUALA BARAM where the scale of planting required that the PSP crew only visited annually. This is no longer the case as the QC crew now also establish and re-measure the PSPs.

The PSPs are used to monitor the growth and from the data yield tables and growth models are developed and these are used for management decisions and to update long term production forecasts.

Prior to start of field work the plots are randomly (with some restriction) allocated within the area of the block that the GIS records as planted. In the field, regardless of where it falls, the plot centre is established at the predetermined GPS point. The only exception being is to ensure that a plot does not encroach on to a road-line or any other non-productive area that has been GPS-ed and excluded from the productive planted area statement.

PSP measurements are recorded on a paper-based system and then entered in to Excel for processing.

Following initial establishment of the PSP, subsequent re-measurement should be done on the anniversary of the first measurement over the length of the whole rotation. In general for Samling, as the data base strengthens the need to continue the current, very high, level of sampling intensity will be reviewed for each species. But this is not the case for KUALA BARAM where there continues to be a lack of PSP data on which to base growth models.

P&D information is also collected at the time of PSP assessment.

9.2 Taper Functions and Volume Equations

A taper function has been developed for *Acacia mangium* (mangium) based on SEGAN volume sample trees (on mineral soil); this taper function is also used for Acacia *crassicarpa* and for Acacia hybrid.

A taper and volume function has been developed for Samling's Pellita, in collaboration with Borneo Forestry Cooperative (BFC). Taper functions for other species will be developed when there is a sufficient number of representative tress old enough to provide the required full DBH range of sample trees.

9.3 Monitoring Plantation Tree Growth and Site Productivity

9.3.1 Introduction

As mentioned in Section 9.1, PSPs are established to monitor tree growth. However, because several species have been planted and because the areas are small the amount of data for each species captured, whilst giving some indicative information, is insufficient for yield table construction. And now that the greater part of area planted in the first rotation has been harvested there will be little additional data available for the first rotation.

9.3.2 *Acacia mangium*

Only 15 PSPs were established in the first rotation and these are insufficient to give meaningful growth data. The 86.3ha harvested at an average age of 8.5 years old yielded a mill gate volume of 57.4m3/ha – an MAI of 6.7m3/ha (Table 9.1). The second rotation 451.2ha harvested at an average age of 4.4 years old yielded a mill gate volume of 50.3m3/ha – an MAI of 11.4m3/ha (Table 9.1).

9.3.3 *Eucalyptus pellit*a

The optimum rotation age has yet to be determined. Much depends on the approach taken by downstream to processing small diameter logs. The first rotation was harvested when about ten years old. The determination of optimum rotation length is dependent on a robust PSP database together with adequate information supplied by downstream as to the recovered values that apply to a range of input log diameters.

As can be seen in Table 9.1 first rotation growth was very disappointing with an average MAI of 6.6m3/ha at an average harvest age of 9.9 years. However, this very low MAI masks the occurrence of a number of individuals and small groups of trees of excellent growth. (Some of these trees were considered to be elite trees and contributed material to Samling's pellita breeding programme on

mineral soil). This indicates that there may be some potential for pellita on peat soil but that work has to be done to learn how to develop this potential.

Table 9.1: Kuala Baram – productivity of main species planted in the first rotation

Rotation	Species	Age at CF	Area (Ha)	Yield (m3/ha)	MAI (m3/ha/a)
1	*A crassicarpa*	9.4	100.5	96.2	10.2
	A hybrid	9.3	520.5	101.0	10.9
	A mangium	8.5	86.3	57.4	6.7
	E pellita	9.9	531.6	65.6	6.6
Total Rotation 1		**9.5**	**1,238.8**	**82.4**	**8.7**
2	*A crassicarpa*	4.5	45.9	41.4	9.2
	A mangium	4.4	451.2	50.3	11.4
	E pellita	3.7	0.8	62.1	16.8
Total Rotation 2		**4.4**	**497.9**	**49.5**	**11.3**
Grand Total		**7.9**	**1,736.8**	**73.0**	**9.3**

9.3.4 *Acacia* hybrid

From Table 9.1 it can be seen that the first rotation had a mill gate yield of 101.0m3/ha at an average harvest age of just under ten years – an MAI of 10.9m3/ha/year. Some of the blocks were uniformly light branched and of very good form. However, it seems unlikely that this particular genetic material can be replicated.

9.3.5 *Acacia crassicarpa*

Crassicarpa was planted in part of Coupe 2A but there were no records of performance. By the time it was harvested at about 17 years old, the stocking had been so severely reduced by wind throw and other factors that the harvest yield was meaningless in terms of assessing performance. A very small area of later planting has shown mixed results, the best of which were in 6B/12, planted October 2015, and with four PSPs giving an MAI of 27.5 m3/ha/year at 4.0 years old when last measured in 2019.

Harvesting of A crassicarpa of 100 hectares to date has been completed. It delivered a yield of 96.2ha at a MAI of 10.2m3/ha/year. This species has potential to perform on the peat and is being planted on a big scale in Indonesia.

9.4 Monitoring of Pests and Disease

9.4.1 Regular monitoring

Regular monitoring is undertaken by the PSP crew at the time of establishing or re-measuring the PSP plot. Only the occurrence of what are considered to be the more import P&D factors is recorded.

9.4.2 Ad hoc monitoring

Ad hoc monitoring is undertaken for specific purposes as and when management deems necessary.

10. Allowable Annual Cut, Annual Harvesting Plan, Harvesting Systems, Financial Sustainability

10.1 Allowable Annual Cut (AAC)

The MTCS area is currently the only contributor to the AAC. The volumes produced from this area do not fluctuate quite as widely from year to year as might be suggested by the skewed area distribution of annual planting (Fig. 5.1).

The annual cut for Kuala Baram FPMU will stabilizes at an estimate 38,000 m3 per year. However, due to wind damage and the Ceratocystis on *Acacia mangium*, the annual cut has been skewed and there will be no harvest for year 2026/ 27 and 2027/28. After this it should be normalised again. Table 10.2 shows the expected woodflow for the rest of the 10-year.

Table 10.1: Summary of Kuala Baram's Allowable Annual Cut (AAC) & Actual Annual Production

Harvest	Financial Year July to June (tonnes)										Annual Ave.
	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	
Actual	0	0	28,747	37,548	40,156	13,037					19,915
Planned	0	0	30,017	29,720	38,314	9,000			38,337	34,200	22,449
Actual - Plan	0	0	-1,270	7,828	1,842	4,037					-2,534

Source: a) Planned vs Actual for Kuala Baram FY 2025/26 as of 30th Sep 2025; b) Refor Harvesting Planning.

Table 10.2: Expected Woodflow for the next 10-years.

Harvest	Financial Year July to June (m3)										Total
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2023/31	2031/32	2032/33	2033/34	
Plan	38,314	9,000			38,337	34,200	34,200	38,880	38,880	38,880	270,974
Actual	40,156	13,037									
Actual - Plan	1,842	4,037									

Table 10.3 reflect the actual yield achieved from Kuala Baram FPMU in Rotation 1 and Rotation 2 respectively. Achieved yield showed that even though the decrease in *Acacia mangium*, the yield in Rotation 2 has improved significantly with 17%. This mainly due to the introduction of *Acacia crassicarpa*. EP yield were down mainly due to the early harvest, due to wind damage.

Once the total crop has been connected to Crassicarpa, yield at 5 years in exceed 100 m3 / Ha can be expected.

Table 10.3: Computation of actual harvested yield.

Rotation	Species Group	Yield m3/ha	Sum of Ha
Rotation 1	Acacia	72.4	330.6
	EP	75.2	44.8
	Others	30.3	56.8
Rot 1 Total		**67.1**	**432.2**
Rotation 2	Acacia	84.7	138.8
	EP	59.1	101.9
	Others	104.5	41.6
Rot 2 Total		**78.4**	**282.3**
Grand Total		**71.6**	**714.5**

10.2 Harvesting Plan

The annual harvesting plan is dynamic. This allows for easy and, more important, for continual, revision as new yield information is generated. It consists of a register of the blocks due for harvest in each of the next ten budget years. The blocks due for harvest, as determined by rotation age with appropriate management adjustments, in a given budget year are those that will be source of that year's AAC.

