

HIGH CARBON STOCK APPROACH

HCSA PEER REVIEW REPORT

Company Name: Toba Pulp Lestari

HCS Assessment Area: PT Toba Pulp Lestari (Tanaman Kehidupan)

05 July 2022

Dear peer reviewers:

Thank you for agreeing to review this HCS study. As you know, we are asking you to do a desk review of the material provided and to highlight any concerns you have about the land cover classification, land-use planning, or consultation processes. We have invited you as an expert in your field, and hope that you will bring your own experience and knowledge to this review to help the company improve its study. We are not asking you to provide a pass/fail decision, just to give your honest opinion and suggestions for changes to the company's plans or activities to ensure that the HCS Approach methodology is implemented correctly. Please refer to the latest [HCSA Toolkit](#) as reference.

Some of the issues raised in the review may be complicated and long-standing, especially those related to land tenure and historical conflict with communities. It is not within the scope of the review for you to do hours of research and determine who is at fault, or to examine stakeholder activities outside of the particular concession or plantation which is the subject of the review. Rather we ask that you call attention to topics that need further research or more information from the company, to improve community relations in the future or to reassure external stakeholders that the intent of the HCS Approach is being followed.

Background information to be provided by the HCSA Secretariat:

- a) Did a Registered Practitioner Organisation lead the HCS assessment? If not, has the organisation which led the assessment started the process of registration?**
Yes. Remark Asia led the HCS Assessment
- b) Was the HCS Team Leader a Registered Practitioner?**
Yes. Cecep Saepuloh is a Registered Practitioner.
- c) Were at least two (2) HCS team members Registered Practitioners?**
Yes. Cecep Saepuloh and Adi Wijoyo.
- d) Was the HCV assessment judged 'satisfactory' (highest rating) by the HCV Resource Network (HCVRN) Assessor Licensing Scheme (ALS)? (See <https://hcvnetwork.org/find-a-report/>).**
Yes, Satisfactory.

Questions for peer reviewers

(Peer Review Panel: Kimberly Carlson & Cynthia Chin)

The estimated time to complete each section is noted in parentheses.

1. Peer Review Summary (2 hours, Lead Reviewer)

1.1. What are the major findings and recommendations from the peer review?

Please refer to the peer review results in this report.

Finding: The report was nicely presented and well written. However, it is missing key information including a description of affected communities and outcomes of consultations with communities, a participatory land use map, an assessment of land bank for future garden areas, discussion of land tenure and community rights to land, justification for HCV area designation, and discussion of incorporation of field inventory findings into the final land cover map. Moreover, there are major issues related to the land cover mapping component of the assessment such as apparent discrepancies between land cover in satellite imagery and final land cover maps. There are several inconsistencies across the report and between the reported information and data provided to reviewers. Finally, the AOI is very large in comparison to the actual project areas, which contributes to many of these issues because of the huge area that is covered by this study. All these issues are documented in Sections 2-6 below. The updated report is a major improvement on the initial report, and now includes much more information on affected communities including consultations and land tenure and justification for HCV area designation. The land cover mapping component and carbon calculations have been updated as well. However, because not all datasets were provided to reviewers for the second round of review (i.e., the satellite data used for classification, the classification in the AOI, the participatory land use map) the robustness of the classification and decision tree are difficult to judge. Moreover, there are some issues with the application of the decision tree, including connectivity. All of these issues are documented in the sections below. In addition to these major issues, the report seems to be still in draft format, with several tables missing information and references to tables that do not exist, among other small content and formatting issues.

Reviewers Recommendation: The company should address all the requests of the reviewers noted below to create a robust HCS assessment that is transparent, coherent, and accurate. It is particularly important to add missing information about community land claims, tenure, and FPIC, and to address the issues around land cover mapping, as these are central to a solid HCSA assessment. The company should provide the requested data to reviewers so that we can assess the robustness of the geospatial components of the assessment. In addition, they should address all requests of the reviewers noted

below to create a robust HCS assessment that is transparent and accurate. Finally, they should read over and edit the report to ensure that it is accurate and complete.

1.2. Did the HCS assessment team include or have adequate access to relevant expertise to undertake the HCS assessment?

Please refer to Section 2 of the Summary Report.

Finding: Yes, the assessment team was sufficiently qualified. The team included eight individuals with expertise including forest inventory and carbon stock assessment, remote sensing, GIS, and biodiversity. There were several HCV assessors and one licensed HCV-HCSA assessor on the team.

Reviewers Recommendation: None.

1.3. What elements of the HCS Approach still need to be completed in order to create a final land use and conservation plan? Are there aspects which you feel need to be re-done?

Please review Section 10 of the Summary Report and the peer review results in this report.

Finding: The company needs to do a final ground check and develop and implement management plans in collaboration with local communities. The land cover mapping component of the study should be redone. The company needs to do a final ground check and develop and implement management plans in collaboration with local communities.

