

HCSA Peer Review Report
Eagle High Plantations (EHP) – PT. Varia Mitra Andalan (VMA)

Background information:

- a) Did a Registered Practitioner Organization lead the HCS assessment? If not, has the organization which led the assessment started the process of registration?
Yes, Aksenta led the HCS assessment and is a Registered Practitioner.
 - b) Was the HCS Team Leader a Registered Practitioner?
Yes, Bias Berlio Pradyatma is the HCS team leader and a registered practitioner.
 - c) Were at least 2 HCS team members Registered Practitioners?
Yes, Bias Berlio Pradyatma and Resit Sozer are both registered practitioners.
 - d) Was the HCV assessment judged 'satisfactory' (highest rating) by the HCV Resource Network (HCVRN) Assessor Licensing Scheme (ALS)? (See <https://www.hcvnetwork.org/als/public-summaries>).
HCV study conducted in September 2012, prior to ALS establishment.
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Questions for peer reviewers (Peer Review Panel: Jules Crawshaw, Gabriel Eickhoff)

1. Peer Review Summary

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

Finding: The summary report is extremely brief and lacking in adequate detail to give a reviewer confidence that the underlying assessments have been undertaken properly.

The HCV report has serious flaws to the logic of the HCV assessment. Much of the necessary information is lacking or missing (especially the maps).

The HCS assessment requires many changes to the technical details and clarifications which are described in the recommendations below.

Reviewer Recommendation:

1. Review the Summary report and ensure sufficient information is provided to enable a reviewer to have confidence that the underlying assessments were undertaken correctly
2. Review the HCV report against the HCV toolkit and ensuring the justifications are clear and follow the toolkit's guidance. All the necessary maps must be inserted.
3. The following improvements should be made to HCS:
 - land cover mapping has to be done around the border of the concession (or evidence provided that this was done).
 - areas of cloud cover within the current image have to be cut out and replaced with cloud free sections of other available images.
 - the land cover mapping has been redone and ground-truthed (with clear labelling of the processes that have been undertaken). A shapefile of the land cover map has to be provided to the reviewers.

4. Describe how the inventory plot locations were determined. Also, a reasonable number of plots (e.g. 5 or more for each class) need to be selected so that statistics can be done on the data. Where there are variations in methodology from the toolkit these needs to be justified.
5. Provide more information about the skills / experiences of the team members – matching against the skill sets for the HCS.
6. All allometric equations used must be stated (including the formulae).
7. Raw data needs to be presented and subsequent calculations should be clearly presented. The method and reasoning for differentiation into HCS classes needs to be clearly presented.
8. The vegetation classification map needs to be adjusted based on inventory results according to the HCS Approach Toolkit.
9. The patch classification needs to be redone with careful reference to the decision tree. Rationale for the design of the conservation areas needs to be clearly explained.

After the final review, it is acknowledged that a lot of work has gone into improving this assessment. There are still improvements required, but the output seems reasonable.

The major area of concern is the HCV report. The reviewer rejects the statement that “conducted in 2013 according to the previous HCV Assessment toolkit”, as many of the justifications did not follow the national interpretation. Furthermore, inadequate information was provided for a reviewer to check the HCV assessment (e.g. lack of a landcover map). One would expect the result of the HCV assessment to be similar to that of the HCS. However, the 2 assessments give completely different results. This makes the reviewer very suspicious. It is recommended that a HCV assessment is repeated, focussing on the areas that are earmarked for development by HCS.

Company response: We will do another HCV assessment in 2018.

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

Finding: Yes. The team was made up of 4 people with an appropriate set of skills amongst them to undertake a HCS assessment and report.

Reviewer Recommendation: No recommendations.

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?

Finding: Referring purely to the Summary report which consists of a map and short explanation only. There is insufficient information provided about the methods used to derive the plan for a reviewer to confirm whether the process has been completed satisfactorily.