10.3 Harvesting Systems

The first rotation of the ITP was planted on degraded peat soils from which any residual timber had been extracted by excavator. A road network consisting of a more or less regular 500 m square grid was constructed. This created management blocks of 25 ha and means that few parts of a block are more than 250 m from a road.

Kuala Baram FPMU mainly use shovel logging system, the effective system to be used in peat condition.

10.3.2 Harvesting activities for Harvesting Kuala Baram LPF/0004

Tree Felling: Tree feller is required to complete a safety and health training course, including the provision of the first aid. Before the beginning ay cutting work, tree fellers are responsible for ensuring that their chainsaw and other tools are full functional and safe to use. While carrying out the felling work, the Felling Crew shall always check for dead and broken branches in the crown of the tree, inter-locking branches and vines; lean of the tree and location of heaviest branches; tree species prone to split; and wind direction. Pre-determine the direction of felling to ensure overall safety and wedge-cut point to induce the falling direction of the tree. Tree Felling essential consist of three (3) cuts; namely the top and bottom cut (gives the tree direction of fall and the back cut allowing the tree to fall in planned direction.

No felling activity carried out in exclusion zones of Kuala Baram LPF/0004, e.g. Special Management Zone (River Buffer, Swampy Area, HCV 1.4 area). The protected tree species such as Tapang (*koompassia excelsa*) and *Ficus* spp. are not allowed to be felled.

Extraction of Planted Timber (Shovel Logging) - The machines operators are required to hold valid training certification in log extraction. The operator shall identify and work within the operating

limits and boundaries set out in the plan, including in moving the timber. On completion of the block, the excavator as when required to completely advancing the timber of the block. The excavator shall sort, align and stack neatly the timber at the roadside.

Cross-cutting and Sort & Stack: a person shall only undertakes the Cross Cutting activities if he been trained or experienced in using and maintaining chainsaws, felling and cross-cutting trees. Trim: to remove the rejected portion of the log end with a chainsaw; Cross-cut: cut made horizontally through the trunk of the tree and taking into consideration of the grading specification. Sorting & stacking: the excavator operator will sort and stack the graded logs into the following piles: Sawlogs, Peeler and Chips.

Log transportation: The personnel in-charge of the harvesting activities shall be present to observe the loading process. The loading activities carried out by log loaders using excavator and only allowed during day light hours excluding period of poor visibility and prohibited when the logging roads are wet and soggy.

10.3.3 Post-Harvesting Activities

The Regional Forest Office (RFO) will conduct ground verification to ensure all activities are carried out in compliance. Upon verification, the RFO will issue the Block Clearance Certificate (BCC) and Coupe Clearance Certificate (CCC).

10.4 Financial Sustainability

The KUALA BARAM MTCS area is a very small part the ITP area operated by the Samling Group. The Group has clearly been financially supportive of KUALA BARAM from start-up in 2008-9 and of its other ITPs since their start-ups. However, now that harvesting has started the net revenue from internal log sales should cover replanting and overhead costs for the remainder of the 60-year licence period and this support should no longer be required.

10.5 Non-Timber Forest Products

There are no non-timber forest products used commercially.

11. Spatial Information and Management System

11.1 Spatial Information

ArcGIS is used to process the detailed spatial information. Data are captured by the QS team using Garmin 76CSx. GPS tracks are downloaded using OziExplorer. Tracks are then cleaned and processed using OziExplorer. GIS data are then held by ArcGIS for further processing and mapping. The GIS allows Samling to produce a variety of maps displaying an array of information including coupe, block and protected area boundaries, and the location of any locations with HCVs. The distributions of the species planted and of the years of planting are also held, as is land-use and related spatial information, such as roads.

11.2 Management Systems

Samling uses an ERP system for financial control and the ATLAS GeoMaster suite to manage block records.

12. Conservation, Conservation Areas, High Conservation Value Areas and Social Impacts

12.1 Conservation and Conservation Areas

Given the past long history of widespread, heavy harvesting tries it is not surprising that undisturbed primary forest has not been identified within the KUALA BARAM LPF.

This history and the relatively small size of the KUALA BARAM MTCS area reduce, but do not necessarily preclude, the prospects for the MTCS area having much relevance to conservation in general. In particular it is highly unlikely that any medium and larger sized rare, threatened or endangered species (RTE) exist within the LPF and certainly to date none has been directly sighted and recorded by the HCVA or by ITP staff. Indeed, there is an absolute paucity of all larger animals in the LPF. But, however limited the potential might be, KUALA BARAM recognises that it has an obligation and commitment to incorporate into its management practices a system that considers the need for conservation awareness and for the identification and protection of any RTE species that might occur.

Samling recognises the importance of indigenous biodiversity and the need to protect some areas of indigenous vegetation which might have the potential to recover, albeit over a very long time, in both structure and biodiversity, to something approximating that which existed prior to the start of natural forest harvesting. Examples of this would include the SMZs and RBZs across Samling's ITPs. However, no areas of undisturbed primary forest have been identified in KUALA BARAM. The 160 ha of the Kejaman Communal Forest (Section 4.4.3), which has been excluded from plantation development, is also very heavily disturbed. Further, there is also little which might realistically be described as even degraded peat swamp forest (PSF); none of the several PSF types that once occurred on the area now under the MTCS area still remains recognisable as such.

The HCVA confirms that there is little of obvious conservation value in the ITP area of the LPF. The major RBZ is the 50 m side strip along the true left bank of Btg Baram, and this falls outside of the MTCS area. Its conservation value is negligible as, for most of its length, it has been, and still is, subject to uncontrolled agricultural use. The extent of the RBZs of the tributaries of the Btg Baram is limited in that there are few streams in the area and they are small and are also used for casual agriculture.

However, it is Samling's stated policy that anyone working in KUALA BARAM ITP should have a positive approach to conservation and be involved with the process of protecting RTE species. For example, all new contracts, and those renewed, for establishment, silviculture and harvesting work contain the following, or similar, clause:

"*Sites which are known to be culturally sensitive or which are known to contain rare, threatened or endangered species are surveyed and placed on KUALA BARAM maps. If these areas are identified on any map(s) issued with the Work Order, it is the responsibility of the Contractor to ensure his workers have been informed of them before work commences. Any new sites where rare, threatened or endangered species are encountered will be reported to KUALA BARAM management immediately.*"

Where a current contract does not contain such a clause then the contractor is required to acknowledge and to agree in writing that he will comply with the conditions of the above clause.

The EIA and HCVA identified some of the RTE and endemic species of flora and fauna that occur within the LPF, some of which are protected and totally protected as described in the Wild Life Protection Ordinance 1998.

The MTCS area is, in terms of NTFPs, clearly not *fundamental* to meeting the basic needs of the local communities.

12.2 High Conservation Value Assessment and Analysis

12.2.1 High Conservation Value Assessment

An HCV assessment was undertaken in July 2020 and a report entitled *'High Conservation Value Assessment of the MTCS area within the KUALA BARAM ITP area of LPF/0004, Sarawak'* (February 2021) was prepared. The assessment followed the WWF Toolkit for Malaysia.

In analysing the HCVA it should be noted that:

1. the whole MTCS area, indeed the whole LPF area, has been very heavily degraded by repeated timber harvesting prior to the issue of the LPF licence;
2. significant areas have been burned over the years prior to the issue of the LPF licence;
3. further salvage harvesting no doubt took place prior to the release of coupes for PEC Op. 5 (clearing & site preparation);
4. discounting Coupe 2, Blocks 1 and 2, planting started in 2007/8 meaning that the LPF has been in more or less continuous operation for about 13 years;
5. there is a large community of oil palm workers adjacent to the ITP area;
6. 26% (775 ha) – of the gross MTCS area is designated as wetlands or swampy areas;
7. hunting by Samling employees and contractors is prohibited; and
8. the demand by the local communities for collection of NTFPs from, and for hunting and fishing within, the MTCS area is negligible.