Reviewers Recommendation: Redo the land cover mapping and decision tree focusing only on project areas (i.e., Areal Kajian TK) and a surrounding 2 km buffer. None.

2. Social Issues (4 hours)

Please review Section 3 of the Summary Report and please also look at the full HCV report (Section 4) for how HCVs 5 and 6 were assessed.

The HCSA Toolkit provides more information on the expected quality of community consultation and FPIC procedures.

2.1. Does the summary provided in Section 3.1 adequately represent and explain the community engagement, FPIC processes, and participatory mapping activities carried out?

Finding: This section is clear in its FPIC approach, SIA and community mapping process. It is clear efforts were made to ensure socialisation and consent was sought prior and follow-up consultations with the communities. The updated report states clearer information on the number of communities engaged. Comprehensive information on the engagement done and socio-cultural profile are now clearly stated in Chapter 4 of the report. Participatory mapping was done and a summary outcome has been provided.

Reviewers Recommendation:

- 1) Add a description of affected communities (e.g., population, history), total number of communities in the area of interest, a map of their respective locations, and on the number of communities the dialogues and FPIC processes were conducted with.
- 2) Provide a summary of the outputs and outcomes of the consultations. None.

2.2. Has a tenure study been completed and has it been vetted by independent social experts?

Finding: There is no specific tenure study mentioned. However, a social impact assessment (SIA) was completed in 2017 and covers community use and crops. There is no mention of land tenure. There is no specific tenure study mentioned. However, a social impact assessment (SIA) was completed in 2017 and covers community use and crops. Details of the FPIC process, community engagement and socialization of the project, including land measurements and community statements, have been conducted and details have been made available.

Reviewers Recommendation:

- 1) To show that the company understands issues of community land use, please summarise or clarify land tenure/uses across affected communities, even if there is no tenure study vetted by independent social experts. None.

2.3. Is there a participatory land use map and does it contain the key components of community land use including the minimum requirement of 0.5 ha per person for future garden areas?

Finding: No participatory land use map is provided. There is no assessment of the minimum requirement of 0.5 ha per person for future garden areas. A land use map has been provided in Chapter 4.3, depicting participatory engagement from the TK PT TPL area. However, this has not been converted to geospatial format for use in the HCS decision tree and ICLUP. Assessment of the minimum requirement of 0.5 ha per person for future garden areas was done and results are stated in Table 9 of the HCSA report.

Reviewers Recommendation:

- 1) Provide results from the participatory mapping exercise, either as a shapefile to reviewers or as a figure in the report with sufficient spatial resolution in project areas (i.e., Areal Kajian TK PT TPL).
- 2) Add a paragraph to the report discussing the 0.5 ha future garden use per person as a measure of future planning and consideration of livelihood additionality for the communities. This should consider the number of communities and farmers affected.
- 1) Provide a georeferenced participatory land use map (e.g., a shapefile)

Company's Response:

Peta PM sudah ditambahkan dalam laporan dan Link data shp sudah di lampirkan pada lampiran 14.4

- 2.4. Is there a record of consultation with affected communities and FPIC processes on the proposed development, the HCS Approach and issues/concerns they raised? Did the community nominate their own representatives?

Finding: There was clear mention of community engagement, FPIC processes and SIA. There was no mention of concerns, if any, nor any mention of number of communities or their representatives. There was clear mention of community engagement, FPIC processes and SIA. There was no mention of concerns, if any, nor any mention of number of communities or their representatives. Details of engagement, location of villages and engagement outcomes are presented in Chapters 4 and 10 of the report.

Reviewers Recommendation:

- 1) Add a report section on that describes the number of communities engaged, their respective locations (in a map) and the outcome of the engagements, including (but not limited to): whether consent was given, presence of opposing or supporting opinions, whether community representatives were chosen by the communities themselves or not, etc. None.

- 2.5. Were their views addressed and reflected in the plans and implementation of the plantation? Is there specific reference to the customary owners being made aware that they can say no to the development and they have the right to independent legal representation with regard to their agreements before they sign (to meet the 'prior informed' test)?

Finding: This information was not detailed in the summary report. This information is given in Chapter 4. The communities are spread over nine kabupaten (districts) within the PT TPL concession and divided into five management areas.

Reviewers Recommendation:

1) Provide a discussion on issues of customary rights and/or ownership of the area of interest, and whether the local communities engaged were cognizant of their right to independent legal representation with regards to their consent. None.

2.6. What recommendations do you have for any improvements regarding community consultation and negotiation of Free, Prior and Informed Consent?

Finding: While FPIC processes, socialisation and SIA were conducted, the results of these consultations were not obvious in the report. There was also no clear indication of number of representatives engaged and the communities they represented (i.e., sampling size of engagement). This is described in detail in Chapter 4 of the full report.

