HCV Assessment Report

PT Arara Abadi

Riau, Indonesia

Asia Pacific Consulting Solutions

June 30, 2014

FINAL

ACKNOWLEDGEMENTS

We would like to thank Asia Pulp and Paper Group (APP) and Sinar Mas Forestry (SMF) for providing us the opportunity to help on such a dynamic and significant shift in the approach by the companies in managing their plantation concessions and the additional important high conservation value resources that are contained within. Particularly Ms. Linda Wijaya, Aida Greenbury, Rolf Jensen, Dolly Priatna and Dewi Bramono of APP were invaluable in providing guidance while still allowing for independence throughout the project. Robin Mailoa, Elim , and Adrianto plus the SMF staff at the field level has provided needed support in accomplishing what needed to be done within such a short time frame.

Equally as important, we would like to thank the 80+/- individual subcontractors without whom we would not have been able to achieve the objectives of the project. They worked hard, were dedicated and showed true professionalism throughout the entire period. Although too many to be acknowledged individually, of particular note are Kevin O'Grady of Pinnacle Quality Pty Ltd, Sam Ponder of SDP Holdings Pty LTD, Langlang Tata Buana and Yana Suryadinata are to be commended for their leadership skills in helping to manage the entire field data collection process. We would also like to thank Kenichi Shono of PT Hatfield Indonesia, Martin Hardiono, Iwan Kurniawan Permadi and Ersa Juarsa for their valuable time in assisting with the overall management of the project.

Finally, without the assistance, advice and guidance of key stakeholders in civil society to help us stay true to the HCV concept and ensure we remain committed to transparency and independence, the following group are just a few of the many that were there for us when we needed.

Greenpeace

WWF Indonesia

WWF International

HCVRN Indonesia

HCVRN International

Forest People's Program

Eyes on the Forest

The Forest Trust

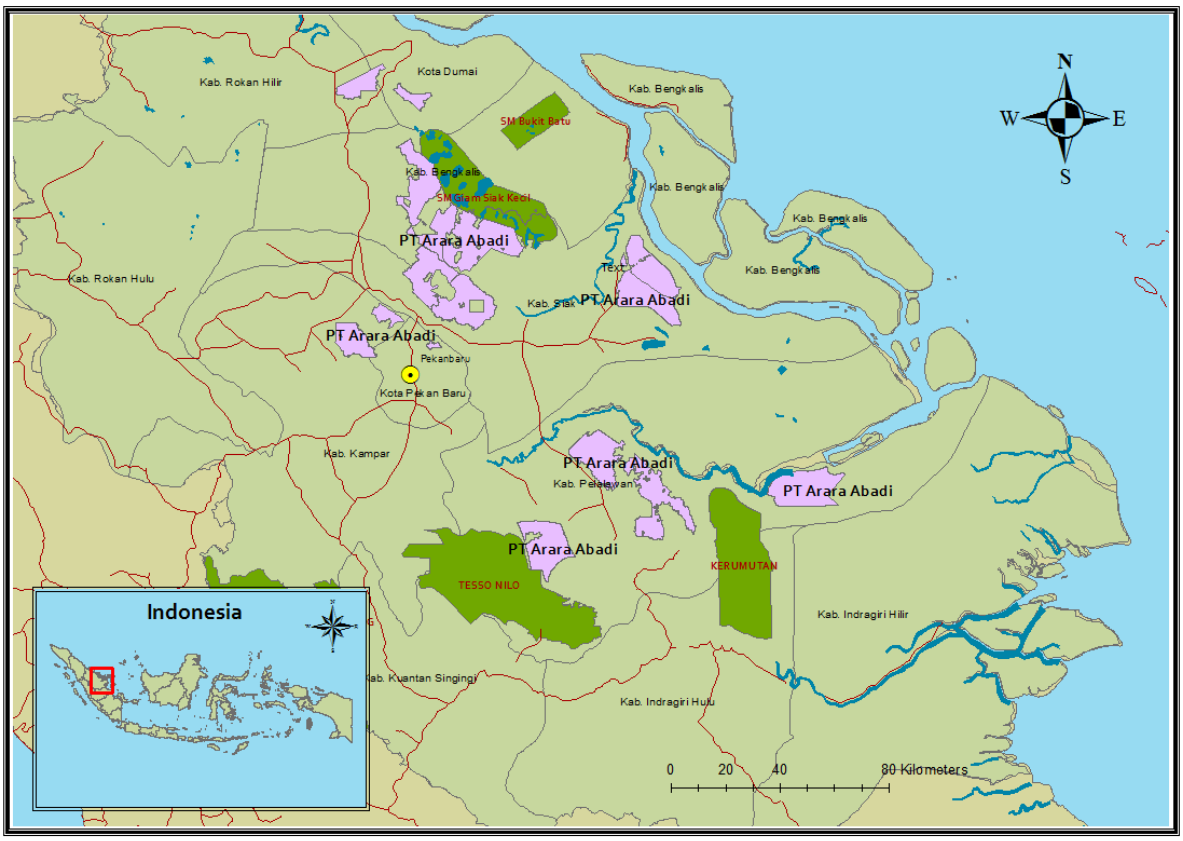
WALHI

and many others at the local level

Thank you all!!