The first five points above are, without doubt, 'conservation negatives' but it is quite clear from the EIA (1999) and the HCV (2021) reports that, despite these negatives, some degree of biological diversity has been maintained although this applies to a very restricted area.

12.2.2 Analysis

In summary the HCVA shows that:

HCV 1 and 2: The KUALA BARAM MTCS area does have at least one HCV attribute. This is in a seasonally flooded/swampy area (SMZ) bordering the Btg Baram where Large Flying Fox were feeding at the time of assessment. (HCV1.4)

Endemic species were identified by the HCVA but they are all acknowledged to be endemic to the island of Borneo. It follows that – on the current level of knowledge – neither the LPF nor the MTCS area can be considered to be an HCV contributor of any importance with regard to endemic species. The closest protected area in relation to the KUALA BARAM ITP is the Malaysia-Brunei International Buffer Zone on the true right of the Btg Baram. The Lambir Hills NP and the Loagan Bunut NP are located further away whilst still in the same Miri Division. The MTCS area is more or less isolated - by oil palm, shifting agriculture and the large Btg Baram and it therefore contributes little in the way of connectivity to or between any areas that have HCV significance.

When the qualitative and quantitative aspects of these HCV attributes are viewed in the context of relevance, either to the needs of Borneo or Sarawak state or to those of the KUALA BARAM LPF

itself, there is no justification for elevating any of KUALA BARAM MTCS conservation areas from their current protected status and according to them HCV status under either HCV 1 or HCV2. This point is reinforced by the fact that SMZs already provide an equal level of protection for free ranging mammals and birds as would be provided by an area being declared and established as having HCV attributes.

HCV 3: the whole LPF is on peat soil but only the Kejaman CF, which is outside of the MTCS area, and in any case, outside the LPF management's jurisdiction, might be considered as peat swamp *forest*.

HCV 4: No water catchments have been identified within the relatively flat and low-lying MTCS area. The nearest gazetted water catchment, Lambir Water Catchment, is located more than 20km from the MTCS area with which it has no river system connectivity. Whilst concerns regarding water supply were expressed during the course of the SIA, all the six communities are actually located on the banks of the Btg Baram, a river of such massive size that the MTCS area and the few small tributaries that drain from it are of no consequence in terms of natural water supply and quality.

It is highly unlikely that any streams will now be located within the MTCS area. Should any RBZ be identified later they will be demarcated on the ground following the NREB specification. The RBZs will then be protected from encroachment by all machinery, other than by chainsaw used to fell any trees that might have been planted in the RBZ prior to its establishment.

HCV 5: Both the reports (HCVA and SIA) reinforce the findings of the much earlier EIA: that there is now no true dependence on any NTFPs that might be provided by the MTCS area or indeed on those provided by the whole LPF. Most timber and timber products are bought in Miri town rather than self-collected. It is clear that for most communities, what *negative* socio-economic impacts the KUALA BARAM MTCS ITP area might have had, they have been greatly mitigated by various forms of economic development, e.g. through government assistance, improved road access and increased availability of salaried and waged employment. In August 2020, 5 of the 6 Sarawakian staff employed in KUALA BARAM ITP were local.

HCV 6: There no sites of special significance to the indigenous people have been identified in the MTCS area. The 1999 EIA identified one burial site used by both Kg Sg Kejaman and Rh Teraja and located well to the south-east of the lower MTCS area boundary. The 2020 SIA did not identify this site but recorded an old one said to belong to Kg Teraja and located on the other side (the true right bank) of the Btg Baram where Kg Teraja was previously located before moving to the LPF side of the river.

12.2.3: High Conservation Value-Recommended Mitigation Measures

HCV	Recommended Management Studies	Recommended Monitoring Strategies
HCV 1	1. Setting aside the area under protection as in riparian buffer zones, designated protected areas, protected flora and fauna and wildlife corridors. 2. Planning of harvesting blocks to avoid cutting migratory pathways of wildlife. 3. Control of encroachment, especially hunting through working with regulatory agencies and local communities. 4. Create Support from the government agencies and NGOs.	-
HCV 2	1. Restoration of previous damages caused by forest activities.	-
HCV 3	1. Restoration of previous damages caused by forest activities.	-
HCV 4	Community development through employment and social activities	-
HCV 5	Formation of Community Representative Committee (CRC): 1. ITP management has to initiate and liaise with FDS on the formation of Community Representative Committee. 2. CRC Comprises of the community representative, female gender representatives and the ITP community liaison officer to mitigate all socio-economic issues between the local communities and ITP.	"To adopt the mechanism of Conflict Resolution Guidelines for Sustainable Forest Management. 1. To solve in any event of conflict and disagreement during consultation with local communities. It is important that the management of ITP recognized and respect the rights of the local communities to own, use and natural resources as prescribed in Principles 3 of MC&I V2 (Forest Plantation) for FMC. 2. Meetings, dialogues and ground checking on raised land issues, conflicts, requests and outcomes with the local communities shall be recorded as future references. "
	Formation of FMC Liaison Committee: 1. Membership comprise of multi-stakeholders: - Government agencies (FDS, SFC, L&S, DO, etc), License/ ITP Holder, CRC, and Other relevant stakeholders (WWF, STA) This will be a platform for top-down approach to discuss and make decision on the issues of community-forestry and community development.	

12.2.3: High Conservation Value-Recommended Mitigation Measures

HCV	Recommended Management Studies	Recommended Monitoring Strategies
HCV 5	The ITP shall also hold regular dialogues with local community on environment issues, job opportunities and mutual benefits: 1. ITP to initiate to call for CR/FMCLC meeting. 2. ITP to conduct briefing on MC&I, HCV and SIA.	-
	Enhance the Mutual Understanding and Awareness within the Local Communities: 1. Make clear about the license boundary as it is the most sensitive issue that involves the ownership of land. 2. to keep update for any changes of ITP operation system that could affect the communities. 3. Job opportunities and communities benefits i.e. community-based program, road construction/ maintenance, facilities development etc. 4. Education programs and awareness briefing shall be conducted on: -Forest policies and prescribed legislation that the employees of ITP and local communities need to abide. -Make known the concept of SFM and how it benefits the whole system landscape in the aspects of biodiversity, economy and social.	
	Control of encroachment, especially hunting through working with regulatory agencies and local communities.	
	Community development through employment and social activities.	
HCV 6	Control of encroachment, especially hunting through working with regulatory agenciesand local communities.	-
	Community development through employment and social activities.	-

12.3 High Conservation Value Monitoring

12.3.1 Introduction

High Conservation Value Assessment (July 2020) had identified within MTCS area of Kuala Baram FPMU, a HCV1.4 site where Large Flying Foxes (*Pteropus vampyrus*) were feeding. The HCV monitoring (2023) was conducted by on-site monitoring and camera trapping. The results show no activity of Large Flying Fox at the site from May 2022 until June 2023.

12.3.2 On-site Monitoring

The on-site monitoring was conducted every day from May 2022 until June 2023, by the field workers and staffs of Kuala Baram FPMU. The monitoring time was chosen randomly to increase the chances of Large Flying Fox sighting at site. The monitoring result of no sighting of Large Flying Fox. Currently, the monitoring was continued to ensure that the HCV 1.4 are protected from any encroachment activity or damages to that area.