Reviewers Recommendation:

1) In the report, include information on community profiles, locations (in a map), number of representatives engaged, and the outcomes of these engagements. None.

3. Ecological and Conservation Values (4 hours)

3.1. Does the summary provided in Section 4.1 of the Summary Report adequately represent the findings of the HCV study?

Finding: Comprehensive maps on HCVA and HCVMA were included in the report and as shapefiles to reviewers. These were detailed and informative in and of themselves. However, justification for the HCVs assessed to be present/absent were not clearly indicated. Moreover, it seems that the HCS forest mapping information was used as an input to the HCV assessment, based on the perfect alignment of the HCS areas onto HCV areas. Comprehensive maps on HCVA and HCVMA were included in the report and as shapefiles to reviewers. These were detailed and informative in and of themselves. All six HCVs were assessed to be present and detailed in Table 10 and accompanying maps in the report.

Reviewers Recommendation:

- 1) Add another column to the HCV table for justification of why the HCV were deemed present/absent. A summary of what ERTs, landscapes of importance, ecosystem services and community livelihood and cultural needs should at least be mentioned in text or in a justification column.
- 2) Explain the use of HCS maps in delineating HCV areas. None

3.2. If the HCV assessment was not judged satisfactory (highest rating) by the ALS scheme of the HCVRN (as noted in the introductory information from the HCS Secretariat – please see page one of this document), please do a cursory review of the HCV report as it relates to HCVs 1-4. Do you have any general comments on the quality of the site description, the analysis of the landscape and national or regional context, or the methods used to undertake the HCV study? Were the determinations of the absence/presence and extent of HCVs 1-4 well-justified? Are the HCV management and monitoring maps accurate?

The HCV Report can be found in the SharePoint.

Finding: The HCV report was judged satisfactory by the ALS.

Reviewers Recommendation: None.

3.3. Please review Section 9.2 of the Summary Report. Was the methodology used for the Pre-RBA and the Rapid Biodiversity Assessments (if any) satisfactory? Did the RBA(s) reveal any significant biodiversity values that should have been captured in either the HCV assessment but were not, or warrant protection?

Note that this is a check of procedures, not outcomes. The HCSA Toolkit provides more information on the expected quality of the RBA and the Pre-RBA.

Finding: This section appears to be aligned with the HCV assessment. There is mention of patch connectivity, which are part of the HCVs assessed.

Reviewers Recommendation: None.

3.4. Are the forest conservation management and monitoring activities outlined in Section 10.3 adequate? Do they take into account forests and protected areas outside the concession?

Finding: This is Section 9.5 of the report. The management recommendations cover a wide array of topics, from conservation of HCS and HCV areas to capacity building of local communities to control hunting, burning, extraction, to socialisation of conservation boundaries, patrolling, threat assessment and developing collaborative measures with relevant partners. The activities appear to be adequate, although they do not explicitly take into account forests and protected areas outside the project area and concession.

Reviewers Recommendation: None.

4. **Image Analysis** (6 hours, including land use planning/Decision Tree Section 6 below)

4.1. Please review Section 6.1 of the Summary Report. Was the Area of Interest correctly identified?

The HCSA Toolkit explains how the AOI should be identified.

Finding: The AOI is defined as areas within a 5 km buffer of the concession boundary. As requested in the Toolkit, the company provides a reasonable rationale for selecting this AOI (i.e., to include forested areas in the broader landscape in the analysis). Given the diversity of the landscape and the relatively low amount of forest in the landscape, the AOI should capture all HCS lands outside of the concession to correctly apply the decision tree and would be appropriate for a typical concession-wide HCS assessment. However, the focus of the company in this report/assessment is on a limited set of small, disconnected areas that total about 3,000 hectares spread across 5 distinct concessions. Because of this, it would have been much better if the company had placed a buffer around these study areas (“Area Kajian TK”) rather than the concession boundaries - this would have allowed them to focus more narrowly on these specific locations, rather than trying to map land cover across such a large area. The AOI is defined as areas within a 5 km buffer of the five Tanaman Kehidupan (TK) sectors. As requested in the Toolkit, the company provides a reasonable rationale for selecting this AOI (i.e., to see how much forest is connected around the study area). Given the diversity of the landscape and the relatively low amount of forest in the landscape, this AOI is more than sufficient to capture all HCS lands outside of the study area to correctly apply the decision tree and is appropriate for this HCS assessment.

Reviewers Recommendation:

1) Redefine the AOI as a 2 km buffer around project areas (Areal Kajian TK). None.

4.2. Please review Section 6.2 of the Summary Report. Were the images used of adequate quality, including resolution and date?

The HCSA Toolkit describes the expected quality of the images.

