FMU 19A HCV Management & Monitoring Summary (Quarter 4) 2022

HCV	ID	GENERAL HCV MANAGEMENT OBJECTIVE	SPECIFIC HCV MANAGEMENT OBJECTIVE	MANAGEMENT TARGETS	MANAGEMENT STRATEGIES		OPERATIONAL MONITORING	STRATEGIC MONITORING	THREAT MONITORING	2022 MONITORING RESULTS
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1	There is protected area of Tangkulap FR on the western side of DFR (also administered by PP/Deramakot).	Reduce the impacts of edge effects exerted on the Class 1 FR caused by logging activities within the Deramakot FR compartments.	Logging activities within DFR do not encroach into Tangkulap FR.	Zero intrusion into tangkulap F.R	The common boundary between DFR and Tangkulap FR (Class 1) A buffer area of 50 meters imposed within DFR compartment areas bordering Tangkulap FR	Common boundary and the buffer zone (50m) initially marked out clearly on maps and ground prior to harvesting.	Periodic monitoring and patrolling along the common boundary : • Aerial patrol at least 3x/year • CHP Monitoring	Aerial survey	No determined threat.	3 x aerial patrols conducted to for the year (1 x during qr 4). HCV attributes intact (no intrusion detected). The Harvesting cpts as planned in FMP 3 are inland thus very far from Tangkulap FR boundary..
	[LISTED Fauna]: Mammals, birds, Orang Utan	Wildlife Management System is to be enhanced and enforced. To conserve and/or enhance the biological diversity in DFR.	a) To manage DFR in order to provide diverse and productive wildlife habitats and habitat components. b) To protect species of special concern (Orang-utans, Pygmy elephants and Tembadaus) and manage them to sustainable levels.	Wildllife population stable or increasing (OU and Borneon Gibbons as indicator)	• DFR boundaries • Conservation Area boundaries • Southern part of DFR	Curb the occurrence of poaching. Wildlife experts are to be approached to assist in enhancing the present system	Periodical monitoring and patrolling (for threat) At least : a. 500 km road patrol/month b. 100 km river patrol/month c. In general – adherence/implementation of Deramakot Protection Plan	Annual orang-utan nest survey/ or complying to enhanced Wildlife Monitoring System And other proposed wildlife monitoring	• Hunting monitoring patrols (more targeted, extensive than operational monitoring) • opportunistic observations of hunting indicators	- Road + foot patrol : 15,193.52km (4,856.34km in qr 4). 253% achievement for the year. - River Patrol : 8,750.24km (1,555.89km in qr 4) 729% achievement for the year. - 3x aerial patrol conducted for the year (1 x in qr4) - No OU census for the year as it was done last year. Next OU census will be done next year. No reported poaching case.
1.2	[LISTED Flora] : IUCN Red List & CITES-listed	Adherence to Schedule 1 of the Forest Rules 1969 and under Schedule 1 part ll and Schedule 2 part ll of Sabah's Wildlife Conservation Enactment 1997 To conserve and/or enhance the biological diversity in DFR.	a) To maintain habitats for a diversity of flora that represent some of the richest stands of Dipterocarp forests in Sabah. b) To protect plant flora sp listed under schedule 1 and Wildlife Conservation Enactment 1997. And to enhance these protected list from time to time in the context of the distributions of flora sp within the fmu	No protected species are harvested	Location of identified trees as marked on ground and CHP maps	• The trees listed in the prohibited lists should be clearly marked out both on ground and the CHP maps. • Enhance staff botanical knowledge on species • Field staff is required to go for annual botanical training/refreshers course • Mitigation when changes (threats) are detected	Quarterly RIL Harvesting Compliance Monitoring	monitoring system for flora and fauna assemblages/richness. Continuous Forest Inventory (CFI) plots using the Dipterocarps as the model family.	Periodical monitoring of the CFI plots to identify potential threats that leads towards changes within the plots.	CFI methodology currently in revision by FRC.
1.3	Fauna: 6 bird species, [LISTED] mammals	HCV 1.3 to be managed in close accordance with HCV 1.2, 2 and 3	• To understand the species behaviour and ecology needs better. • To maintain and	Wildlife population intact	Whole of DFR	Focusing on endemic birds, as they are sensitive towards environmental changes	Same as 1.2	In depth study to be conducted with university/research institutes/NGOs/interested parties	Wildlife population deterioration	Same as 1.2 Current research ongoing : 1. Bio diversity Monitoring by IZW Berlin (