Table 12.1: On-site monitoring summary of HCV 1.4 at Kuala Baram FPMU

Month / Time range (pm)	May -22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov -22	Dec-22	Jan -23	Feb-23	Mar -23	Apr-23	May -23	Jun-23
4.00-5.00	NM	0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
5.00-6.00	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
6.00-7.00	0	NM	0	0	0	0	0	0	0	0	0	0	0	0
7.00-8.00	0	0	0	0	0	NM	0	0	NM	NM	NM	NM	NM	NM
8.00-9.00	0	0	0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
9.00-10.00	0	0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

NM: No Monitoring

Camera Trapping at the HCV1.4 site: A camera trap was installed at the HCV1.4 site in June 2022. Camera data was collected monthly from June 2022 until May 2023 for 11 months. The results show no activity of Large Flying Fox.

On-site Monitoring summary for year 2024: The HCV monitoring was conducted using Unmanned Aerial Vehicle (UAV) to capture aerial imagery of the site. the results indicated no encroachment or damage detected within the HCV area. In addition, scheduled ground patrols were carried out covering the HCV site. No sightings or evidence of large Flying Fox or other large mammal was recorded during these patrols.

On-site monitoring for year 2025 (as of 20 September 2025): The HCV monitoring was conducted using Unmanned Aerial Vehicle (UAV) to capture aerial imagery of the site. the results indicated no encroachment or damage detected within the HCV area. Scheduled ground patrol and night spotting yield no sightings or evidence of large flying fox or other large mammals in the HCV area.

Table 12.2: Stakeholder Feedback on Flying Fox Monitoring Site.

HCV Assessment	Action taken by LPF Management	Stakeholder Feedback	Recommendation/ Action to be taken
The Feeding site of was identified in year 2020.	Continuous Monitoring (2023) has been conducted to document the occurrence and behaviour of Flying Fox. The monitoring result has been shared with UNIMAS, FDS and SFC.	Unimas (2024): Seems the tree is no longer used by flying foxes, likely serving as a temporary roost rather than maternity roost. The sites might attract other mammals and birds.	Maintain the site as a High Conservation Values (HCV) area. Conduct monitoring to detect potential; a) return of flying fox and track other wildlife activity; b) encroachment or damage towards HCV site (Aerial View Monitoring)

12.3.3 Procedure and Guidelines in Managing and Demarcating of Protected Forested Area – Special Management Zone (SMZ)

The following guideline and procedures are used as a guide in managing and demarcating of Protected Forested Area (SMZ) and HCVs, if identified.

a) The Guidelines for Fauna Conservation and Ecosystem Management (FDS)
b) Procedures for Identifying and Demarcating Sensitive Areas for the Protection for Soil and Water (FDS);
c) Procedure for Monitoring and Management Measures of High Conservation Value Area (HCVAs); and Process of Discovery and Demarcation of New HCVAs (FMC-2023).
d) Operational Procedure No.: SST/RP/QS/01 Riparian and RF10iver Buffer Zone
e) Operational Procedure No.: SST/RP/OP/01 Quantity Survey and GIS Mapping

12.4 Wildlife Monitoring

Fauna

The presence, or absence, of fauna within the plantation is monitored by means of sightings and camera trapping. The Table 12.3 shows the annual summaries of the patrol report sightings for the various animals whose presence in the plantation has in some way been noted.

Table 12.3: Kuala Baram LPF – Wildlife Monitoring Record

Annual summary of sightings							
Common/Local Name	Scientific Name	Year					Total
		'20	'21	'22	'23	'24	
Mammalia							
All mice/rat (Tikus)	Family *Muridae*	1	57	95	53	54	260
All otters (Memerang)	Family *Viverridae*	1	0	0	0	0	1
Bearded Pig (Babi Berjanggut)	*Sus barbatus*	0	0	0	0	0	0
Borneon Sun Bear (Beruang Madu)	*Helarctos malayanus*	0	0	0	0	0	0
Flat-headed Cat (Kucing Hutan)	*Felis planiceps*	0	0	0	0	0	0
Fruit Bat	*Cynopterus* sp.	0	0	0	0	0	0
Large Flying Fox (Keluang)	*Pteropus vampyrus*	0	0	0	0	0	0
Leopard cat (Kucing Batu)	*Prionailurus bengalensis*	0	0	0	0	0	0
Long-tailed Macaque (Kera)	*Macaca fascicularis*	0	0	0	0	15	15
Malayan Porcupine/Common Porcupine (Landak)	*Hystrix brachyura*	0	0	0	0	0	0
Mousedeer (Pelanduk)	*Tragulus* sp.	0	0	0	0	0	0
Muntjac/Barking Deer (Kijang)	*Muntiacus* sp.	0	0	0	0	0	0
North Borneo Gibbon (	*Hylobates funereus*	0	0	0	0	0	0
Pig Tailed Macaque (Beruk/Nyumboh)	*Macaca nemestrina*	0	0	0	0	0	0
Plantain Squirrel (Tupai Pinang)	*Callosciurus notatus*	37	223	285	261	216	1022
Prevost's Squirrel (Tupai Gading)	*Callosciurus prevostii*	0	0	0	0	0	0
Sambar Deer (Rusa/Payau)	*Cervus unicolor*	0	0	0	0	0	0
Slow Loris (Kongkang)	*Nycticebus coucang*	0	0	0	0	0	0
Sunda Pangolin (Tenggiling)	*Manis javanica*	0	0	0	0	0	0
Reptilia							
Borneo Skink (Mengkarung)	*Dasia vittata*	0	0	0	0	0	0
False Gharial (Buaya Jejulong)	*Tomistoma schlegelli*	0	0	0	0	0	0
Monitor Lizard (Biawak)	*Varanus salvator*	145	351	356	351	247	1450
Python (Ular Sawa)	*Python* sp.	0	0	0	0	0	0
Saltwater Crocodile	*Crocodylus porosus*	0	0	0	0	0	0

Table 12.3: Kuala Baram LPF – Wildlife Monitoring Record (Cont.)

Local/ Common Name	Scientific Name	'20	'21	'22	'23	'24	Total
Aves							
All birds	-	0	0	0	0	0	0
All pigeon/dove	Family Columbidae	3	54	0	0	0	57
All eagle (Helang/menaul)	Family Accipitridae	0	0	0	9	8	17
All egret	Family Ardeidae	39	203	198	194	204	838
All owl (Burung hantu)	Family Strigidae	0	0	0	0	0	0
Bulbul (Burung merbah)	*Pycnonotus* sp.	0	0	0	0	0	0
Bulwer's Pheasant (Sempidan)	*Lophura bulweri*	0	0	0	0	0	0
Bushy-Crested Hornbill	*Anorrhinus galeritus*	0	0	0	0	0	0
Collared Kingfisher	*Todiramphus chloris*	0	0	0	0	0	0
Coucal (Burung Bubut)	*Centropus* sp.	11	20	115	0	0	146
Forest Raven (Gagak)	*Corvus tasmanicus*	3	0	0	0	0	3
Hill Myna (Burung Tiong)	*Gracula religiosa*	0	0	0	0	0	0
Long-tailed Parakeet (Burung Bayan)	*Psittacula longicauda*	0	0	0	0	0	0
Malkoha	*Phaenicophaeus* sp.	0	0	0	0	0	0
Munia (Pipit)	*Lonchura spp.*	60	0	0	109	126	295
Oriental magpie-robin (Murai)	*Copsychus saularis*	8	0	0	0	0	8
Oriental Pied Hornbill	*Anthracoceros albirostris*	0	0	0	0	0	0
Plaintive Cuckoo	*Cacomantis merulinus*	0	0	0	0	0	0
White-breasted waterhen (Burung ruak-ruak)	*Amaurornis pheonicurus*	254	400	303	350	253	1560
Yellow-bellied Prinia	*Prinia flaviventris*	0	0	0	0	0	0
Spotted Dove	*Spilopelia chinensis*	0	0	0	24	55	79
Insecta							
Giant Honey Bee	*Apis dorsata*	0	0	0	0	0	0
Slender Skimmer	*Orthetrum sabina*	0	0	0	0	0	0
Blue Sprite	*Pseudagrion microcephalum*	0	0	0	0	0	0

Source: Wildlife Monitoring Record

Note: 1The camera trapping data started to be incorporated in year 2024.