Finding: The company states that they primarily used Landsat 8 imagery (30 m resolution) collected on August 20, 2017. The company claims that this was for landsat path 120 / row 58, and that it had minimal clouds and <10% haze. However, the study sites fall under 4 landsat scenes (129/58, 128/58, 128/59, 129/59). There is both haze and clouds across the sites, although it is probably sufficiently limited for a good classification. The company implies that they also use SPOT imagery from 2016/2017 (Section 1.5) and states that they used UAV imagery from 2014 (Section 1.5, Section 6.3) to fill these cloudy areas, but it is not clear exactly how this was done. The Toolkit requires 10 m imagery unless it is not available; there is no statement of availability of higher resolution imagery such as Sentinel-2. The company used Sentinel 2A imagery. Although some of the bands have 10 m resolution, the company used bands 11, 8A, and 5 - which all have resolution of 20 m - to do the classification. The report states that the collection dates were 17 March 2017 (Table in Section 1.5), but the image name indicates that the collection date was actually March 17 2020 and that the tile was located in West Kalimantan / Ketapang (L1C_T49MDT_A024725_20200317T030728). The reviewers were not provided with the imagery (the link to the “Citra, dengan resolusi yang cukup” only

includes a .tfw file), there are no figures with the imagery, and there is no statement about clouds or haze in the imagery.

Reviewers Recommendation:

- 1) In the report, provide a full list of Landsat imagery used in the classification, with correct dates and path/rows.
- 2) Clarify how the aerial and SPOT imagery was used.
- 3) Explain why higher resolution imagery (e.g., Sentinel-2) was not used for the classification.

1) In the report, provide a full list of Sentinel imagery used in the classification, with correct dates and path/rows, and a description of the image quality (cloud/haze) within the AOI.

Company’s Response: Daftar lengkap citra sentinel sudah tersedia pada tabel 1. Sumber data yang digunakan

2) Provide reviewers with imagery (raster data) used to undertake classification.

Company’s Response: Data Citra sudah tersedia pada Lampiran 11.1

3) Justify why the 20-meter bands (rather than the 10-meter bands) were used for the classification.

Company’s Response: Telah di jelaskan pada bab 6.3 "Pada proses Layerstacking, hal yang pertama yang harus dimasukkan adalah citra yang memiliki resolusi spasial paling tinggi yaitu saluran kanal 2, 3, 5, 8a, dan 11. Kanal yang digunakan untuk mendapatkan mendapatkan pseudo-natural colour yaitu kanal 11, kanal 8A dan kanal 5."

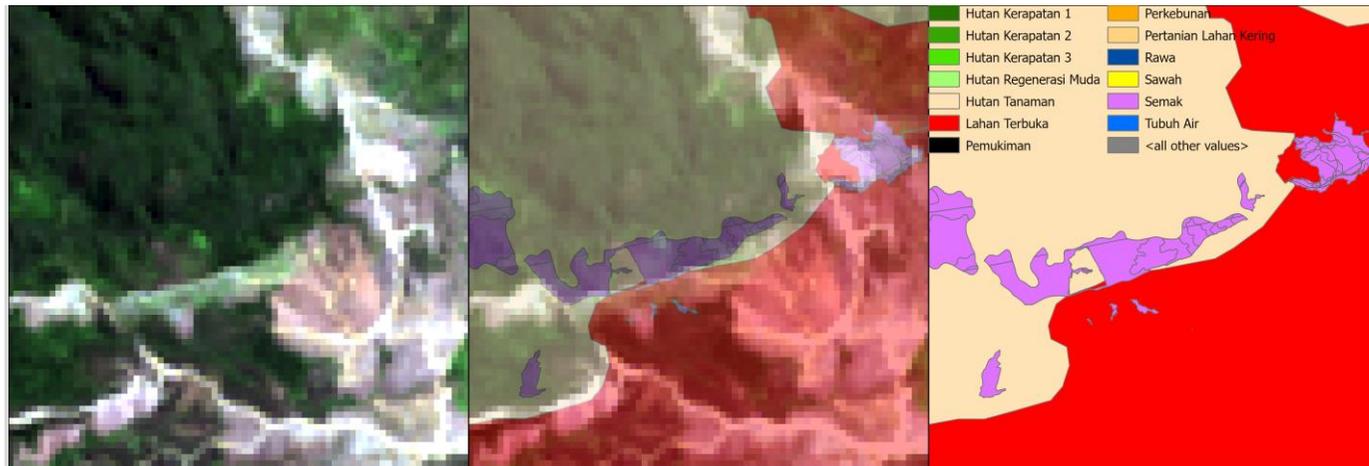
4.3. Please do a quality check using the images provided in 6.3. Was the initial vegetation classification done properly? Do the land cover areas in the tables in Section 6 look reasonable? Are there any obvious errors in classification?

The HCSA Toolkit provides more information regarding the expected quality of the image analysis.