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		Enhance the wildlife management plans.	enhance the monitoring to be carried out on an annual basis to allow for effective enforcement of Wildlife Monitoring System					Implementation of DFR Wildlife Monitoring System.		2. E-DNA by Dr Hisahsi Matsubayashi of Kyoto University. 3. Figs Ecology by Dr. Miyabi Nakabayashi & Ms. Eyen Khoo. 4. In-coming : Forest Genetics by Dr. Chris Kettle & Ms Eyen Khoo. 5. Ongoing research on cats by Panthera Malaysia.
	Flora: 176 tree species are recognized as endemics- 163 tree species Borneo Endemic;13 Sabah endemics	Maintain species pool According to FSC's Principle and Criteria — Principle 6, Aichi Biodiversity Targets, Sabah Conservation Strategy	• Protect rare endemic species • Protect listed species	Protected species are preserved	Intended harvesting cpts	• Rare endemics-record the tree location and mark it on the ground • Species listed are prohibited from harvesting • Trees are clearly marked on the ground for retention in preparation of the CHP. • Directional felling is employed to avoid damage to retained trees. • Trees are also identifiable within the CHP map as trees prohibited from felling; and verifiable on the ground. • annual species identification training for field staff or contractors	Same as 1.2	Progressive survey during CHP ground inventory/planning. Progressive improvement in tree identification will provide for better identification of threatened and endangered in order to prescribe at compartmental level specific prohibition of felling t.e's.	Protected species being felled to make way for road opening	CHP Monitoring during harvesting – highlighted in DFR's QR reporting.
1.1. 1.4	1-Saltlicks 2-Potential nesting sites (winter migratory visitors)		Continuous identification of saltlicks and its preservation as well as nesting sites (north west of DFR)	No intrusion into salt licks Fruit trees/mother trees retained	1-Compartment 9, 49, 63, 88, 108, 120. Generally found within the wetland or swamp forest areas. Buffer zone of 50 m. 2-Potential nesting sites (winter migratory visitors) in the north western portion of DFR	1-No harvesting in saltlick and buffer zone 2-Nesting sites retained/not harvested Fruit trees, seed trees and tree species that are known to be nesting sites for Rhinoceros Hornbills are marked out and not harvested. Cross check that all salt licks and tree marked out for seeds, fruits or nesting sites are clearly marked out in the CHP map as well.	CHP monitoring Wildlife Monitoring	1-Monitor the species of fauna that utilizes the saltlicks through camera trapping. Annual survey of the health of nesting sites	Harvesting intrusion into salt licks Degraded /deteriorationof nesting sites due to depleting food source	1. Closing Inspection SPKP RIL 04 includes reporting of disturbances if any. None to date. 2. On-going E-DNA research by Dr. Hisashi Matsubayashi on water sampling of salt licks. 3. On-going Fig trees ecology research by DR Miyabi Nakabayashi : the importance of figs to wildlife. No salt licks identified in 2022 harvesting cpts.
2	DFR is part of a large FR complex	Maintain steady landscape diversity	Management and monitoring	Ensure no changes to landscape thus	• Logging roads that	Maintain buffer and	Quarterly RIL	Landscape monitoring through	Encroachment into corridors	Same as 1.2

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	within the central Sabah, bordered by big complexes comprises of both Class 2 Commercial FR and Class 1 FR, hence the richness in wildlife diversity		recommendations as suggested in HCV 1.2 and 1.3. To maintain and restore the full array of ecological functions within and around DFR, through maintaining and restoring forest connectivity.	provide for easy access – wildlife migratory pathways	are commonly used by the wildlife as migratory • 30 m buffer areas as according to RIL guidelines	continuity of forest landscape	Compliance Monitoring	satellite images DFR Protection Plan (aerial patrol at least 3x/year)		
3	LMDF and the Freshwater Swamp Kerangas Forest (zoned as conservation area)	To maintain healthy ecosystem	To protect areas of scenic, historic, geological or ecological significance through the establishment of natural forest areas that will remain in an undisturbed state, with development and maintenance being limited to that required for public health and safety.	Maintain and prevent damages to identified conservation-priority area	Recommended 9,115 ha (in Map) +The compartments containing kerangas forest within DFR has to be set aside for conservation purposes and its boundaries mapped out.	Fire prevention measures to be undertaken as per FDRS requirement Prevent adjacent compartment (of areas that has been set aside for conservation) from encroachment		Long term monitoring of the areas that are set aside for ecosystem protection and conservation using satellite imagery	Area degradation due to harvesting/fire/encroachment	1. Forest Fire Management Plan in place. 2. No plan harvesting near kerangas area during FMP 3.
4.1	Water catchment area 30 m wide buffer areas within production forest	Preserving water qualities and its entities	Water quality is protected, considering that there are water catchment areas along the Sungai Kinabatangan- to prevent a cascading effect to people's livelihood downstream. To consider application of gravity pipe water (from villages).	To ensure healthy water qualities all over DFR	Water catchment area in Compartment 109-water catchment for Kg Balat 30 m wide buffer areas located on both sides of the permanent waterways within the production forest	Protected from any future harvesting and encroachment activities Not to disturb the 30 m riparian buffer imposed To strictly comply with RIL guidelines	FRC or other relevant authorities undertake water sampling (1x/year).	1.(cpt 109) Periodical water assessment should be conducted to ensure safe domestic consumption, following the Water Quality Index (WOJ), special attention should be paid to TCC and FCC values (2x/year) 2.Water quality of the 5 rivers located within the FR (Sungai Rawog Besar, Sungai Tabalion Besar, Sungai Tangkulap Kecil, Sungai Balakang and Sungai Deramakot) are to be assessed Periodically (2x/year) 3.CHP Monitoring	Deteriorating quality and encroached water source	1. Environment Protection department conducted water sampling in QR 2 nd no reverse effect reported. 2. Planned Harvesting to date located very far from cpt 109 (approx.. 15km). Nevertheless there is no harvesting done in 2022. 3. 3 Social/stakeholder Meetings conducted to for the year (1x in qr 4)