EXECUTIVE SUMMARY

The HCV Assessment in Riau province focused on five (5) concessions comprising PT Arara Abadi (AA), PT Satria Perkasa Agung (SP), PT SPA Serapung (SPA), PT SPA Koperasi Tani Hutan (KTH) Sinar Merawang (SM) and PT Riau Abadi Lestari (RAL) of all of which provide timber supply to the Asia Pulp & Paper (APP) Group. This particular report presents finding from PT Arara Abadi (AA).



PT Arara Abadi is a forest management enterprise managing an industrial plantation located in Kabupaten Bengkalis, Kampar, Pelalawan, Rokan Hilir, Dumai, Pekanbaru and Siak within Riau Province. The majority of the area is plantation pulpwood forests (planted forests) with a larger block of natural forest remaining in conservation forest and *tanaman unggalan.*

Project Ownership

This project was commissioned by Asia Pulp and Paper Group. Asia Pulp and Paper Group (APP) is a trade name for a group of pulp and paper manufacturing companies in Indonesia and China. The APP group of companies is one of the world's largest vertically integrated pulp and paper companies, with an annual combined pulp, paper, and converting products capacity of over 18 million tons. APP-Indonesia and APP-China currently market their products in more than 120 countries across six continents. Asia Pulp & Paper's Indonesian administrative office is located at Sinarmas Land Plaza, Jalan Thamrin, Jakarta, Indonesia.

At the time of this report, the pulp mills of the Asia Pulp and Paper Group (APP) receive pulpwood from the HTI concessions of 38 suppliers located on the islands of Sumatra and Borneo. This project covers one (1) of those supplies on the island of Sumatra.

Concession Historical Aspects

In the beginning, FME obtained natural forest concession license through Ministry of Agriculture under Decree No. 359/Kpts/Um/6/1979 dated 8 June 1979 with the total area of 65,000 Ha. In 1990, the company obtained an extension of their concession through the Ministry of Forestry under Decree No. 560/Kpts-II/1990 dated 27 September 1990 with the total area of 93,500 Ha. In 1991, PT. Arara Abadi further obtained an extension and change of status through the Ministry of Forestry under Decree No. 758/Kpts-II/1991 dated 16 October 1991 on Industrial Plantation Forest (temporary) for a total area of 265,000 ha. During its operation, the company license of concession has been revised several times such as in Ministry of Forestry Decree No. 859/Kpts-II/1992 dated 31 August 1992, and Ministry of Forestry Decree No. 1070/Kpts-II/1992 dated 19 November 1992. The latest revision of PT. Arara Abadi plantation forest concession license is the Ministry of Forestry Decree No. 743/Kpts-II/1996 dated 25 November 1996 that revised the previous temporary license of plantation forest into definitive.

Information on the companies' legality aspects are served as follows;

1. The revised RKUPHHK-HTI (Industrial Plantation Forest Ten Year Management Plan) for a period of 10 year (2008-2017) of PT. Arara Abadi has been approved by the Ministry of Forestry through Ministry of Forestry Decree No. SK.371/VI-BPHT/2008 dated 4 November 2008. The RKUPHHK-HTI of PT. Arara Abadi was revised again and approved through Director of Plantation Forest Business Administration under Decree No. S.571/BPHT-3/2010 dated 8 December 2010 for a period of ten years (2011-2020) with effective planting and harvesting area of ±252,475 Ha with cycle periods for main plantings of 5 and 6 years.
2. The Business License for Timber Forest Product Utilization (IUPHHK) holders on the Plantation Forest are PT Arara Abadi (AA) which is a Limited Liability Company with National Private Investment status, and is of Chip Raw Material Producer Forest Company Class. PT Arara Abadi's head offices are located in Jalan Teuku Umar 51 A, Pekanbaru, Riau Province.
3. PT Arara Abadi is dully established under Raden Suratman Notary Deed No. 213 dated 9 August 1974 which later was legalized by the Minister of Justice by virtue of Decree No. YA 5/72/9, dated 13 February 1976 and have been amended several times, lastly made before Yulia, S.H. by virtue of her Notary Deed No. 1 dated 14 January 2004. The company is authorized for business by virtue of Definitive Decree No. 743/Kpts-II/1996 dated 25 November 1996, granting it area of 299,975 ha.