Finding: The imagery was hand-digitized rather than classified via supervised learning approaches (as stated in Section 6.4) - this is apparent because supervised learning applied to pixels would not produce such large blocks of contiguous land cover. Although there is substantial macro coherence between the land cover classes observed in satellite imagery provided by the company and the maps (Figures 5-9 in the report), when zooming in there are major discrepancies apparent from both SPOT and Landsat imagery provided by the company. Two of these are pasted below; there are clear instances where HCS forest classes are mapped as non-forest, and vice versa. Moreover, the accuracy assessment described in the text (Section 6.4) does not align with the accuracy statistics presented in Table 3 (the text states that accuracy was around 71%, while the table reports that overall accuracy was over 90%). The company did not provide their initial classification outputs or accuracy assessment data points to the reviewers, so an assessment of these

datasets could not be undertaken during review. In Table 4 (Section 6.6) the land cover classes are not equivalent to those reported in Figure 11 (initial vegetation class map). For instance, belukar tua is prevalent but this class is not included in the table (presumably, it is equivalent to the hutan regenerasi muda class in the table?). Finally, the table does not report the overall land cover in the AOI but just the land cover in prospective development areas, which are quite small (<4,000 ha) relative to the broader study area. This is not clearly noted on the table caption.





The imagery was classified via an object-based approach. According to the report, the classifier used bands 11 (Short wave infrared 1610 nm), 8A (visible and near infrared 865 nm), and 5 (visible and near infrared 705 nm). It is not clear exactly how the model was initially trained (did someone visually identify areas based on visual interpretation?). While reviewers were provided with a shapefile of the classification within the study area, the larger AOI was missing a necessary part (the .shp file), so was not useable to view the result of classification (TUPLAH_TK_LANSKAP). Moreover, the robustness of the classification within the TK areas cannot be assessed without access to the underlying satellite data (see Section 4.2).

Reviewers Recommendation:

- 1) Revise the description of the initial image classification and accuracy assessment so that there is consistency between the actual approach taken and the written description, as well as between different parts of the document.
- 2) Revise the classification so that the classification accurately represents land cover within the AOI (ideally for a smaller AOI - see recommendation above).
- 3) Ensure that the land cover classes reported in the tables, text, and figures use the same names (e.g., if HRM is equivalent to Belukar Tua, then the map should report HRM - an official HCS class - rather than belukar tua).
- 4) Clearly note which areas each analysis covers (e.g., Table 4 is just TK areas).

1) Provide the shapefile with the full AOI classification.

Company's Response: Sudah tersedia pada lampiran 14.3

- 2) Explain how samples for classification were selected, the classifier used (e.g., was it a nearest neighbour approach?), and how the person undertaking the classification interpreted land cover from satellite imagery.

Company's Response: Telah di jelaskan pada bab 6.4 "Tutupan tersebut selanjutnya selanjutnya dilakukan pengecekan lapangan (Groundtruthing) pada saat penilaian penuh. Penentuan jumlah titik sampling menggunakan winrock calculator sebanyak 121 titik. Penempatan titik sampling dengan menggunakan lintasan transek yang terdiri dari 3 sampai 5 plot. Tahap kedua adalah mengelaskan kembali untuk kelas hutan sekunder dan Belukar menjadi kelas tutupan lahan SKT (Hutan kerapatan Tinggi, Hutan kerapatan sedang, hutan kerapatan rendah dan hutan regenerasi muda). "

5. Forest Inventory (4 hours)

5.1. Please review Sections 7.1 and 7.2 of the Summary Report. Were the sample plots selected, set up, and measured properly? Please check the inventory plot layout for adequacy.

The HCSA Toolkit describes the expected quality of the forest inventory process.

Finding: The company sampled ~120 field plots, distributed using a random stratified approach based on land cover proportion. They ran transects with distance between plots of 100 m. Plots were circular with nested 100 m² and 500 m² plots sampled, following suggested HCS methodological approach. Samples were collected in every concession except TELE, which appears to have the smallest area allocated to the TK development, but substantial potential HCS forest. Yet, in Table 6 (HK3) the company writes: "Dipterocarp species such as meranti (Shorea sp.) are abundant in this area with a diameter of >30 cm, especially in the Tele Sector of PT TPL." It is not clear how they could know this given that they didn't sample in this area. The company sampled 101 field plots, distributed using a random stratified approach based on land cover proportion. They ran transects with distance between plots of 100 m. Plots were circular with nested 100 m² and 500 m² plots sampled, following suggested HCS methodological approach. Samples were collected in every concession except TELE, which appears to have the smallest area allocated to the TK development, but substantial potential HCS forest. This could result in inaccuracies if the HCS forests in TELE have different properties than the HCS forests in other areas. Yet, in Table 11 the company writes: "Jenis dipterocarpaceae seperti meranti (Shorea sp.) banyak terdapat di areal ini dengan diameter >30 cm terutama di Sektor Tele PT TPL." It is not clear how they could know this given that they didn't sample in this area.