12.5 Social Impacts

12.5.1 Assessment

A Social Impact Assessment (SIA) was undertaken in September 2020. A report on the assessment entitled: '*Social Impact Assessment Report for Communities within and adjacent to Kuala Baram Forest Plantation Management Unit*' was produced in December 2020. The assessment was guided by the '*Guidelines and Procedures for Social Impact Assessment and Monitoring of Forest Operations (Peninsular Malaysia)*' (UPM 2012).

12.5.2 SIA Report and Analysis

The SIA stated the objectives of the assessment as: "*to assess the social impact by the forest plantation operations on the communities living within and areas adjacent to the KUALA BARAM ITP*", in which management actions needed to mitigate and monitor social impacts of forest management operations were also recommended.

The assessment identified and addressed three main points of impact arising from the forest plantation activities within the ITP:

1. Water Supply and Quality

Ensuring adequate supplies of clean water throughout the year is a major concern for most villages that have to rely on rainwater, and where water catchment is absent. Still, when the supplies run low, the villages within and adjacent to the KUALA BARAM MTCS area have the advantage in their relatively close proximity to Miri.

The SIA report sited past logging activities upstream and other agricultural development activities along the river to be the causes of the current state of the Btg Baram. It has to be noted that water quality in forest streams can and will become turbid from natural erosion in areas of high and heavy rainfall. Nonetheless, the removal of vegetation that the establishment of ITP requires and the use of heavy equipment for road and timber extraction would have and will lead to increased siltation of the rivers. But just how much can be attributed to which cause is the subject of generally qualitative, unscientific argument.

2. Local Economy

a) Occupation and income

In 2020 six of the Sarawakian *staff* were local and one was from Sabah; the *workforce* was made up of foreigners. The low participation rate of locals in the workforce reflects the twin perceptions by these locals, and the reality, of contract work in the forest plantations being physically arduous and that the work is not overly well paid. These perceptions, together with the need for regular and consistent working hours, has resulted in this low participation rate. But low worker participation rates are not confined to KUALA BARAM ITP; this is the case for the ITP industry throughout Sarawak and, to a slightly lesser degree, for Sarawak's oil palm industry.

b) Forest resources

The SIA recognised that the forest resources surrounding the communities [living within and adjacent to KUALA BARAM MTCS area] have long been in a depleted and degraded state. This means that forest resources are scarce to a point that the communities are not able to

depend on nature exclusively for food and other services. They now have to find other ways to meet their needs. This is reflected in their subsistence farming activities as well as the rearing of domestic livestock.

In KUALA BARAM ITP, most of the residual forest areas are now protected as SMZs, namely the seasonally flooded/swampy areas, and the Kejaman Communal Forest. The very limited forest resources are restricted to these areas, where extractive activities are more or less non-damaging, e.g. collecting firewood, honey, wild vegetables and meat, etc. The felling of any tree within an SMZ is prohibited (unless it is an exotic).

c) Accessibility
The report acknowledges a positive impact in that the improved access by way of the plantation roads allows villagers to travel to Miri and other nearby townships for better work opportunities outside of the ITP. The improved accessibility also means that villagers can attend training courses outside of the LPF and similarly for government trainers to run courses on location in the villages where they can develop their skills which can be used to better their livelihoods.

3. Socio-cultural Livelihood

The SIA has little of substance to say about health and safety apart from noting a concern that the dust from the plantation roads gives rise to reduced air quality.

Linked in part to the reduced area of the forest resource is the dwindling traditional knowledge and shrinking traditional skill base of the communities. But the reduced availability of traditional material is not the only cause of diminishing handicraft practices. As the population ages so the number of skilled and practicing artisans decreases; infirmity renders the collection of the raw material from the forest a less attractive activity; and then death takes its toll and further reduces the number of participating artisans. For many, perhaps most, of the younger villagers the time taken to collect raw material from the forest and then process it prior to starting handicraft production – even if the material is available in the forest in adequate quantity – is not a very attractive proposition. When viewed against a wage-earning occupation and the lure of the 'digital world' it becomes even less so.

However, it should also be acknowledged that even handicrafts move on and that the traditional skill of basket weaving has to some extent flourished with the realisation that PVC strapping can be used as a readymade substitute for rattan for certain handicraft products. With some adaptation of technique and design, this allows the traditional skills of basket weaving to be gainfully practiced without the need for (a) a rattan resource and (b) the very time-consuming process of collecting and then processing the rattan to a state in which it can be used for handicraft products.

The SIA noted that disputes due to land claim between the local communities and the ITP were limited as boundaries are well defined.

In the Conclusion, the SIA report states that "…*FPMU operations in the ITP have brought about some positive impacts to the communities particularly in providing easier access for them to move in and out from their villages*…". It goes on to mention: "…*concerns…. with regard to water quality, for*

drinking, washing or bathing…" but, whilst this is a justified concern, it is not one created as a direct result of the existence of the MTCS area, or even the LPF.

12.6 Mitigation and Enhancement Measures

12.6.1 Introduction

Previous forest timber licence holders had exercised conventional logging operations that caused adverse impacts on forest resources, water quality and environment. Thus, affecting the local communities' livelihood and their dependency on jungle produces. It is noted that any unsatisfactory feeling and lack of trust by local communities could be due to the past history and any project or development taken over will be affected. Therefore, KUALA BARAM ITP needs to restore that trust and foster a good relationship with the local communities. Based on the SIA assessment conducted, there is a need to alleviate the impacts from prior damage resulted from logging operations by former license holders and on-going plantations operations.

The components needing mitigation and enhancement measures identified in the three key social impacts are listed as the following:

1. Water supply and quality
2. Local economy
3. Socio-cultural livelihood

12.6.2 Measures to mitigate adverse social impact and enhancement of water supply and quality

There are no community water catchment areas or water intake points within the MTCS area, or even in the ITP for that matter.

KUALA BARAM ITP is to adhere to the standard operating procedures for harvesting operations with requirements as accorded in the MC&I SFM to minimise soil erosion and other adverse environmental impacts.

12.6.3 Measures to mitigate adverse social impact and enhancement of local economy

<u>Occupation and income</u>

As part of the corporate social responsibility and in line with Principle 4 on Community Relations and Workers' Rights of the MC&I SFM, the KUALA BARAM ITP management should prioritise employment among the local communities to enhance their long-term social and economic well-being. Job priority for locals would ensure that they benefit directly from the development of KUALA BARAM ITP. The interventional approach should target the segment of the communities that is on the lowest rung of the economic status ladder.

<u>Accessibility</u>

It is recommended that the management of KUALA BARAM LPF should regularly maintain the existing plantation roads. The management can work closely with community in handling issues on road maintenance and other issues.

12.6.4 Measures to mitigate adverse social impact and enhancement of socio-cultural life

<u>Road access and urban migration</u>

The villages are located by the Btg Baram and are well away from any *busy* LPF roads; little could be done regarding dust on these roads especially during dry season but drivers could be mindful of other vehicles on the roads.

Indigenous knowledge and skills

In the course of the SIA, little or no interest was recorded in Traditional Knowledge and Skills. With regards to new knowledge and skills, management of the LPF could provide and support training that is related to plantation operations and organise education programmes in order to maintain and enhance the long-term and economic well-being of local communities.

Land use and forest aesthetics

There are some claims of Native Customary Rights (NCR) land by the local people within the LPF. These are mainly spurious as the areas are in the Lower Baram Forest Reserve which was well documented as still being mostly primary peat swamp forest well after 1958. However, inexplicably, areas of NCR have been declared within the forest reserve; but these are outside of the MTCS area.

As described in the Gazetted Notification for the Lower Baram Forest Reserve Third Extension certain rights were granted within the MTCS area.