Assessment Findings

In an effort to provide APP a result that could be more easily utilized, this report is prepared at the concession (Forest Management Unit) level. The concession report provides:

- identification of the team members and background,
- details on HCV descriptions according to the HCVF Toolkit for Indonesia (2010),
- a discussion of the methodology used to identify potential sites where HCV might exist,
- a landscape perspective in which the concession is operating within,
- results of the assessment,
- Management and monitoring recommendations, and
- Barrier should the company choose to pursue certification in the future.

The results of the identification can be summarized as follows:

HCV 1 Areas with Important Levels of Biodiversity

HCV 1.1 Areas that Contain or Provide Biodiversity Support Function to Protection or Conservation Areas

Several FME concession districts directly border protected areas; Melibur district borders Giam Siak Kecil Wildlife Reserve (GSK), Sebanga district borders the Elephant Training Centre (PLG) and GSK, Berbari district borders Danau Besar Pulau Bawah Wildlife Reserve, and Tapung district borders Sultan Syarief Qasim Great Forest Park (Tahura SSQ).

The concession districts themselves also have set aside area designated for protection and conservation purposes areas including riparian buffer zones, water storage areas and protected regions as elephant corridors. Approximately 18% of the total FME concession area should be protected area, though the actual percentage of genuinely protected area is less than this. Many areas of the areas with designation as protection and conservation purpose have been converted for other land uses, particularly for oil palm estates. Thus, HCV 1.1 is present within the concession.

HCV 1.2 Critically Endangered Species

From observations in 11 districts in the FME concession 13 critically endangered flora species were found that can be categorised as HCV 1.2. These species were found generally in regions of natural vegetation or natural forest at the young secondary forest, underbrush or old secondary forest (areas logged many years ago) succession stages.

Two wildlife species come under the category of HCV 1.2: the Sumatran tiger (*Panthera tigris sumatrae*) and Sumatran elephant (*Elephas maximus sumatrae*). Elephants were detected in 6 districts, while tigers were detected in five. The presence of tigers was detected indirectly through scratch marks, previous resting places and footprints, or based on information from villagers or management unit employees. Elephants were either observed visually, or from signs such as broken branches and leftover acacia bark.

HCV 1.3 Areas that Contain Habitat for Viable Populations of Endangered, Restricted Range or Protected Species

During visits to the FME concessions several species of flora and wildlife were found with important categories on the IUCN Red List, in Appendix I and II of CITES, are protected under Government Regulation No. 7/1999 or are endemic. HCV 1.3 activities involved **identifying habitats** in or around the management unit for viable populations of critically endangered, endangered, endemic or protected species. The emphasis of HCV 1.3 is maintaining species populations, so, in assessing potential **population viability,** landscapes surrounding the assessment area had to be considered.

A lot of effort, and more time is required to assess population viability than was available during HCV assessments. As there were no population viability analyses, HCV assessments used landscape **carrying capacity analyses for HCV 1.3 species**, which considers the level and quality of support to the ecosystem from the landscapes closest to the concessions.

The presence of humans and farming directly severs and separates and fragments previously intact habitats. The separation of habitat islands causes certain populations to become fragmented, and unviable if numbers are insufficient for an MVP (***Minimum viable population***). Industrial timber plantations (HTI) in this case acacias can be barriers for some species, but not to others. In this respect, **corridors are vital** in reconnecting fragmented populations and making them whole. This means the MU must provide **protection space** similar to original conditions that can connect sub-populations. If this is not realised, then **restoration** is essential. In all there were 40 species of flora, 21 species of mammals, 45 species of birds and 8 species of herpetofauna that meet the requirement for HCV 1.3.

HCV 1.4 Areas that Contain Habitat of Temporary Use by Species or Congregations of Species

No migrant bird species were found in some FME, though Melibur and Sebanga districts are part of the same landscape as the Giam Siak Kecil Important Bird Area (IBA) (Birdlife 2013). Another area that comes under HCV 1.4 is Merawang district with its IBA being the Kerumutan region. Despite their proximity to the Tesso Nilo IBA, wetlands in Nilo district do not support migratory birds as they are no longer natural.

Some wetlands in the MU region close to IBA areas can be stopovers for migratory birds, where they can also seek food and rest. Accordingly, HCV 1.4 is present in wetland regions inside the management unit.

Other keystone HCV 1.4 habitats like breeding or nesting areas such as caves or swiftlet and bat habitats, and saltlicks were not found on the ground.