The following statement is made – *“Final ground verification and conservation area delineation have not been undertaken yet. This activity should also involve the community and local government to reconfirm that the land use plan is appropriate and to acknowledge them about the further management plan. This process should be undertaken with GPS guidance to delineate the boundaries on the ground.”* It makes sense that the plan is signed off at this stage before any on the ground delineation is done as one would not want to have to go and change the boundaries retrospectively.

Reviewer Recommendation:

The only glaring error in the final plan is that the river buffers (HCV area) are earmarked for development. Other than this the plan seems reasonable.

2. *Social Issues*

- 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: The Summary report mentions that these processes were carried out and the results of it were 2 of the 12 clans rejected the development and the remaining 10 clans accepted it.

Reviewer Recommendation: The summary is too brief; merely saying these processes were carried out is not sufficient. There needs to be some description of the methods undertaken to ensure these processes were completed properly.

Please label the maps (e.g. Fig1....) so they can be referred to. Also, please use a single language (e.g. the legend in the map in section 3.1 has one label as “Permukiman” and the second as “Garden Land”). Also, please make a note on the map of the data sources e.g. the clan boundary data, is this derived from participatory mapping? Or from a government data set?

After the final review, a very brief summary has been provided. Although the reviewer can understand the main steps, it appears that a reasonable FPIC process has been followed. What would be good to understand is whether the garden areas meet the criteria of ½ ha per person. Also, how are the clans organised to ensure that the people signing off on the development of these areas do actually have the authority to do so.

Company response: We will redo the FPIC process starting in January 2018.

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

Finding: There is no mention of any tenure study. However, the reviewer's understanding of land tenure in Papua is that land is jointly owned by all members of a clan. A clan boundary map is provided which would probably provide the basis of a tenure study.

Reviewer Recommendation: Provide a description of land ownership in the area; which may enable the clan boundaries to be used as land tenure boundaries. A description of the methods used for mapping these boundaries is required. All this should be vetted by independent social experts.

After the final review, there is no mention in the summary report of any wars to gain land. However, the summary report describes mapping the boundaries between neighbouring clans, where the neighbours walk the boundary and sign off on the coordinates. This appears a reasonable process.

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. What is called a land use map is just a map of the clan boundaries – the reviewer does not consider this a land use map. One would expect to see things like agro-forestry, gardens and settlements on a land use map.

Mapping of garden lands is provided in section 3.1 but this is **not** based on the criteria of 0.5 ha / person, rather a 300m boundary around all settlements.

Reviewer Recommendation:

After the final review, it is rather a strange company response below where first sentence states “community garden lands are located around the settlements within radius of 300 m distance from the village” and then “Land cultivation and/or shifting cultivation is not occur in the study area”. This seems rather contradictory.

“Company Response: According to the interview and field survey, community garden lands are located around the settlements within radius of 300 m distance from the village. Community interaction to the other areas include hunting and collecting other forest product. Land cultivation and/or shifting cultivation has not occur in the study area. Therefore, criteria of 0.5 ha/person is not relevant for the condition of the communities in this assessment.”

Fig 5 in the summary report would be improved by mapping out all the land that is not for development, whether it is garden land or hunting areas or some other use. Also provide a table of area by clan with area for development and area reserved from development.

Company response: We will the community garden lands starting in January 2018.

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: In the section “Details of meetings and findings”, a dropbox link is given which opens to an AMDAL of the area. The reviewer looked at the table of contents and nothing on it appeared to address consultation with the affected communities. The reviewer believes the link may be incorrect.

After the final review, it appears the clan chief was the community representative. Two of the clans rejected development. It appears their desires were respected. No documentation has been made of issues / concerns raised by the communities.

Reviewers Recommendation: Provide a link to the correct documents.

Company response: We will redo the FPIC process & documentation starting January 2018.

- 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: See 2.4

Reviewer Recommendation:

Revision has been made in the summary report. Two of the clans rejected development and this was respected.