13. Multiple-Use

13.1 Local Population

13.1.1 Hunting

Hunting is prohibited within the LPF other than by members of the local communities and then only for personal consumption. Members of a local community who are also Samling employees are prohibited from hunting whilst working in the LPF and whilst resident in Samling's quarters within the LPF.

13.1.2 Fishing

There would seem to be little or no opportunity for fishing *within* the MTCS area given that no streams have been identified. The true left bank of the Btg Baram forms part of the MTCS area's eastern boundary for about 1 km of Coupe 5B and for about 5.5 km of Coupe 6B's eastern boundary. All this boundary area adjacent to the Btg Baram is 'swampy land' from it will often be difficult to access the river. It seems likely that fishing in the Btg Baram will be by means of boat. And that whatever fishing is done will mainly be recreational rather than because of any food dependence.

13.1.3 Other Non-timber Forest Products (NTFP)

Probably only the Kejaman CF, which is outside of the MTCS area, can be considered as a source of NTFPs apart from wild vegetables such as kangkong (Ipomea aquatica) and edible ferns which are widespread throughout the area.

This means that, as a source of NTFPs, the MTCS area is of very limited utility to the communities. The results of the HCVA and SIA tend to confirm the EIA information as indicated above.

13.2 Others

In the past, KUALA BARAM LPF has been a participant in Samling's R&D programme.

It has also been the source of elite *E. pellita* seed and other genetic material some of which has been used in the *E. pellita* seed source trials on mineral soils.

Samling, through STA's Plantation Committee, has cooperated with Swinburne University (Kuching) in the development of a mycorrhizal based bio-fertilizer for *E. pellita*. A successful outcome might well benefit Samling's silviculture of *E. pellita.*

14. Cultural and Historical Values

14.1 Cultural Values

Given that the greater part of the MTCS area was, only a few decades back, covered by a continuous swathe of primary peat swamp forest in a long-established forest reserve[12], that the river bank levee areas are subject to frequent and often severe flooding and that the communities are relatively recent new comers to the area, it should not be surprising that there is little of tangible cultural value associated with the MTCS area. The sole longhouse on the true left bank of the Btg Baram, Rh Masam, was located by the 1999 EIA as being more or less on the boundary of the MTCS area. It shrank from 11 doors at the time of the EIA to 4 doors before the residents finally moved out[13].

There no sites of special significance to the indigenous people have been identified in the MTCS area.

The 1999 EIA identified one burial site used by both Kg Sg Kejaman and Rh Teraja and located well to the south-east of the lower MTCS area boundary (EIA Fig. 3.8). The 2020 SIA did not record this site but recorded an old one said to belong to Kg Teraja and located on the other side (the true right bank) of the Btg Baram where the village was previously located prior to moving to the LPF side of the river.

14.2 Historical Values

Given the points made in Section 14.1 it is not surprising that sites of historical significance have yet to be identified.

15. Occupational Health and Safety and Environment

15.1 Introduction

In the conduct of forestry operations, a safe and healthy work place, as far as practicable, is assured by compliance with the Occupational Safety and Health Act 1994 and the relevant legislative regulations and guidelines that are applicable to the respective work places.

15.2 Health, Safety and Environment (HSE) Policy Statement

Forest management is committed to the following principles:

[12] Lower Baram Forest Reserve, 3rd Extension GN 1806 wef 1st August 1965

[13] pers. com. (via Brewin ak Ngumbang) TR Asam Paya, 29 September 2020

- Provision of working system, environment, plant, equipment and the maintenance of the same in so far as practicable, that is safe and without risk to health and adverse impact to the environment;
- Provision of facilities, machinery integrity and products or services we provide are in accordance with the legal requirements and industry best practices;
- Provision of available and effective contingency plan to deal with and recover from any emergencies and communicated to all stakeholders;
- Provision of information, risk assessment, safe work practices, training and supervision for all employees to enhance work competencies, skills and awareness in HSE;
- Continual improvement in HSE management and performance by focusing on improvement in people, process and technology;
- Employees, including our partners and sub-contractors is expected to stop work when there is an imminent threat to the safety and health of own-self or others, or when there is an adverse impact to the environment or loss and damage to the property; and to only resume work when the impending hazards has been mitigated.

This commitment from Top Management documented in HSE Policy Statement and displayed at all workplaces in English and Bahasa Malaysia.

15.3 Safety Practices and Procedures for Forest Activities

Safety practices and procedures in the workplace developed based on legal requirements and periodically reviewed. This is to ensure forest activities complied to the laws and certification requirements. Practices and procedures implemented at workplaces focus on the followings;

15.3.1 Compliance to Law and Regulations

Forest Management to ensure all activities complied to Laws or Ordinance such as OSHA 1994, Environmental Acts 1974, Sarawak Forest Ordinance and any Acts or Ordinance applicable to Forest activities.

15.3.2 Safety Practices and Implementation at the Workplace

Forest Management to ensure the health, safety and environmental compliances in place and implemented by all employees at the workplace with focus on the followings;

a) Formation of Safety and Health Committee - Safety and Health committee actively meet and review all related matters for the benefits of all employees at the workplace. Safety and Health Committee must discuss on the related matters at least every 3 months. (*Required when there are 40 or more employees in the workplace*).
b) Appointment of OSH Personnel - At least one (1) staff has been trained and appointed as OSH Coordinator at the workplace to promote the safety culture in the workplace and provide the knowledge pertaining to health, safety and environmental compliance. (*OSH-Coordinator required for workplace with 5 employees and above*)
c) Regular OSH Audits and Inspection - Safety and health related audit and inspection regularly conducted and enforce disciplinary measures on errant workers to ensure the safe operating of machinery and other company's tools and equipment.
d) Reporting to Authority - Reporting to Department of Occupational Safety and Health (DOSH) for accident or occupational poisoning to be done according to Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease (NADOPOD)

Regulations 2004. Forest Management also must ensure reporting of scheduled waste to Department of Environment (DOE) to be done regularly according to Environmental Quality (Scheduled Wastes) Regulations 2005.

e) Competency and Assessment - Ensure every employee are competent and knowledgeable in their work area by giving regular training and periodic assessment.
f) Health and Welfare - Forest Management also to ensure the welfare of employees and their family also must be taken care of by providing basic amenities and to ensure the cleanliness of the compound, water source and proper disposal of household wastes.
g) Emergency Response Plan – Forest Management to ensure Emergency Response Plan was implemented at the workplace and to ensure First-Aid box, Emergency Shower, Eyewash and Fire-fighting equipment is sufficient and always in good condition.
h) Responsible Waste Management – Forest Management must ensure all waste generated at the workplace are properly disposed according to Environmental Impact Assessment (EIA) report and Environmental Quality (Scheduled Wastes) Regulations 2005.

15.3.3 Risk Assessment, Safe Work Practices and PPE Compliance

Forest Management to ensure all risk related to forest activities to be documented and reviewed periodically. This is to ensure all employees are protected from any hazards arise from their work activity.

a) Physical Risk Assessment - All physical risks related to forest activities documented in Hazard Identification, Risk Assessment and Risk Control (HIRARC). This document must be regularly reviewed and used as a reference to develop Safe Work Practices for every activity.
b) Health Risk Assessment - Risk and exposure to chemicals and noise to be assessed by Competent personnel and recommended action must be taken to ensure risk related to health can be eliminated. (if applicable to the workplace)
c) Safe Work Practices – Forest Management must ensure safe work practices are regularly updated and reviewed based on physical and health risk assessment for every activity. This Safe Work Practices documents are used as a guideline for every employee on how they are going to perform the task correctly.
d) Personal Protective Equipment (PPE) – Forest Management will ensure PPE required in their work activities must meet the standard according to Approved PPE issued by DOSH-SIRIM. Issuance of PPE also must be properly recorded and according to PPE Matrix.