HCV 2 Natural Landscapes and Dynamics

HCV 2.1 Large Natural Landscapes with Capacity to Maintain Natural Ecological Processes and Dynamics

FME concessions do not have intact forest blocks with core zones of more than 20,000 ha as recommended in HCV 2.1. However, some districts still constitute part of surrounding natural forest landscape, however, not within the surrounding buffer zones of large blocks, so no MU activities should disrupt the dynamics of natural ecological process. Merawang district forms part of the Kerumutan landscape, Pusaka district forms part of the Danau Besar Pulau bawah landscape, Melibur and Sebanga districts are in the Giam Siak Kecil landscape, while Nilo district is part of the Tesso-Nilo landscape. Thus, there is no HCV 2.1 located within the concession.

HCV 2.2 Areas that Contain Two or More Contiguous Ecosystems

Three approaches used to determine HCV 2.2 contiguous forest ecosystems were based on (1) ***difference in altitude***, (2) ***contiguous wetland and non wetland ecosystems and (3) the presence of kerangas forest***.

Two districts in the FME concession; Melibur (MBR) district and Sorek (SRK) district have areas that can be considered representative of two natural and contiguous ecosystems; lowland forest and swamp forest.

HCV 2.3 Areas that Contain Representative Populations of Most Naturally Occurring Species

The area of habitat needed to sustain MVP (minimum viable population) varies greatly between species. Nevertheless, large unfragmented areas covering various ecosystem types have far greater potential for sustaining viable populations of various species than smaller fragmented areas do. FME in Merawang district meets this requirement with the Kerumutan forest landscape, and can therefore be categorised as HCV 2.3. (See ***Figure 91-93***). Meanwhile, Melibur and Sebanga districts, despite bordering Giam Siak Kecil Wildlife Reserve, are fragmented and cannot be classed as having HCV 2.3 value. The same applies to the Nilo district, which borders Tesso Nilo National Park and Pusaka district, which is beside Danau Bawah Pulau Atas Wildlife Reserve.

HCV 3 Rare or Endangered Ecosystems

To ascertain which ecosystems in the FME concessions are rare or endangered and come under the category of HCV 3, investigations were conducted using a physiographic analysis approach. From RePPProT (2008/2010), based on a physiographic approach Sumatra is divided into four regions: the Western Coastal Foothills and Plains, Barisan Mountains, Eastern Plains and Hills, and the Eastern Coastal Swamps (see Figure 93).

The FME concession areas are located in the South-Eastern Coastal Swamps and South-Eastern Plains and Hills regions. Most of the South-Eastern Coastal Swamp region was formed from alluvial sediment in shallow sea and more recently from quaternary peat deposits formed behind mangrove forests. Most of the region still consists of swamps with occasional rocky outcrops in dry lowland areas where base sedimentary rock has been pushed up. This region contains one of the largest tropical peat swamps. Almost the entire region was once covered by peat swamp forest, swamp forest or riparian forest linked to rivers and flood plains, and lowland dipterocarp forest in areas with dry mineral soil. Generally, the whole of the FME concession comes under the peatland category, though there were some differences in terms of peat depth between Reppprot data and measurements taken on the ground.

In the Indonesia HCV toolkit (2010), ecosystems that meet one or more of the following criteria are considered endangered in the HCV 3 definition: (1) if within a single physiographic region an ecosystem has declined in extent by 50% or more; (2) if it is expected to decline by >75% under future scenarios of forest conversion assuming all conversion areas in prevailing spatial plans can be converted. Ecosystems meeting the following criteria can be considered rare ecosystems: If, as a result of natural factors or human intervention, an ecosystem constitutes less than 5% of the total area of a bio-physiographic unit. Based on the physiographic analysis approach used during pre-assessments, rare and endangered ecosystems in the South-Eastern Coastal Swamps exist within the concession. Thus, we can conclude that all types of secondary forest in the PT Arara Abadi concession region constitute endangered ecosystems as they are heavily degraded lowland rain forest.

HCV 4 Environmental Services

HCV 4.1 Areas or Ecosystems Important for the Provision of Water and Prevention of Floods for Downstream communities

Rivers, wetlands and peat areas serve as (a) water catchment areas, (b) natural drainage for flood control and (c) sources of water for human and wildlife use. As sources of water, it has been understood that rivers that flow from within the concession area has important roles in providing water for the surrounding living organisms and communities. The sustainability of ecosystems within FME area is highly dependent on the existence of these rivers. The biodiversity in the river and its surrounding riparian zone is higher than that for the areas far from rivers. Aside from being utilized directly by the surrounding organisms, the river is also being utilized by the community downstream (see discussion on HCV5).

