EXECUTIVE SUMMARY

Deramakot Forest Reserve (DFR's) High Conservation Value (HCV) Assessment was carried out from the 9th to the 20th of July 2013, where HCV 1 to 6 were assessed. The assessment was carried out by a multidisciplinary team with experienced assessors from various fields. HCV 1 to 6 were found to be present within the forest reserve hence appropriate management and monitoring actions have been planned and discussed with the management team of DFR for further actions to be undertaken.

One of the major plan is to increase the conservation areas within the DFR from its original 3,734 ha to 9,115 ha, seeing to approximately 17% of the DFR being conserved. The compartments selected for this purpose consist of various habitats and forest types: Extreme Lowland Dipterocarp Forest, Lowland Dipterocarp Forest, Seasonal Freshwater swamp and Heath Forest. Aside from doubling the area conserved for the first 2 forest types, the additional conservation areas included would be, the total conservation of the Freshwater Swamp and Heath Forest that were not listed as conservation areas in the previous Forest Management Plan. The reason behind this is that from the assessment of HCV 1.2 and 1.3, DFR has not just shown to harbour a great diversity of flora and fauna, but also is rich in terms of endemicity as well.

Through the analysis of the many species recorded, nearly half of the species have yet to be assigned IUCN status and not much research work has been conducted on such species, especially within the flora group. Therefore, it is essential for actions to be taken in setting aside conservation areas consisting of various forest types with the aim to preserve a portion of the species diversity and also taking into account species that are unique to particular forest types. It is planned that further studies should be done in understanding and documenting of the rich flora and fauna diversity present within DFR.

On a landscape level (HCV 2), DFR forms part of the forest reserve complex that borders by Tangkulap FR (west) and Segaliud Lokan FR (east); Malubuk, Ulu Segama Malua and Kuamut FR on the Southern part. HCV fauna assessment has shown the diverse fauna can be found within the DFR and interviews with the villagers provided information on the frequent sightings of wildlife that are present and constantly travel in and out of DFR. Therefore, DFR does not only provide habitats for the fauna but also acts as a transient wildlife migratory path between the different forest reserves it borders.

From the social aspect, there is a gradual decrease of villagers living by the forest (as HCV assessment results were compared to Sabah Forestry Department's social studies result prior to FMP 2). Gradual migration of villagers to other villages is due to the desire for improvement in terms of the standard of living and securing better job opportunities in villages nearer to townships. Even though that is the case, it was found that some of the villagers are still reliant on the forest and rivers that flow through DFR for fishing purposes, collection of NTFP and medicinal plants. These needs and reliance are not to be ignored.

Table 1: The following are the HCVs found to be present during the HCV assessment conducted in Deramakot Forest Reserve in 2013, along with the management and monitoring plan for each HCV.

HCV	Management Plan	Monitoring Plan
1.1	1. The common boundary between DFR and any FR to be changed to Class 1 should be demarcated and marked out clearly to ensure that logging activities within DFR do not encroach into Tangkulap FR. 2. A buffer area of 50 meters should be imposed within DFR compartment areas that border the Tangkulap FR in order to lessen the impacts of edge effect exerted on the Class 1 FR caused by logging activities within the Deramakot FR compartments. The buffer zone should be clearly indicated in the CHP. Timber extraction within the buffer zone is prohibited.	1. Periodic monitoring and patrolling should be carried out to prevent encroachments in the buffer zone. Any signs of encroachment should be reported and dealt with immediate mitigation actions. 2. The buffer of 50 m from the border of the DFR imposed during the CHP exercise has to be monitored to ensure no encroachment/intrusion into the neighboring forest reserve during the harvesting of the compartments at the borders of DFR. Any encroachment is to be reported to the Director of the Sabah Forestry Department. 3. Mode of Monitoring : 3.1 Deramakot Protection Plan envisaging the different magnitude of patrolling depending on classified risk areas of high, medium to low. Mode of patrolling via air, river and ground even during weekends and public holidays. 3.2 Quarterly Progress reports in reporting of the progress of activities as prescribed in the approved AWP, encompassing reporting of monitoring results of known HCV attributes. 3.3 RIL guidelines in area reconnaissance (100%) and monitoring mechanism during harvesting operation.
1.2 (Flora)	1. Establish/Enhance a long term monitoring system for flora assemblages/richness. The prescribed monitoring system would be that of the establishment of Continuous Forest Inventory (CFI) plots using the Dipterocarps as the model family.	1. Periodical monitoring of the CFI plots to get an indication of the potential threats that lead towards changes within the plots set up. This will allow for mitigation process when changes are detected.