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

Finding: See 2.4

Reviewer Recommendation: Revision has been made in the summary report. The process that is described seems reasonable – although it is so terse that the reviewer cannot really provide any recommendations as one has to look into the detail of such processes.

3. *Ecological and Conservation Values*

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

Finding: The summary provided in section 4.1 is 3 lines long and mentions that all HCVs were present and the total HCV area.

Reviewer Recommendation: The reviewer considers this too brief. The reviewer would expect to see a description of:

- The current land cover and map
- the location of the community in the area
- Each of the HCVs that are present and a brief justification of each HCVs presence and a map of the area
- A HCV synthesis map

None of the above recommendations have been followed in the summary report. There is just an HCV area map – this does not show what HCVs are present within the areas marked as HCV area. Furthermore, the areas that have no information (white areas), the reviewer has no information to determine why HCVs are absent in these areas.

Company response: We will do another HCV study in 2018.

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?

Finding: The HCV report pre-dates the ALS therefore it is not written in the format required by the ALS. In chapter 4 there is a section on “General Conditions”; these cover:

- Licenses and the company’s development plan
- Administration and accessibility
- Spatial Plan designations (RTRWP and TGHK)
- RePPPProT land systems
- Soil Types
- Topography
- Climate
- Land cover
- Social and Culture
- Religion

This is all good background. Many of the maps are missing from the report. Of particular concern is the land cover map is missing.

The sections on the landscape and national or regional context are supposed to give the reviewer an idea about what is happening in the assessment landscape (i.e. a zoom out) so that one can assess whether the whole area is being developed for oil palm or is this a single isolated concession. Then again the regional context should zoom out again to the whole of Papua and give the reviewer an idea of how this development fits into the province’s development goals and how it is balancing development and conservation on the provincial level but also the landscape level.

Methods are presented in Chapter 3. A series of flow charts are used which show how data is gathered and processed to determine what is HCV. Secondary data sources are mentioned which are relevant include:

- The physical area
- Biodiversity
- Social, economy and culture
- Environmental services (although this is copy paste of the physical area)

There is a description of how this data is used to prepare for the assessment. Also, description of the public consultation and peer review.

HCV1.1 – this consists of river buffers, Conservation Areas and springs. Some crucial maps are missing especially 5-49 which maps the locations of HCV1.1.

HCV1.2 – reference is made to a number of survey places but no maps are provided. No checklist of species is provided and species that are seen or mentioned in village interviews ticked off so that a comparison can be made about the potentially present species and actually present species. A list of areas of HCV 1.2 is provided which appears exactly the same as HCV1.1. This does not make sense as this is only river buffer areas, however the reviewer requires a land cover map and an HCV1.2 map to make a proper review.

HCV1.3 – only the species that were seen that met HCV1.3 criteria were noted. There was no comparison with checklists of potentially present species. Once again, no map of HCV1.3 was provided and a list of areas appears exactly the same as 1.2.

HCV1.4 – a number of eagles and crocodiles use this area for migration and nesting. The HCV1.4 map is missing.

HCV2.1 – No land cover maps of the area around the concession are provided and the analysis does not make sense, It should refer to large contiguous forests that are present / absent within and around the concession but it does not.

HCV2.2- there are no ecotones present in the area. However, the reviewer believes an ecotone may be present between karst and mineral soil.

HCV2.3 – uses top predators (crocodiles and eagles) as a proxy for the presence of HCV 2.3. One would expect to see a large area mapped however there are only river buffers from HCV1.

HCV 3 – the crucial maps 4.5 and 4.6 are missing from the report. The description then refers to the *Schwaner Mountains* which are in Central Kalimantan. Now the reviewer is completely confused and gave up reviewing HCV 3.

HCV4.1 – the justification appears reasonable based on relevant laws. However, the justification for Sungai Waromge mentions a buffer of 500 m, whereas table 5.11 has a 250m buffer.