The above lakes and swamps function as water reservoirs by taking in the surface runoff of the surrounding area. Furthermore, the continuity of water comes from water seepage of surrounding rivers. Rivers described above that still retain their natural function plays a role in controlling floods downstream. In addition, peat centers act as water recharge areas and water reservoirs, thus serving as both source and flood control. In general HCV 4.1 has been found to exist within certain areas of the FME concession can be grouped into 4 types as follow: (i) Upper reaches of water courses that function as water catchment areas (ii) Open bodies of water (lakes and swamps) that function as reservoirs and water retainers that control flooding (iii) Rivers and their tributaries as flood controllers and water recharge areas and (iv) peat swamp as water recharge areas and water reservoirs. In all there were 34 catchment areas, 7 swamp and lake areas, 4 peat dones and numerous rivers identified as HCV 4.1 within the PT AA concession area.

HCV 4.2 Areas Important for the Prevention of Erosion and Sedimentation

HCV 4.2 is determined by using DEM that generated into contour and slope. The slope factor used as a limit was the coefficient value of slope length and slope gradient factors in regions categorised as upstream areas (slope >15%). All area with steep slope and containing highly erodible soils, as well as riparian zones along major rivers and tributaries are identified as areas critical for preventing erosion and sedimentation. Steep areas within the upstream areas particularly need to be protected by maintaining vegetation cover necessary to prevent erosion. Maintaining healthy and adequate buffer zones provide a filtration effect that removes significant sedimentation from runoff prior to it entering the streams, rivers and other water bodies. In general HCV4.2 has been found within areas of the FMU concession can be grouped into 2 types as follow (i) Upper reaches with dense vegetation that can control erosion and sedimentation and (ii) riparian buffers to control morpho-erosion and filter sediment from surface run off. In all there were 2 catchment areas and many rivers identified as HCV 4.2 with the concession.

HCV 4.3 Areas that Function as Natural Barriers to the Spread of Forest or Ground Fire

These areas are marked by the presence of key elements that have important functions as firebreaks. The important value of such areas is identified from their capacity to prevent or contain actual or potential forest and land fires.

Natural firebreaks constitute areas that tend to be wet all year round, or areas that have high moisture levels and relatively low temperatures. A fire break area can the categorised as possessing HCV 4.3 elements if it meets some of the following criteria (ProForest, 2003): (i) can naturally prevent, limit or control fires, (ii) covers a large area as a significant barrier to fire and (iii) has or is close to a community settlement, (iv) has or is close to a place of cultural significance (cultural sites, sacred places) and (v) has or is close to a conservation area containing important species or ecosystems. The establishment of HCV 4.3 is done with an approach that forest fires as a potential disaster. Although there is no record of previous fires, areas of potentially permanent firebreaks defined as HCV 4.3. The team found 7 swamp and lake areas and many rivers that met the criteria of HCV 4.3 within the concession area.

HCV 5 Natural Areas Critical for Meeting the Basic Needs of Local People

Most people from the assessed villages, particularly those not located beside rivers, use wells or artesian wells for their drinking water and washing, bathing and toiletry needs. However, many of these wells run dry during the dry season. When this happens, villagers use river water for bathing, washing and toilet purposes, and occasionally, when they have to, for drinking water. Sakai communities living in riverside villages, however, use river water all year round and rarely dig wells as the **water** from them is just the same as the river water near their settlements. In addition to meeting water needs, rivers assessed inside the concession areas are also used for fishing. Most villagers living near rivers use their free time on returning from their fields for fishing. For a minority of villagers, river **fishing** is their **main livelihood** source, and they use lines and install traps and nets every day.

Only three lakes found inside the concession region are linked to meeting the basic needs of communities living around them. Existing lakes have similar functions to rivers in meeting basic human needs for protein, from fish caught in them and as water reserves during long dry seasons. The interconnectedness of rivers and lakes is clearly apparent from the many species that inhabit them both. Fish species caught by villagers in lakes inside the concession areas include *silais*, snakehead murrel, giant mudfish and Indo-Pacific tarpon, which are caught using rods, nets and fish traps. A worrying thing with these lakes is that they are continually receding, and becoming shallower. Based on information from villagers, this recession and shallowing of lakes began in the last 10 years with the widespread growth of forest concessions and oil palm estates. Even the greenbelts around lakes, which were previously forested, are now covered with scrub and oil palm. The concern of nearby communities is that if no management is carried out to rehabilitate the functions of lakes and their surroundings, then they may disappear in the coming years.