	2. Field staffs are required to go for botanical training/refreshers course to further enhance their botanical knowledge on species that are currently listed in the threatened, threatened endemic and forestry prohibited lists to ensure they do not harvest species that are in the list suggested. This is to be done biannually so that they can keep up to date, with current threat status or in the event of the upgrade or downgrading of threat status internationally, nationally and state wide. 3. Considering that total protection has been accorded to various plant groups under Schedule 1 of the Forest Rules 1969 and under Schedule 1 part II and Schedule 2 part II of Sabah's Wildlife Conservation Enactment 1997, the DFR Management should continue to ensure that none of the prohibited species listed are logged, unless it is approved by the Director of the Sabah Forestry Department. Strict monitoring of CHPs is to be performed. The trees listed in the prohibited lists should be clearly marked out both on the ground and the CHP maps. 4. Considering there is marked differences in terms of IUCN Red List assessment outcomes, primarily between the global and national level, which indicate potential differences in the interpretation of the level of threat across geopolitical boundaries. It is recommended a Sabah Red List assessment to be carried out, providing an indication of the threat level faced by species within Sabah, thus enhancing and provide guidelines at the Forest Management level.	2. Continuous Forest Inventory (CFI) data is captured by Forest Research Centre (FRC) staff once a year via field inventory to establish plots and later to analyze and publish in the website. 3. The yearly conducting of botanical training by FRC experts and attended by Deramakot staff.
1.2 (Fauna)	1. In view of the richness of species diversity (mammals and birds) within the Southern part of DFR, Wildlife Management System is to be enhanced and enforced. Wildlife experts are to be approached to assist in enhancing the present system from time to time.	1. Periodical monitoring should be practiced. Patrolling of the DFR boundaries and conservation area should be enforced to curb the occurrence of poaching. 2. The collaboration with HUTAN and the Leibniz Institute for Zoo and Wildlife Research (IZW, Germany) to further enhance Deramakot's Wildlife Management System.

		3. Mode of Monitoring : 3.1 Deramakot Protection Plan envisaging the different magnitude of patrolling depending on classified risk areas of high, medium to low. Mode of patrolling via air, river and ground even during weekends and public holidays. 3.2 Quarterly Progress reports in reporting of the progress of activities as prescribed in the approved AWP, encompassing reporting of monitoring undertaken on known HCV attributes.
1.3 (Flora)	1. For rare endemics (in reference to point 3 below), measures must be taken to protect them, such as recording the tree location and mark it on the ground to ensure that those species are not harvested. 2. Biennial training should be provided to field staff to ensure a high level of competency in their ability to identify the tree species. 3. In view that the maintenance of species pool (in accordance to FSC's Principle and Criteria – Principle 6 Environmental Values and Impacts especially related to 6.3, 6.4, and 6.6; in accordance to the Aichi Biodiversity Targets i.e. reference to Strategic Goal B-Target 7 and Strategic Goal C-Target 11, and the Sabah Conservation Strategy; section 5.2.5 – Conservation of Biodiversity in Commercial Forest Reserves and section 5.2.6 – Management of Threatened Species – note: focus on wildlife species) within the management unit; a list of proposed tree species and the rationale for the prohibition to further felling of these trees for its timber is provided. As a provision to ensure the species listed are	1. 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 must also be identifiable within the CHP map as trees prohibited from felling; and verifiable on the ground. 2. Regular training should be provided to field staff to ensure a high level of competency in their ability to identify the tree species. (refer HCV 1.2). FRC conducted Botanical training yearly and attended by Deramakot staff.