Reviewers Recommendation:

- 1) Check for the accuracy of the narrative statements and edit the report to address these inaccuracies.
- 2) Justify not sampling in TELE.
 - 1) Review Table 11 for accuracy (how did the company know that there were many trees >30 cm DBH in TELE if they collected no samples there?)

Company's Response: Pada tabel 15 deskripsi dan kondisi fisik udah di update

5.2. Please review Section 7.3 of the Summary Report. Was the forest inventory team qualified?

The HCSA Toolkit describes the expected qualifications of the forestry team.

Finding: The team has clear qualifications in GIS and field sampling. However, the qualifications for individuals who led tree identification efforts are less clear. The toolkit requires a botanist: “Core role is identification of tree species in plots. Must be able to identify the majority of trees to species level and less common species to genus level” but it is not clear who on the team served in this role. The team roles and specialities are clear.

Reviewers Recommendation:

1) Clearly state which team member(s) carried out the vegetation identification, and list their qualifications to do so (e.g., training and/or experience doing vegetation IDs in similar Sumatra ecosystems). None.

5.3. Please review Section 7.4 of the Summary Report. Was the allometric chosen adequate?

The HCSA Toolkit provides more guidance on choosing an allometric equation.

Finding: The company selected an equation presented by Ketterings et al. 2001, which uses tree DBH and average site wood density to calculate tree biomass and which was calibrated for mixed secondary forests in Sepunggur, Sumatra, Indonesia with DBH ranging from 8-48 cm. The original article states that this equation is suitable for use in secondary forests in Sumatra. Because this HCS study is also located in Sumatra in a mixed landscape with secondary forest, it seems reasonable to use this equation for this HCS study.

Reviewers Recommendation: None.

5.4. Please review Sections 7.5, 7.6, 7.7 and 7.8 of the Summary Report, and do a cursory review of the forestry data and statistical analysis. Are there any obvious errors in the raw forestry data? Are there any flags where a result does not seem consistent with your rough interpretation of the land cover image? Do the final carbon classes seem accurate given what is known about other forests in the region?

The HCSA Toolkit provides more guidance on what statistical analysis should be used.

Finding: Reviewers were not provided with raw inventory data, so cannot check the accuracy of company summaries related to species composition. Table 5 presents carbon stocks in each stratified vegetation class. HK3 is reported to have an average of 345.2 tonnes of carbon per hectare, and extremely high carbon stock for the region, greater than most reported for instance in Laumonier, Yves, et al. “Landscape-scale variation in the structure and biomass of the hill dipterocarp forest of Sumatra: Implications for carbon stock assessments.” *Forest ecology and management* 259.3 (2010): 505-513. Calculations align with reviewer checks except for the open land class which should have a mean carbon stock of 2 tonnes/ha. It appears that plots were classified

based on carbon stocks alone based on the fact that there is no overlap in per hectare carbon stocks in multiple classes. In general, the imagery aligned with the classification of a given point (e.g., lands that appeared to be forested were classified as HK 1, 2, or 3). Table 11 presents carbon stocks in each stratified vegetation class, but they seem to be incorrect (e.g., high density forest is 52.75 tonnes of carbon per hectare, while semak is 970 tonnes of carbon per hectare). Yet, Table 12 has the correct values. Notably, plots were classified based on carbon stocks alone, rather than any other metric of intactness such that many plots that were initially classified as HCS forest were reclassified as non-HCS forest (55 plots were originally classified as HDF, MDF, or LDF but the final classification indicated just 7 plots in these classes). This led to concordance between carbon stock values reported by the company and carbon stock values for these classes in the region. No land cover image was available, so an evaluation of the against the land cover image was not possible.

Reviewers Recommendation:

- 1) For transparency, please provide the raw plot data (i.e. with each tree included) to reviewers.
- 2) Update the Lahan Terbuka carbon stock to align with data inputs.
- 3) Check HK3 calculations and explain why carbon stocks for this class are so high.
 - 1) Please provide the land cover image so that the plots can be compared with the image.

Company's Response: Sudah tersedia pada gambar 13

- 2) Update Table 11 for accuracy (or remove it since the information is contained in table 12).

Company's Response: Pada tabel 15 deskripsi dan kondisi fisik udah di update

6. Land use planning (6 hours with Image Analysis above)

- 6.1. Please review Section 8.1 of the Summary Report. Was the initial vegetation classification map adequately calibrated and adjusted to take into account forest inventory results?

The HCSA Toolkit provides more guidance on how to incorporate the forest inventory results into the land cover map.