The team also found that HCV 5 is present in the form of customary forests in the FMU concession areas as indicated in the following table:

No	HCV 5	Area (ha)	Village	Sub district	District
1	Lubuk Umbut customary forest	0.13	Lubuk Umbut	Sungai Mandau	Siak
2	Bencah Umbai customary forest	7.19			
3	Tasik Betung customary forest	0.13	Tasik Betung		
4	Sungai Paloge customary forest	-	Kota Garo	Tapung Hilir	Kampar
5	Rotan customary forest	13.35	Melibur	Pinggir	Bengkalis
6	Beringin Customary forest	92.82	Beringin		
7	Sialang Kawan customary forest	1.32	Lubuk Raja	Bandar Petalangan	Pelalawan
8	Pulau Panjang customary forest	1.38			
9	Lompatan customary forest	3.25			
10	Kladiae customary forest	24.60	Sungai Buluh	Bunut	
11	Budak Kocit customary forest	20.0			
12	Guguk customary forest	4.33			
13	Sungai Peta customary forest	2.20			
14	Sialang Kopian customary forest	1.60	Lubuk Mandian Gajah		
15	Sialang Kopung Bonang customary forest	0.83			
16	Sialang Tanjung Malin customary forest	8.80			
17	Sialang Tanjung Panjang customary forest	4.14			

The community Income which associated with the FME concession areas for further delineation as HCV 5 areas is the revenue from the sale of honey, which grow within the concession areas. Many trees with beehive which located in the boundaries of the concession area are well maintained by residents or specific community groups. Sialang tree produces honey with volume that can suffice the needs of the community and furthermore sold to outside the village and sub-district. Identified beehive trees within the concession area are delineated below.

Many *sialang* trees and clusters of *sialang* trees were found inside the FMU concession area. Sialang is the name for trees where bees nest and produce honey. These trees generally grow tall and protrude from groups of other trees with many branches and thin canopy cover. Sialang trees can grow up to 60 metres tall with diameters of up to 2 metres. The *sialang* trees found in the concession comprise several species as shown in the table below:

Table 1. *Sialang trees found in the concession*

No.	Tree name	Latin name
1	*Jelutung*	*Dyera costulata*
2	*Keruing*	*Dipterocarpus*
3	*Terap*	*Artocarpus odoratissimus*
4	*Ara*	*Ficus racemosa*
5	*Beringin*	*Ficus benjamina*
6	*Kempas*	*Koompassia malaccensis*
7	*Pulai*	*Alstonia scholaris R.Br.*

Source: 2013 primary data analysis

HCV 6 Areas Critical for Maintaining the Cultural Identity of Local Communities

Before the arrival of FMU management units, communities were already living in the areas that are now inside the company concession. The existence of these settlements can be proved by a number of burial sites of their forebears that communities now consider sacred. This can be corroborated bearing in mind the graves of village elders are generally located close to settlement centres. There were a number of these sites found within the concession.

Customary forests inside the FMU concession area with links to surrounding communities, in addition to having socio-economic functions and being sources for fulfilling their basic needs, also have significant ties to communities' cultural identity. Follwing is a list of those that meet the criteria for HCV 6.

No.	HCV 6	Area (ha)	Village	Sub district	District
1	Tasik Betung customary forest	0.13	Tasik Betung	Sungai Mandau	Siak
2	Sungai Paloge customary forest	-	Kota Garo	Tapung Hilir	Kampar
3	Customary forest	92.82	Beringin	Pinggir	Bengkalis
4	Sakai customary forest	-	Kesumbo Ampai	Mandau	
5	Imbo Sangkut Ogung customary forest	0.13	Tarantang Manuk		Pelalawan
6	Teluk Sebayang sacred forest	29.51	Teluk Meranti	Teluk Meranti	
7	Sialang Tanjung Asa customary forest	6.73	L. Mandian Gajah	Bunut	

HCV 6 is present in the form of old village sites, traditional houses and Mount Melibur in the FMU concession areas, as shown below.

No	HCV 6	Area (ha)	Village	Sub district	District
1	Tanjung Lebuai old village	0.125	Tasik Betung	Sungai Mandau	Siak
2	Sakai traditional houses	-	Kesumbo Ampai	Mandau	Bengkalis
3	Mount Melibur	0.13	Melibur	Pinggir	

Naga Sakti Lake is inside the Pusaka/Bubari district regions of the FMU concession area. Considered sacred by surrounding communities, the lake covers an area of approximately ± 12 ha. The lake is still surrounded by pristine natural forest. The total area of Naga Sakti Lake and its surrounding forest is 400 ha. This is also classified as HCV 6.

In discussions above, some *sialang* tress and *sialang* clusters growing inside the FMU concession areas were described as having important value in terms of meeting basic needs and have socio-economic functions. In reality, in addition to the functions described earlier, *sialang* trees also have associated cultural functions.