Reviewer Recommendation:

- Add sections on the landscape and national or regional context to the report.
- Add the maps that are missing in Chapter 4 to the report.

- Reference the checklists of species that are compiled for the biodiversity teams
- Fix copy paste error in environmental services
- Add a time line especially mention the time spent in the field
- Map biodiversity sampling points and provide an explanation for their selection.
- Add the HCV1.1 map (5-49)
- Provide a land cover map
- Provide an HCV1.2 map (5-52)
- Provide an HCV1.3 map (5-57)
- Provide an HCV1.4 map (5-57)
- Provide a landcover map of the area surrounding the concession and revisit the HCV2.1 analysis.
- Provide a map of karst and mineral soil and provide a justification for this not being considered an ecotone.
- Provide an HCV2.3 map (5-60)
- Map the ecosystems mentioned in HCV 3 analysis along with current and previous forest cover. Show the areas of forest that will likely be lost due to logging activities in the future. The whole of HCV 3 needs to be reviewed and explain why they refer to regions in Kalimantan.
- HCV 4.1 correct the buffer for Sungai Waromge. Insert 5.69 and 5.69 and map the karst areas on these maps.
- HCV4,2 Insert 5.70
- HCV 5 – tables 5.16 – 5.29 document resource use and have many numbers in the table – but there is no explanation of what the numbers mean. Insert a legend to describe resource use. A village map needs to be inserted which shows village boundaries also. Needs map 5.77 inserted.
- Insert map 5.79.

After the final review, the only thing that has been done to the HCV report is that the maps have been added. However, there is no landcover map, which would be used to verify the presence of a lot of the HCVs. Without this the reviewer, very much questions why almost all the HCVs are constrained to narrow river buffers. These are kilometers long and intuitively don't make sense for the justifying

the presence of many HCVs. In reality, the justifications for HCV need to be strengthened significantly. It is the opinion of the reviewer that the locations of the HCVs will have to be remapped (especially with reference to fig 11 in the summary report – there is a lot of lowland forest that is not assessed as HCV – this seems very strange). However, not enough information is provided in the HCV report to state this with conviction.

Company response: We will redo the HCV study.

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?

Finding:

The description seems to have an error “The rest of the medium priority without connectivity were also set for conservation because the land cover is forest (LDF, MDF and HDF).” Medium priority patches without connectivity require a risk assessment at step 7 irrespective of forest type.

Reviewer Recommendation:

It is stated that “Most of the Low Priority Patches (208.2 ha) are indicative to develop because of the forest landscape cover of the South Sorong Regency is > 30%, the rest are sets as High Priority because of it provide connectivity between two or more High Priority Patches and connected to High Priority Patch.” This appears to be a correct application of the toolkit.

Also “According to the connectivity analysis, the Medium Priority Patches area connected to High Priority Patch and considered as High Priority” these do not require RBA.

So, in this instance no RBAs were required.

- 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: There is no mention of forests and PA outside the concession. There is no mention of any specific M&M activities.

Reviewer Recommendation:

A list of management and monitoring activities is provided – the list seems reasonable. However, there is no mention of application of these activities to forest & protected areas outside the concession nor is there any information provided about forest & protected areas outside the concession.

Forest & protected areas outside the concession needs to be mapped and these M&M activities should be expanded to include these areas, where appropriate.

4. Image Analysis

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

Finding:

The report stipulates that the AOI is the strict concession area and that no buffer around is considered because the status of the land around is forest. First, the HSCA Toolkit advises that the Area of Interest (AOI) to be mapped must include the concession and also the broader landscape adjacent to the concession. Secondly the status of the land may be forest but the land cover may be not. What matters is the land cover found at the edge of the concession to assess the connectivity of HCS patches.

The AOI identification is not correct and the justification given confuses land status with land cover.