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								4. RIL guidelines adherence 5. DFR Protection plan as per magnitude defined with different risk areas (inclusive of aerial patrol at least 3x/year) 6. Social Forestry Meetings and adhoc meetings with FD personnel in addressing water issues.		
4.2	Area that contains steep slopes of over 25 degrees	No harvesting or degrading activities inside or near steep areas (conservation areas)	All steep areas (conservation areas) are marked on map	No encroachment/degrading activities such as harvesting inside steep areas to avoid soil erosion.	19 compartments, generally located on the South East and South West of the DFR.	Steep slope areas within production compartments be set aside as protection areas to be marked out on the CHP maps Results obtained from research studies regarding harvesting effects on soil erosion taken into consideration Steep areas are not encroached during the harvesting process	Continuous monitoring aspect via CHP Monitoring personnel in ensuring no steep area is encroached.	Annual remote sensing	Soil erosion hence biodiversity degradation	CHP is planned to exclude steep areas in harvesting cpt and later monitored by CHP Monitoring personnels during harvesting. The harvesting contractor was appointed by the Ministry of Finance in August and is currently undergoing courses before harvesting. Harvesting will only commence next year.
4.3	FFMP	The Forest Fire Management Plan implemented	DFR is exposed to fire outbreaks especially on areas adjacent to oil palm estates. Not only that, specific actions must be taken, especially during the critical period (Fire prone).	Ensure no fire outbreak into the FR especially on critical areas	Previously burnt: southern part of the DFR, Kerangas forest at the North Eastern part of DFR and areas that are adjacent to palm oil	FDRS monitoring and actions as depicted in the FFMP activated when warranted.	FFMP monitoring	Annual remote sensing analysis to derive changes on forest cover/quality	Fire outbreak within and outside into DFR	FFMP in place. Weather been generally wet all year round.
5	NTFP Collection	Preserve wellbeing of communities	Ensuring that HCV 6 is not negatively impacted by activities in DFR	Maintain the availability of of NTFP resources which shall be	Cpt 117- Tongkat Ali & ferns (km 24, 23, 17 and 15)	Allow communities to continue to collect NTFP for their own consumption with the approval from the DFR	Observe & record NTFP collection as per S.O.P At least 2x Social		Timber harvesting impacting the NTFP.	No collection request to date.

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				harvested sustaibly	Salingkawang Cpt 108, Sg Karis-karis & Kg Balat, adjacent to DFR –rotan Buffer zone (if logging is planned adjacent to villages)	Management Set up buffer zone where needed boundary established is clearly marked out both on the map and on the ground Mitigate potential conflict on NTFP or agriculture cultivation at fringes of DFR	Meetings/year			
6	Old durian orchard located in cpt 88	Site wellbeing is preserved	Site remained intact inclusive of its entities (fruit trees)	Site not impacted by harvesting activity	Old durian orchard located in Compartment 88 that belongs to Kg. Desa Permai	Boundary clearly marked on the ground and in CHP maps Meetings held constantly to mitigate potential issues	a. Social Meetings at least 2x/year b. CHP Monitoring unit ensure harvesting activity mitigated according to established CHP		Further Harvesting activity/impacting site.	3 social/stakeholder meetings conducted for the year. Planned harvesting cpts in FMP 3 is located very far from the durian orchard.