	prohibited from harvesting, field identification training should be provided to the field staff or contractors involved in the preparation of the Comprehensive Harvesting Plan and enforcement.	
1.3 (Fauna)	**1.** HCV 1.3 to be managed in close accordance with HCV 1.2, 2 and 3. **2.** Periodical monitoring to be carried to assess population distribution and size for the endemic species. Consider focusing on endemic birds, as they are sensitive towards environmental changes. **3.** In cases whereby not much is known about the species, in depth study to be conducted with university/research institutes/NGOs/interested parties to understand the species behavior and ecology needs better. This will enhance the wildlife management plans.	**1.** To maintain and enhance the monitoring to be carried out on an annual basis to allow for effective enforcement of Wildlife Monitoring System. 2. The collaboration with HUTAN and the Leibniz Institute for Zoo and Wildlife Research (IZW, Germany) in 2014 to further enhance Deramakot's Wildlife Management System. 3. Continuous recording of wildlife sightings via orang utan nest counts, camera traps on saltlick areas and opportunistic sightings and reported yearly via annual report.
1.4	1. Buffer zones of 50 m for the saltlicks that have been identified are to be clearly marked out on the ground and indicated in the CHP map. The management team is to keep checks on the number of saltlicks and to monitor the species of fauna that utilize the saltlicks through camera trapping. 2. In the event that there are new salt licks that are found within the DFR, the above (point 1) is to be applied. *3.* Fruit trees, seed trees and tree species that are known to be nesting sites for Rhinoceros Hornbills are marked out and not harvested.	1. Monitoring to be carried out at the salt lick areas to ensure that the buffer zones around the saltlicks are maintained and reporting in the quarterly progress report. 2. During harvesting operations monitoring should be carried out to check on whether nesting sites for Rhinoceros Hornbills are present. If such nesting sites are identified, the trees are to be marked out for conservation and not felled. 3. Cross check that all the salt licks and trees marked out for seeds, fruits or nesting sites are clearly marked out in the CHP map as well. 4. Adherence to Reduced Impact Logging (RIL) guidelines.
2	1. Logging roads that are commonly used by wildlife as migratory or access road to the different sub compartments should be maintained to ensure wildlife are able to use it	1. If there are any changes in terms of migratory pathways, the management team should be alerted. 2. If there are any changes in terms of the landscape, there

	crossing from one FR to another/compartments to another. 2. Maintain 30 m buffer areas as according to RIL guidelines on either side of the riverine, especially for the Rawog and the Kinabatangan rivers located within the forest reserve areas to ensure wildlife has continued passage to different FR or compartment. 3. Wildlife monitoring should follow management and monitoring recommendations as suggested in HCV 1.2 and 1.3.	should be identified either through map and satellite images and incorporated into the management plan for planning purposes. 3. Adherence to RIL guideline on stream buffers. 4. To be maintained DFR FR under natural forest and managed under the principles and guidelines of SFM.
3	1. Several DFR compartments that were assessed during HCV studies (LMDF and freshwater swamp) should be set aside for conservation purposes. 2. The compartments containing kerangas forest within DFR have to be set aside for conservation purposes and thier boundaries mapped out. 3. Fire prevention measures have to be undertaken to prevent the relics of the Kerangas forest ecosystem and the other ecosystem from being decimated in the event of forest fire. Extra precaution and patrols to be undertaken during the drought season.	1. Long term monitoring of the areas that are set aside for ecosystem protection and conservation via Satellite maps and aerial survey (concurrent with orang utan nest counts – twice a year) for monitoring purposes to prevent adjacent compartment from encroachment. 2. Adherence and compliance towards Deramakot's Forest Fire Management Plan especially when the fire index is at a high. 3. To be maintained DFR FR under natural forest and managed under the principles and guidelines of SFM.
4.1	1. Management team to take into account the results of any water quality or riverine protection studies into their FMP. 2. Even though there are no legal water catchment areas located within the Deramakot FR, 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 as all these rivers are connected to the Sungai Kinabatangan. This is done to ensure water quality is protected, considering that there are water catchment areas along the Sungai Kinabatangan. This is to prevent a cascading effect as social	1. To strictly comply with RIL guidelines. 2. Water sampling and analysis is undertaken twice a year. This also includes rivers inside harvesting areas.