Finding: Based on the large map extent (>100 km N-S and E-W extent) and very small area of land that was surveyed and for which land cover classification was updated, it is impossible to assess whether the vegetation map was adequately adjusted after the forest inventory. It is clear that the company only adjusted land cover within areas that were within the "Areal Kajian TK PT TPL" (study area) but since an initial land classification map was not provided to reviewers, a before-after assessment within these areas was not possible. Moreover, the company does not describe whether and how the maps were adjusted; they simply state that there were differences between initial land cover analysis and field conditions. Initial and final vegetation classification calibration and methods are presented in Section 6.3 and 6.4. It was not fully clear how the map was calibrated based on the methods presented in the

report, which does not mention field inventory in these sections. Examination of the shapefile provided indicates that all “belukar” (shrub) was reclassified as young regenerating forest, and all “hutan sekunder” (secondary forest) was broken into HCS classes (HDF, MDF, LDF). Based on the accuracy assessment, the final map does accurately reflect the forest inventory points + some additional points selected from Google Earth imagery.

Reviewers Recommendation:

- 1) Clearly describe how field inventory findings were incorporated into the map to produce the final land cover map.
- 2) Provide the reviewers with the initial land cover map so that a comparison can be made within the TK study area.
 - 1) In the report, clearly describe how field inventory findings were incorporated into the vegetation map to produce the final map. In other words, how did the company retrain the model with the additional information from the field inventory, or how did they alter the maps based on specific locations visited during the field assessment - did they take a manual/visual approach?

Company’s Response: Penjelasan tersebut sudah di tambahkan pada bab 6.4 "Interpretasi citra dilakukan dalam dua tahap, yaitu tahap pertama adalah membuat beberapa kelas tutupan lahan awal, yaitu hutan sekunder, belukar, semak belukar, lahan terbuka, lahan terbungun, sawah, badan air dan Hutan tanaman (SNI 7646,2010). Tutupan tersebut selanjutnya selanjutnya dilakukan pengecekan lapangan (Groundtruthing) pada saat penilaian penuh. Penentuan jumlah titik sampling menggunakan winrock calculator sebanyak 121 titik. Penempatan titik sampling dengan menggunakan lintasan transek yang terdiri dari 3 sampai 5 plot. Tahap kedua adalah mengelaskan kembali untuk kelas hutan sekunder dan Belukar menjadi kelas tutupan lahan SKT (Hutan kerapatan Tinggi, Hutan kerapatan sedang, hutan kerapatan rendah dan hutan regenerasi muda). "

6.2. Please review Section 9 of the Summary Report. Was participatory mapping data used in step one to identify community lands that should be enclaved? Were patches merged correctly? Was the core area correctly identified? Was the connectivity analysis done correctly?

The HCSA Toolkit explain how to merge patches and identify the core area.

Finding: The reviewers were not provided with the participatory mapping data (the shapefile provided simply delineates HCS land covers, even though it is labelled “Community_Landuse_TK”). Neither the description in Section 9 nor the decision tree shapefiles indicated any use of participatory mapping data in application of the decision tree. Merging appears to be correct based on shapefiles provided. Based on a spot check, it seems that the company included all the HCS land covers including YRF into the HCV layer, so although they provided many of the decision tree steps in their shapefiles, they did not actually apply the decision tree beyond step 1 - all HCS forest was classified as indicative conserve. The HCV identification and HCS identification processes were envisioned as separate streams of information that would be combined in the decision tree. Including all HCS forest classes into the HCV areas prior to applying the decision tree suggests that the HCV procedure incorporated information from the HCS assessment to identify HCVs. It is beyond the scope of this review to comment on whether this is an appropriate approach. The report contains no description of the decision tree analysis, just a table of the

results (Table 13). Even though the company provided maps produced by the community during a participatory mapping exercise, these are not georeferenced and therefore it is unclear how they could be incorporated into the decision tree. Moreover, neither the description in Section 9 nor the decision tree shapefiles indicated any use of participatory mapping data in application of the decision tree. Step 4, connection between high priority patches, was done incorrectly - the company drew a 200 meter boundary around the high priority patches, when in fact they should have drawn 100 meter buffers around all patches to determine connectivity *between* high priority patches (including multiple stepping stone patches between the HP patches). However, it is not clear whether this affects the overall outcome of the patch analysis (i.e., designation of indicative conserve patches).

Reviewers Recommendation:

- 1) Provide the participatory mapping data to reviewers and describe how these data were used in the decision tree.
- 2) In Section 4 (Penilaian Nilai Konservasi Tinggi) describe how the HCS data were used to identify HCV areas.
 - 1) Provide the participatory mapping data (in geospatial format, such as a shapefile) to reviewers and include these in the decision tree.