Sialang trees complete with honey-producing bee nests, particularly those growing around Sorek, Malako and Nilo districts in the Pelalawan region, are considered integral to the cultural identity of the local communities. As explained earlier, the *sialang* clusters in these regions belong to and are controlled by sub-ethnic Batin groups, and constitute the property of communities called *soko* and have been passed down from generation to generation. *Sialang* use is regulated traditionally, and includes harvest times and methods, who harvests, who has rights to receive harvest yield and how it is shared.

Whoever breaks rules regarding cutting down *sialang* trees will be subject to heavy penalties. Anyone caught cutting down a *sialang* tree will be fined anything up to IDR 60 million. In addition, the tree cut down must be confiscated, covered with cloth and prayed for as a sign of respect for ancestors and the tree. For community members, *sialang* are not merely trees, as many customary rules and community identity are tied to them.

For communities, *sialang* trees and the regions they grow in - which are generally designated as village customary forest and prohibition forest – have important roles. The loss of land, forest and other trees growing there not only means the loss of a livelihood source, but more fundamentally, the loss of culture, a source of customary and traditional activities, a source of pride and self-esteem, and even the loss of part of their identity. In their traditional beliefs, nature is a reflection of themselves, and where they get things to support their lives and ceremonial interests.

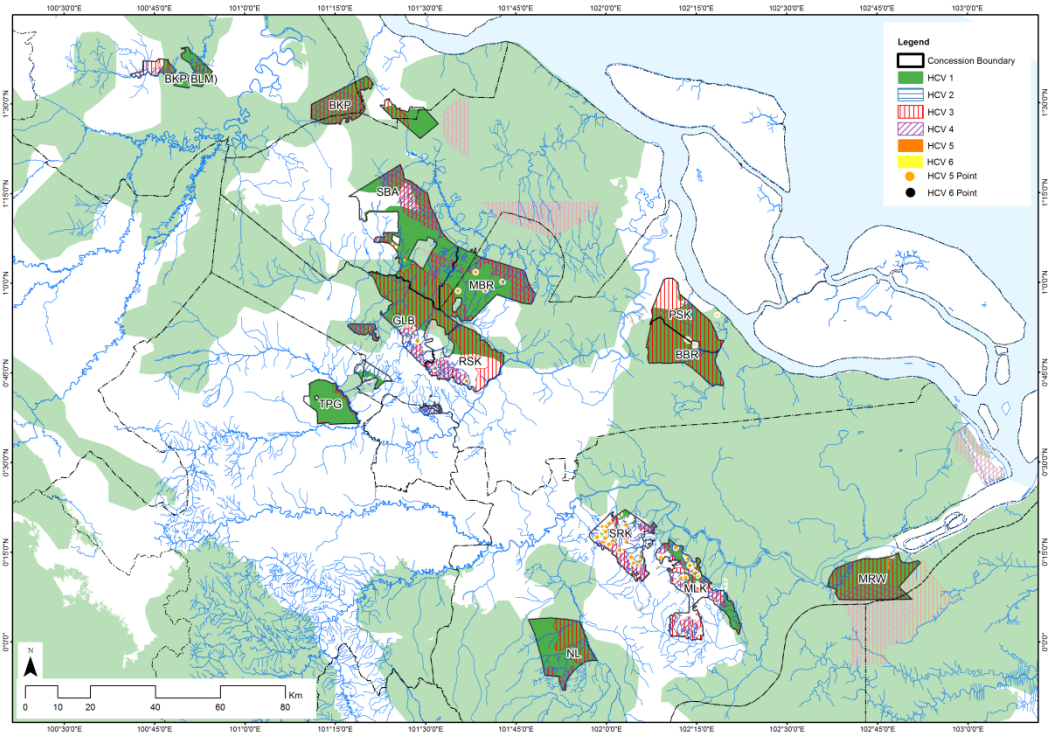
Sialang trees have become symbols of their cultural identity, sources of pride, hereditary property for following generations and differentiators between one community and another. Conserving *sialang* trees also means conserving the communities that have owned them for hundreds of years and witnessed many changes from one age to another. The following table indicates *sialang* trees and clusters that qualify as HCV 6.