The presentation of the various land areas identified through the FPIC process is confusing as some garden lands are included in the clan's set-aside area as well. This overlap makes it difficult to understand how much total clan area has been assigned.

The total area of land that is set aside from plantation development is not provided.

Shapefile of the HCS (that overlay landcover with HCV and clan's land) is not provided thus the provided numbers for the various land cover classes cannot be checked.

Reviewer Recommendation:

AOI should be reconsidered.

The description of the clan's area and garden could indicate the total area or be outlined in a table.

The second paragraph that indicates the various area for each land cover classes should be moved alongside the table found in 6.6

Company response: We will reconsider the AOI.

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

Finding: The base image used for the initial classification is quite cloudy with 10% of clouds. The HCSA Toolkit advises to use an image with less than 5% cloud cover. Additionally, a cloud free image has but procured but it is not clear how this new image was used and how it improved the analysis as the report says that the initial classification still uses the quite cloud covered image from Dec.2015.

The following sentence is not informative enough on what has been conducted: “So that, there is additional satellite imagery (February, 2016) were used to verify the cloud cover of the previous image”.

The cloudy image is not suitable to be the basis of the initial classification.

Reviewer Recommendation:

The use of the new procured image must be more explicitly described.

The cloud-free image has to be used as the basis for the classification work from the start.

- 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?

Finding:

No image correction was conducted, while HCSA Toolkit recommends to pre-process the image with radiometric correction for example. The initial land cover unsupervised classification uses the cloudy image from Dec.2015. As stated above, this image is too cloudy to be the basis of the analysis.

A refined land cover classification was done with only manual visual interpretation of the image from Feb.2016. Why a fresh new classification has not been conducted on the cloud-free image?

The map displayed in section 6.5 mentions in the source the cloudy image from Dec. while it seems to be produced from the cloud-free image from 2016. If the later assumption is right, why the report says that the cloud-free image was only used to refine the classification with visual interpretation.

The table found section 6.6 is not related to the map shown section 6.5 and outlines HCS classes that may be described in a following section.

The section 6.7 lists the various land cover classes found in the concession after the ground truthing.

It is difficult to follow the workflow and understand which landcover/map was used as the basis for the forest inventory/ground truthing.

The section 6.7 specifies in one sentence that the HCS classes, MDF, LDF and YRF, correspond respectively to lowland secondary forest, limestone forest and old shrub. No explanation is given to justify why such statement is made.

Reviewers Recommendation:

The initial classification must be conducted with a suitable, pre-processed imagery to ensure the quality of the analysis from the start.

The whole workflow, from the initial classification map in section 6.5 to the final land cover map used for the forest inventory, should be more elaborated to understand the steps.

The table in section 6.6 that outlines the area must be linked to the corresponding map and text description. The table could be much understandable by including the areas of HCV and excluded land so that 100% of the concession is covered.

5. Forest Inventory

- 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.

Finding: The Summary Report claims the Carbon Stock Assessment was conducted in 2015; however, the base image for the land cover classification is stated to be a LandSat 8 image from December 2015. If so, it is not possible that the inventory plot locations were based

on the same base image as what was used for the interpretation of the land cover classification. This discrepancy needs to be clarified, including whether there any discrepancies between the classification used to determine land classes for the inventory versus those presented as the outcome of the land cover classification presented in Section 8.

In terms of the plot establishment, summary of the areas per land cover class from the initial land cover classification of the AOI were provided for the HCS classes of Medium Density Forest, Low Density Forest and Young Regenerating Forest. However, the inventory was conducted to determine the C stocks in Forest, Secondary Forest, Old Shrubs, Young Shrubs and Bushes for Limestone Forest and Lowland Forest respectively. No explanation is provided as to how these different land cover classes align. Additionally, the number of plots to be sampled was determined using the Taro Yamane formula and not the HCS Approach recommended formula (see p.56 of the Toolkit). Details on the parameters used in the Taro Yamane formula are not provided to allow the reviewer the opportunity to confirm the accuracy and appropriateness of these calculations. Furthermore, no comparison is provided with the recommended HCS Approach to confirm the suitability of this alternative approach.