	studies conducted have indicated some of the villagers rely on fishing for livelihood and they frequently fish down river from the forest reserve around the state land areas. 3. In the event that there are applications for gravity pipe water from the surrounding villages, DFR management should take note of those application. *4.* Not to disturb the 30 m riparian buffer imposed. *5.* Considering that the gravity water from Compartment 109 is Kampung Balat's main water source, the catchment that feeds water to the pipe gravity should be protected from any future harvesting activities. Periodical water assessment should be conducted to ensure water quality is maintained and suitable for domestic consumption following the Water Quality Index (WQI), special attention should be paid to TCC and FCC values.	
4.2	1. Steep slope areas within production compartments that are not set aside as protection areas have to be marked out on the CHP maps. *2.* Results obtained from research studies (if available) regarding harvesting effects on soil erosion should be taken into consideration by the DFR management team in their FMP.	1. Steep areas are not encroached during the harvesting process. 2. Adherence towards RIL guidelines on steep slopes.
4.3	1. The Forest Fire Management Plan implemented and has to be updated periodically. 2. DFR staff and the local community should work closely together in forest fire prevention. Continuous talks and public awareness campaign should be conducted among the villages to raise the importance of forest fire prevention. 3. All water tanks and fire equipment to be made easily accessible and routinely checked and maintenance work should be conducted, especially during the drought season.	1. Ensure that all fire prevention procedures (monitoring, fire drills, public awareness campaign and *etc*) to be practiced on a regular basis especially during the drought season.

	4. Monitoring and patrols should be conducted regularly within the FR, especially during the drought season. Areas that are prone to fire should be taken note. 5. Regular training and fire drill to be conducted especially during the drought season.	
5	1. To allow communities to continue to collect NTFP for their own consumption with the approval from the DFR Management. 2. Generate public awareness program among the community to reduce the issue of illegal encroachment at DFR forest boundaries. 3. During CHP planning for compartments bordering the villagers, if trees that are to be logged are located close to the DFR boundary, a buffer zone has to be set up within the harvest compartment. This is to ensure none of the villages will be affected by potential tree falls that might endanger their lives or properties. 4. Ensure that the boundary established is clearly marked out both on the map and on the ground, and to have constant patrols along the boundary to prevent encroachments. 5. Continue to provide employment opportunities and the involvement of the local communities in the maintenance work as to uplift their economic status and to improve their livelihoods. 6. DFR management team to take note of all aspects may it be agricultural plants and NTFP grown along the fringes of the boundary, which might potentially cross over into the DFR management site and to put in place mitigation measures to avoid potential conflicts that might arise from this.	1. DFR management team to continue on with the social forestry programs and conduct frequent meetings with the Social Forestry Committee to involve the local communities in any new development of the DFR, may it be capacity building or entrepreneurship opportunities. 2. Adherence towards relevant existing S.O.P.S. 3. Mode of Monitoring : 3.1 Deramakot Protection Plan envisaging the different magnitude of patrolling depending on classified risk areas of high, medium to low. Mode of patrolling via air, river and ground even during weekends and public holidays. 3.2 Quarterly Progress reports in reporting of the progress of activities as prescribed in the approved AWP, encompassing reporting of monitoring results on social and boundary re-brushing.
6	1. Boundary of the durian orchard located in Compartment 88, to be clearly marked out on the ground and in the CHP	1. The sites marked should be constantly monitored or reestablished in the event markings on the ground have

	maps. To prevent any potential conflict that might occur during harvesting. 2. DFR management team is to constantly conduct meetings with the village representatives as stated in HCV 5 to mitigate any potential problems or to discuss issues that were not previously brought up.	faded/disappeared by the DFR management team. Boundary is re-brushed once a year. 2. Deramakot's Social Forestry Committee meeting conducted twice a year.