15.4 Trainings Related to Health, Safety and Environment

Forest Management to ensure trainings related to Health, Safety and Environment to be regularly conducted for all employees at the workplace. It is employer's obligation to ensure every employee to be given training or awareness related to their work activities. At the same time, every employee must ensure all information or knowledge given through training and briefing will be used and practiced at the workplace all the time.

15.4.1 Competency Related Trainings

Forest Management must ensure only competent person allowed to operate the machinery or equipment related to forest activities. Requirement of competent or trained person listed below;

a) Trained Workmen or Operators under The Forests (Trained Workmen) Rules 2015. The Rules require workmen in the 5 prescribed forestry activities (Tree Felling, Log Extraction,

Log Loading, Clear-fell Site Preparation and Mechanical Site Preparation) to be trained and certified prior to carrying out forestry activities. Currently the training was conducted by Sarawak Timber Association Training Sdn Bhd (STAT).

b) Safety and Health Officer / OSH Coordinator. Competent Safety and Health Officer / Trained Person – OSH Coordinator is required under Section 29 & 29A - Occupational Safety and Health Act 1994.

c) Certified Environmental Professional in Scheduled Waste Management. CePSWaM competent person to manage scheduled waste generated at the workplace required under Section 49A, Environmental Quality Act 1974.

d) Trained First Aider under Section 15(1) Occupational Safety and Health Act 1994 & Guidelines on First-Aid in the Workplace. Forest Management must ensure sufficient number of Trained First Aider in the workplace and to be trained by Training Provider approved by DOSH.

15.4.2 Awareness Training and Briefings

Forest Management must ensure all required trainings and briefing conducted for every employee for the following topic;

a) Induction and HSE Policy briefing for new workers and refresher
b) Training on Fire Extinguisher/ Fire Drill
c) Training on safety related topics in Reduced Impact Logging Guideline
d) Training/ Briefing on Safe Work Practices
e) Training/ Briefing on Scheduled Waste Management
f) Training on Safety and Health topics
g) Toolbox briefing related to work activities

Forest Management must ensure all attendance records for training, briefing and toolbox to be kept in file for future reference.

15.5 Reference Documents

Occupational Safety and Health act 1994 (Amendment)
Environmental Quality Act 1974
Guidelines on Occupational safety and Health in Logging Operations – DOSH
HIRARC – HSE/HRC/NFO/01 or HSE/HRC/ITP/01
Safe Work Practices – HSE/SWP/NFO/01 or HSE/SWP/ITP/01
Chemical Management Plan
Waste Management Plan

16. Monitoring

16.1 Introduction

The ITP's MTCS area has only recently been established within the KUALA BARAM LPF and, furthermore, certification status has yet to be achieved at the time of preparing the FMP. For these reasons the monitoring of various attributes is also a very new feature in KUALA BARAM's ITP management portfolio. With the exception of growth rates, which have been monitored through a network of PSPs since 2015, other monitoring records have only recently started to be maintained.

16.2 Elements to be monitored

The following elements are monitored:

a) **Yield of forest products** (logs) harvested is monitored through the daily trucking reports.

b) **Growth rates** are monitored through a strong network of PSPs. The actual growth rates of mangium based on the real production and that for Pellita based on PSP data are discussed in Chapter 9.

c) By means of planting records and maps the composition and changes of the **flora are monitored** and recorded over time.

d) The annual summaries for the **monitoring of fauna** are shown in Table 12.3

e) As the EIA (2007) and SIA (2020) and attest, KUALA BARAM LPF is not in any way fundamental to meeting the basic needs of the communities within or nearby, and so there is little to actually monitor in this respect. What absolutely minimal current use is made of the LPF in terms of NTFPs will surely lessen as the population of the nearby communities ages, continues to decline and to change its consumption patterns to a more modern way of life.

f) The extracts from the annual **Social Impact Monitoring** report show that the **impact of harvesting and operating** in ITP area has no, or negligible, social impact other than in providing employment for those with the relevant skills or for those who wish to obtain such skills. Employment levels are monitored by recording the actual numbers of locals employed each year – see Table 7.1.

g) Monitoring of the **environmental impacts of harvesting** and other operations and of compliance with the EIA requirements is monitored through Environmental Compliance Audit (ECA).

h) Productivity (for harvest productivity this has already been covered in volumetric terms in Chapter 10) and the efficiency of forest management are **monitored by budgetary controls** under the HQ accounts section.

i) The risk of **invasion[14] by exotic species** planted by KUALA BARAM or of invasion of the LPF by exotic species planted by external third parties is **monitored** during the regular patrol reports. To date no invasion of significance has been note as attested by the patrol reports.

j) **Regular monitoring of pests and diseases** is through information captured at the time of PSP measurement together with *ad hoc* monitoring.

17. Climate Change - Adaption, Mitigation and Monitoring

17.1 Introduction

Forests has a significant function in climate change mitigation by acting as “sinks”, i.e. absorbing carbon from the atmosphere and storing it in biomass and soils. However, when the forests are cleared or degraded, they are also significant sources of greenhouse gas emissions. Forests, therefore, are important components in strategies for adapting to climate change.

[14] *'Invasion'* here means an exotic species is growing where it was not intended that it should.

Sustainable Forest Management (SFM) can help reduce the negative effects of climate change on forests and forest-dependent people. SFM is consistent with climate adaptation and mitigation whereby the planning will factor climate change and the management practices will be adjusted accordingly. The planning will put greater emphasis on risk management and to weigh the costs of changes in forest management against the likely benefits.

In 2010, the **Conference of the Parties (COP)** to the United Nations Framework Convention on Climate Change (**UNFCCC**) adopted a decision on reducing emissions from deforestation and on the conversion of forests, sustainable management of forests, and enhancement of forest carbon stocks, usually known as ***REDD+***. The accessibility of benefits from ***REDD+*** activities to individual forest managers would depend on the arrangements in place in the country for ***REDD+*** benefit-sharing.

Last but not least, the forest management should also be aware of the policy incentives instituted by governments, or market incentives, such as carbon credits or demand for bio-energy. Forestry projects are favoured by the voluntary carbon markets because of their additional social and environmental benefits (known as co-benefits).

17.2 Policies on Climate Change

Forest management is affected by climate change policies made at the national and global levels. Under the **Malaysian Timber Certification Scheme (MTCS ST 1002:2021)**, forest management shall comply with the **National Policy on Climate Change, 2002** and the **UN Framework Convention on Climate Change, 1992.**

17.3 Adaptation and Mitigation in Forestry

Adaption and mitigation are the two main responses to climate change. The mitigation addresses the causes of climate change whereas the adaptation on its impacts.

In the forest sector, adaptation encompasses changes in management practices design to decrease the vulnerability of forests to climate change and interventions intended to reduce the vulnerability to climate change.

Mitigation strategies in the forest sector can be grouped into four categories: reducing emissions from deforestation; reducing emissions from forest degradation; enhancing forest carbon sinks and product substitution.

17.4 Adaption Actions

The actions for adaptation to climate change shall consider the risks and impacts. These actions are drawn mostly from existing forest management practices.

17.5 Mitigation Actions

Mitigation actions on climate change shall focus reducing **Green House Gases (GHG)** emissions by source and increasing GHG removals by sinks. These actions can be grouped into four general categories:

- Maintaining the area under forest by reducing deforestation and promoting forest conservation and protection;
- Increasing the area under forest (e.g. through afforestation and reforestation);

- Maintaining or increasing carbon density at the stand and landscape level by avoiding forest degradation and managing timber sustainably; and through the restoration of degraded forests, e.g. enrichment planting; and
- REDD+ activities: using the voluntary carbon markets as a means to sell carbon credits generated from avoided emissions or from improved forest management (IFM) that increases the rate of carbon sequestration by the forests

17.6 Monitoring and Evaluation

Monitoring of the climate change adaption and mitigation actions shall be additional and significant burden. Nevertheless, the existing databases, criteria and indicator processes and forest certification schemes shall form the framework for monitoring.