The report claims sampling plots were distributed in every land cover type proportionally to the size of the land cover. However, a summary of the calculations is not provided to explain the assumed population size(s) or sample size for each forest class. The tables in Section 7.8 indicate that for some forest classes (i.e. Shrub and Secondary Forest in the Limestone Ecosystem) only a single plot was measured. This is inadequate to be able to calculate means, standard errors, CIs, etc. for the class.

The Summary Report also states that placement of the field plots was done with stratified random sampling in each type of land cover. However, in reviewing the map in Section 7.2, plots seem very close to each other and to roads which would introduce bias. It is therefore questionable whether the placement was truly random and no constraints were used. Furthermore, an overlay of these plots with the initial land cover classification is not provided. With regards to the placement and measurement of plots, the report includes a description that does not allow the reviewer to understand how the plot identification and field measurements were actually conducted. This language is copied here: *“Observation was done in each land cover types, with the initial land cover classification map as guidance in*

the field. This was done so that the results of field measurements can represent the data diversity in each type of land cover. The weakness of this method is that the proportionality of the samples is slightly imbalance.”

Justification on the use of square plots is provided as opposed to the circular plots recommended by the HCSA Approach however details on how these plots were adjusted in the case of sloped areas are not provided.

It should be noted, that the initial land cover classes identified in the map in Section 6.5 (and presumably used to determine the plot locations for the inventory) are not the same as those required by HCS (HDF, MDF, LDF, YRF, etc.). This is not critical at this stage as the later carbon stock assessment can help to differentiate between the identified land cover classes and provide justification for their inclusion into the different HCS classes. However, this could already have happened during the creation of the initial land cover classification to facilitate the later definition of the classes.

Reviewer Recommendation:

Clarification should be provided as to how the classification used to determine the inventory plots was appropriate and consistent with the results of the classification presented of HCS classes. Additionally, the Summary Report should provide a summary of the calculations to determine the number of plots per land cover class and indicate how this links back to the original land cover classification. Without a visual presentation of the plot locations compared to the forest classes identified it is difficult to ascertain whether the stratification of the plots was done appropriately.

An explanation should be provided on how using square plots does not materially affect the calculations on sloped area.

Where deviations from the HCS Approach are taken (i.e. use of formula to calculate minimum number of plots per strata, plot design, etc.) justification should be provided how this does not materially affect the overall results.

Company response: We will review the CSA.

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

Finding: 5 people comprised the field team and details of their specific responsibilities are provided. In the current version of the summary report only limited information on the experience and knowledge base of the team is provided. This makes assessing their suitability for the assignment difficult.

No mention is made as to whether local community members were involved in the process.

Reviewer Recommendation:

Details of each team member's experience, as provided in the first version of this Summary Report, should be included to justify the experience and knowledge of the team selected. Justification should be provided for not involving local communities in the inventory.

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

Finding: The Summary Report provides no actual details of how the carbon stocks were calculated, except for mentioning that a carbon stock to biomass ratio 0.47 was used. The process to select the different allometric equations used and how they were applied is not provided.

Reviewer Recommendation:

Provide a detailed description of the allometry used by forest type, including justification, rather than just a list in the excel file.

- 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?

Finding: While the previous raw data provided preprocessed and aggregated data at the plot level, the current excel file provides only calculations at the plot level without the aggregation. This should be provided to ensure calculations across levels are correct.