Company’s Response: Peta PM sudah ditambahkan dalam laporan dan Link data shp sudah di lampirkan pada lampiran 14.4

- 2) Update the patch analysis to correct Step 4

Company’s Response: Pada langkah 4 ini, pada toolkit modul 5 halaman 25 dan 28 di jelaskan untuk mendapatkan keterhubungan dengan hutan kerapatan tinggi, menggunakan buffer 200 m

6.3. Please review Section 9 of the Summary Report, and select a few sample patches to test that the Decision Tree was used correctly. Were the patches correctly identified as High, Medium, or Low Priority? Was the Patch Analysis done according to the HCS Approach Decision Tree?

The HCSA Toolkit explains how to prioritize patches and go through the Decision Tree.

Finding: See comments above. The company did not do an RBA in low priority patches (which is required in the case of low forest cover landscapes unless the company did an integrated HCV/HCS approach, which was not the case for this assessment), stating that “Pra-RBA dan RBA check tidak dilakukan pada kajian ini karena sudah dilakukan kajian Nilai Konservasi Tinggi (NKT).” (*Pre RBA and RBA checks were not done in this study because an HCV assessment was already done*). Yet, some of the areas that were indicative develop according to the HCS approach did not fall under areas identified as HCV. Given that the HCV assessment was judged satisfactory by HCVRN ALS, it is unlikely yet possible that these indicative develop areas contain conservation values not captured via the HCV assessment.

Reviewers Recommendation: None. 1) Consider conducting an RBA in low priority indicative develop patches that are outside of HCV areas, according to the guidance provided in the Toolkit.

Company's Response: Penjelasan tersebut sudah di tambahkan pada bab 8.2 "Akan tetapi, untuk prinsip kehati hatian, sebelum areal tersebut dikembangkan, perusahaan disarankan untuk melakukan RBA check kembali untuk patch prioritas rendah."

6.4. Please review Sections 10.1 and 10.2 of the Summary Report. Were the final integrated conservation and land use planning steps completed to maximize the ecological and social viability of the conservation areas (HCV, HCS, peatland, riparian zones, customary forest, etc)? Were the results of the final ground verification (if any) adequately incorporated into the land use plan and final HCS map?

Finding: In figure 23 (Peta Areal SKT Final) it appears that peatlands and riparian buffers have been incorporated into the final ICLUP, although the figure too low resolution to confirm this. However, in the shapefile provided to the reviewer ("13_Finalising_the_proposed_ICLUP") neither peatlands nor riparian buffers are included. Thus, it is not clear whether the final ICLUP includes these areas or not. The final ground verification has not been completed. The integrated conservation and land use planning steps still need to be undertaken, including development and implementation of management plans in consultation with local community members. The list of management and monitoring activities is sound, except that it does not make clear that the community will be involved in the final determination of lands designated as conservation areas (bullet point #1 in this section). Spatial information on peatlands and riparian buffers have been incorporated into the final ICLUP, but community lands are not in the final map. The final ground verification has not been completed. The integrated conservation and land use planning steps still need to be undertaken, including development and implementation of management plans in consultation with local community members. The list of management and monitoring activities is sound, except that it does not make clear that the community will be involved in the final determination of lands designated as conservation areas but simply "informed" ("Areal yang teridentifikasi sebagai NKT dan SKT untuk dikeluarkan dari rencana pengembangan lahan, tetapkan areal tersebut menjadi areal konservasi dan diinformasikan kepada para stakeholder terkait."). Because the final indicative map covers such a large area, it is impossible to discern different land designations within the project areas from the summary report. It would be better to provide a series of several maps "zoomed in" to various project areas. I don't think it is useful to include the 5 km buffer areas since these are not part of the final project activities. Such maps would support project transparency.

Reviewers Recommendation:

- 1) Clarify what spatial layers are included in the ICLUP spatial footprint in the text and provide the final ICLUP shapefile to reviewers.
- 2) Since the focus of this HCS assessment is the TK areas, update the report to include maps of all TK areas with sufficient spatial resolution to understand which lands have been designated as conservation versus development of TK.

3) Modify section 9.5 to acknowledge the important role of the community in determining the finalized ICLUP/conservation lands.

1) Since the focus of this HCS assessment is the TK areas, update the report to include maps of all TK areas with sufficient spatial resolution to understand which lands have been designated as conservation versus development of TK.

Company's Response: Peta ICLUP sudah di bagi menjadi peta persektor untuk memberikan informasi yang lebih jelas

2) Modify section 9.1 to acknowledge the important role of the community in determining the finalized ICLUP/conservation lands.

Company's Response: Penjelasan sudah di tambahkan pada bagian 9.1 "2. Menejemen PT TPL bersama desa sekitar perlu melakukan penataan batas kawasan NKT dan SKT yang sudah diidentifikasi dan bersama-sama menyusun MOU untuk pengelolaan dan pemantauan untuk melindungi kawasan NKT-SKT secara bersama."