No.	HCV 6	Area (ha)	Village	Sub district	District
1	Pulau Pintean cluster	1.88	Lubuk Keranji Timur	Bandar Petalangan	Pelalawan
2	Pulau Kayu Kolat cluster	0.13			
3	Pulau Baye cluster	1.72			
4	Tanjung Besulung *sialang*	0.13			
5	Tongkat Belukar cluster	47.52			
6	Embau Ulu cluster	1.39			
7	Nagosai cluster	-	Terbangiang		
8	Sei Sadak cluster	5.28			
9	Putaran cluster	24.65	Balam Merah	Bunut	
10	Tapui cluster	0.04	Kesuma	Langgam	
11	Sungai Aur cluster	-			

The following table and map summarizes the HCV management areas identified by the assessment team. The size of the concession area based on the license is a bit different if compared with the GIS calculated size as shown in the table above. Regarding this discrepancy, the company has stated the following "The determination of concession area size is based on the Republic of Indonesia Ministry of Forestry Decree (Surat Keputusan or SK) for the plantation forest concession license which includes the appended concession map. Boundary in the field was laid down in accordance to the appended SK concession map. There is inconsistency between the calculated area size based on the field boundary and the area size that was stated in the SK. This variation is caused by the digitization process on the SK concession map, which was only available in hardcopy format when the SK was issued, into the company's Geographic Information System (GIS). The company is still in the process of settling the definitive boundary with relevant government institutions. Under the current situation, the company decided that HCV assessment will use the GIS map which is consistent with field condition."

DISTRIK	LUAS (Ha)					
	HCV 1	HCV 2	HCV 3	HCV 4	HCV 5	HCV 6
BARBARI	16,827.15		22,880.46	400.66	24.67	24.67
BUKIT KAPUR	22,034.01		18,237.34	12,052.64		
GELOMBANG	20,836.82		26,408.30	6,850.78		
MALAKO	5,726.08		14,121.27	11,724.41	179.89	33.53
MELIBUR	39,157.17	454.25	17,517.71	12,149.70	0.58	
MERAWANG	28,724.39	8,538.58	28,738.57	9,185.16	259.93	29.51
NILO	26,463.65		12,858.58	2,624.85	22.55	
PUSAKA	21,993.45		21,993.45	315.41		
RASAU KUNING	4,163.64	19.63	19,796.16	6,161.39		
SEBANGA	42,697.17	976.72	28,387.58	20,141.74	58.23	43.88
SOREK	2,609.31	0.40	10,066.18	10,051.47	73.87	26.03
TAPUNG	16,930.00		1,642.91	1,084.48		

*Areas for HCV 5 in the form of honey trees, burial site, and sacred ground are not calculated in the hectarage of the table.



Management and Monitoring Recommendations

APP has stated an intention to conduct an extensive "landscape management planning" process upon completion of HCV, HCS and social impact assessments that will provide a clear, holistic approach to dealing with all of the pertinent issues identified. The stated goal is to conduct extensive stakeholder consultations with government, universities, neighboring landusers, civil societies and communities during that process. **As a result management and monitoring recommendations provided in this report, as well as indicative High Conservation Management Areas (HCVMA) are provided in a generic framework to be used as a "guide" to help develop management prescriptions during this more extensive planning process.**

HCV category and sub-category recommendations are provided in the full report and the following major generic recommendations have been provided without specific reference to HCV category or sub-category:

- Additional data for all HCV needs to be collected to supplement that from the assessment team, particularly relating to species presence, locality and potential population since due to time and budget constraints only a small fraction of the total area was able to be sampled;
- All final HCV management areas must be delineated on the ground and adequately protected from encroachment to protect and enhance HCV values present with the use of an appropriate buffer;
- Natural areas, particularly riparian zones and those areas that could be part of a larger concession wide wildlife corridor system connecting protected areas inside and outside the concession areas, need to be rehabilitated and restored with natural, indigenours species;
- Consultation with experts on specific species need to occur to determine when management activities have the most and least adverse effect on disturbance as well as what specific habitat needs are required;
- Hunting and encroachment of HCVMA must be controlled and prohibited, either using company staff, community patrols, government enforcement, civil society or a combination;
- Public education at the community level must occur to stress the importance of the HCV values, what they mean to the people living near the concession and why it is critical to protect and enhance these values;
- Designated staff responsible for HCV management should be assigned within each concession (at minimum concession level) and all field staff and contractors need training sessions explaining HCV values present and the importance of protecting and enhancing them;
- Areas with high populations of HCV 1.2 and 1.3 species should be considered for potential restoration as conservation areas;
- Collaboration with neighboring land users, particularly that can negatively influence HCV values within the concession and at the landscape level, must be undertaken in an effort to protect and enhance these values;
- Alternative species that require less intensive water management for survival and productivity need to be examined for peat soils to reduce the negative impact this has on the soil, hydrology and carbon emissions;
- HCV management prescriptions should be based on best practices instead of business as usual, summarized and made publically available;
- Identification of specific environmental values to monitor in order to determine the health of each HCV value and effectiveness of management programs must be developed and monitored on a regular basis;
- Periodic (minimum annually) summaries of monitoring results must be prepared and should be made publically available.