Regardless of the scale of monitoring required, forest management shall use precautionary approach and involve participation by local people on the social and environmental impacts.

Monitoring will require the collection of data on indicators of climate-induced impacts (e.g. forest productivity, forest health and forest pests). Many of these data will normally be collected in standard forest inventory.

For biodiversity, the ideal species for monitoring are those that are expected to be vulnerable to climate change and that are also easy to census. Ideally, such species will also be species of special concern.

For water monitoring, dry season base flow and suspended sediments during periods of low flow might be the most appropriate indicators. Macro-invertebrates in streams can serve as good indicators of ecological integrity.

For fire susceptibility, monitoring fuel loads and moisture content are the first steps in assessment.

Social factors can be monitored by engaging with a local community or by the census data or rural development databases maintained by government.

17.7 Greenhouse Gas (GHG) Inventory Accounting

The initiative to reduce GHG emissions in Samling's timber operations started in 2023 with baseline accounting of GHG emissions for Scope 1 and Scope 2 for the year 2022. This in-house accounting reporting exercise was conducted by a third-party consultant engaged to ensure that the scope coverage, methodologies and verifications used in the accounting exercise were in accordance with the:

- GHG Protocol Corporate Accounting Reporting Standard, covering Scope 1 and Scope 2,
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories ("2006 IPCC Guidelines"); and the
- 2019 Refinement to the 2006 IPCC Guidelines.

Scope 3 studies will be developed at a later stage.

17.8 Conclusion

Whilst in general forests provide a wide range of goods and ecosystem services to the stakeholders and although climate change, combined with deforestation, forest degradation and population

pressure, threatens the continuity of such provision, as can be seen from the above, this is not the case in KUALA BARAM LPF.

Climate change mitigation programs (e.g. REDD+) are emerging that can increase the stock of carbon in forests. This can help - by the sale of carbon credits – to reduce the costs of actions to reduce GHG emissions due to deforestation and forest degradation. However, KUALA BARAM MTCS area does not have the necessary scale to offset the present costs of preparing for and drafting a carbon project development document (PDD) and then having the project validated and verified to the Verra, or similar, standard.

18. Cost Benefit Analysis

18.1 Introduction

Kuala Baram ITP area covers a gross licensed area of 8,293 ha which 6,772 ha has been estimated as plantable area. It is a peat site and trees planted to be harvested on a rotation of 8 to 12 years depending on species to be planted. It is sitting at the northern region of Miri and surround it has a few operating processing complexes.

18.2 Costs Relating to LPF Development

18.2.1 Financial Costs

- Temuda compensation
- Land rent / license fee
- Establishment & infrastructure cost

18.2.2 Non-Financial Costs

- Change in environment / landscape – from natural forest to monoculture
- Change in social dynamics

18.3 Benefits Relating to LPF Development

18.3.1 Financial Benefits

- Residual logging income
- Planted forest logs income

18.3.2 Non-Financial Benefits

- Log material sustainability through planted forest
- Alleviate the pressure of natural forest by producing higher volumes of tree plantation
- Working opportunities for locals around the concession area and establish economy in the area
- Road connectivity for community

18.4 Social Aspects

Samling's Kuala Baram ITP will contribute to the livelihood of local communities living in the area. However, some impacts related to water quality and the decline of the forests have been detected. Cooperation between the company, relevant government agencies and the community will help to minimise these impacts and increase the benefits brought about by the forest management operations.

18.6 Summary

Plans has been putting in place to develop Samling's Kuala Baram ITP area into an Acacia / Eucalyptus tree planting site. Infrastructure like road and drains will be maintained as per the site requirement. There will be housing available for workers to stay and transports to be ready at site to commute and transport materials. Access road around and within the plantation will be maintained and all these related costs has been incorporated in arriving at a return in NPV at the end of a rotation planting as shown above.

This project is viable after taking into consideration the costs to be spent including those social aspects which is quantifiable at the stage when this report being established, offset against the possible benefits which this project can gain mainly from harvesting the planted trees and replant.

18.7 Financial Sustainability

The KUALA BARAM MTCS area is a very small part the ITP area operated by the Samling Group. The Group has clearly been financially supportive of KUALA BARAM from start-up in 2008-9[15] and of its other ITPs since their start-ups. However, now that harvesting has started the net revenue from internal log sales should cover replanting and overhead costs for the remainder of the 60-year licence period and this support should no longer be required.

19. Forest Plantation Management Plan – Review and Revision

19.1 Background

ITP is still a relatively young industry in Malaysia. There is much that is not yet known in growing, harvesting, processing and marketing. Operational planting only started in KUALA BARAM in August 2008[16]. The Samling mills that use KUALA BARAM's ITP logs are still addressing the technical challenges and changes required when processing plantation logs and in marketing the products made from BORNEOTEAK® and pellita.

19.2 Review and Revision

19.2.1 Optional Review

An annual review of the KUALA BARAM Forest Plantation Management Plan will be considered and undertaken if thought appropriate. A revision may follow if deemed necessary.

19.2.2 Revisions

The FPMP will be reviewed and revised as deemed necessary in the last year of this 10 year plan.
In order to incorporate any major policy change in the management plan a specific *ad hoc* revision may be required.

Other than a mid-term or end of term review that indicates the need for a revision of the FPMP a revision may result from any one of a number of triggers such as:

- new information from operational monitoring or research becoming available and being used to make significant improvements or necessary changes;
- new information becoming available to senior management and resulting in policy change;
- biotic or weather events the nature of which have or might have a significant impact on the management objectives;

[15] A small area in Coupe 2 was planted in 2003.

[16] Coupe 2A Blocks 1A-1C and Blocks 2A-2D were planted in March 2003 following which there was no further planting until the date given here.

- changes in downstream planning or requirements; and
- new or revised regulations imposed by the government.

20 Internal Audit and Management Review

20.1 Introduction

Forest management activities are subject to internal audit and management review at planned intervals as required under Malaysian Criteria & Indicator (MC&I ST 1002:2021 SFM) of the Malaysian Timber Certification Scheme for sustainable forest management. Both internal audit and management review will ensure that there is continual improvement in the management system.

The Internal Audit and Management Review Procedure is used as the basis for the annual internal audit. It outlines the frequency, methods, responsibilities, planning requirements and reporting of the internal audit process.

20.2 Internal Audit

The internal audit shall be planned and conducted once a year. The objectives of the audit plan shall ensure that the FMU:

(a). meets the requirements of its management system; and

(b). its management system conforms to the requirements of MC&I ST 1002:2021 (SFM).

The internal audit plan shall define the audit criteria and scope of each audit. The auditors conducting the audit must ensure objectivity and impartiality of the audit process. The results of the audit will be presented during the management review meeting. All information gathered during the internal audit should be documented and retained as evidence of the implementation of the audit program and of the audit's results.

20.3 Management Review

The Management Review shall be conducted annually and shall include at least the following:

(a). The status of actions from previous management reviews;

(b). Changes in external and internal issues that are relevant to the management system;

(c). Information on the FMU's performance, including trends in:

- Non-conformity and corrective action;
- Monitoring and measurement results; and
- Audit results.

(d). Opportunities for continual improvement.

20.4 Non-conformity and Corrective Action

When any non-conformity is encountered, applicable action shall be taken to control and correct it. The consequence shall also be dealt with. The non-conformity shall be reviewed and the causes of it shall be determined. The need for the action shall be evaluated to eliminate the causes of the non-conformity and ensure that similar non-conformity does not recur or occur elsewhere.

Any action needed shall be implemented and the effectiveness of any corrective action taken should be reviewed. Changes shall be made to the management system, if necessary.

Corrective actions shall be appropriate to the effects of the non-conformity encountered. Information as evidence of the nature of the non-conformity and any subsequent action taken including the results of any corrective action shall be documented and retained.

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