Nevertheless, with regards to the data provided, the following was noted:

- The data does not distinguish between the two ecosystems for which results are presented in the Summary Report.
- The raw data does not clarify to which class each plot belongs
- Formulas to calculate AGB are not included (values only) therefore it is not possible to determine whether these calculations were done properly (i.e. whether allometric equations were applied correctly). Furthermore, the current version of the data does not show how BGB was calculated.
- The raw data does not include calculations on any of the statistics provided in the table in section 7.8
- Key additional statistics, as per the HCS Approach toolkit, were not calculated, including an ANOVA test and Scheffé pairwise multiple comparisons test, including a justification for the separation of classes. This has later implications for whether the classes identified in the initial land cover classification can be considered valid.
- The summary report does not outline how the raw data was preprocessed to eliminate outliers or errors
- In cases where the sample size is 1, standard error and CI are indicated as 0 and a mean is provided. These should be respectively shown as N/A as these statistics cannot be calculated from a sample size of 1.
- The results are presented by land cover class but also by ecosystem. They are not provided according to the HCS classes, including justification for the distinction between the classes.

The Summary Report does not explain how the inventory results presented in Section 7.8 and 7.9 translate into the determination of distinct HCS forest carbon classes of HDF, MDF, LDF, YRF, Scrub and Open land. This is necessary in order to subsequently conduct the patch analysis.

Reviewer Recommendation: The full raw data needs to be provided in order to make an assessment of the accuracy of the carbon stock estimates, however the following can be recommended:

- A description of how the data was processed and specific calculations conducted needs to be provided (for e.g., use of allometric equations, how BGB was calculated, etc.).
- The full raw data (with formulas included) should be provided to allow the Reviewer to confirm that the calculations to go from plot level data to carbon stock values was done correctly.
- More detailed statistical analysis needs to be conducted to justify the differentiation between classes and these results presented.
- The data analysis should undergo QA/QC to determine whether there were calculation errors
- Clarification needs to be provided of how the results from the inventory are translated into the HCS forest classes and justification for them being significantly different provided.

Company response: We will review why there is such a significant difference between CSA & land cover.

6. *Land use planning*

- 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?

Finding: The refined land cover map shown in section 8.1 mentions in its source that it is a re-interpretation based on the cloud-free image from Feb.2016 after ground checking.

No explanation is given to understand what was the workflow from the initial map shown in section 6.5 and this map. For instance, in the initial map in section 6.5, shows that the area located in the east of the village called Itage, is composed of old and young shrubs. The same area in the map in section 8.1 is surprisingly classified as lowland secondary forest.

Furthermore, this map looks very similar to the land cover map displayed in section 6.5 in the former report. It seems that the shape of the polygons is the same but the allocated land cover class changed for some polygons.

There is no explanation on how the forest inventory has been inferred with the land cover classes to stratify them into the HCS categories.

No information or data is provided to check the validity of the accuracy assessment. How it has been conducted? How many plots were used?

The quality of the HCS final map is still highly questionable.

Reviewer Recommendation:

Describe the workflow from the initial land cover classification (displayed in section 6.5) to the refined land cover map shown in section 8.1. Check the workflow to assess why there are such discrepancies between the two maps.

Include rationale on the workflow that combines the results of the forest inventory and the revised land cover map and leads to the HCS forest categories.

The accuracy assessment methodology should be described in the report.

The data used to conduct the accuracy assessment and the resulting matrix should be provided for the review.

- 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?

Finding: Step 1 of the patch analysis is an overlay of HCS categories with other information such as HCV. But Set aside lands should not be clipped out from the HCS maps which could “cut” HCS patched and interfere the patch analysis. For instance, patch number 54 is part of a larger HCS patch, but by clipping the set aside land, the result is a much smaller patch that become a low priority patch whereas in reality it is part of a wide forested land.

Reviewer Recommendation: Patch analysis should be re-conduct without clipping out set aside land at step 1.

- 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?

Finding: Some low priority HCS patches were classified as indicative Develop at the end of step 11 but were finally allocated to conservation, as for instance patch number 62. It is assumed that such changes were part of step 12, but there is no explanation in the text that describes how and why such changes occurred.

Reviewers Recommendation:

Step 12 could be more elaborated especially regarding the integration of HCV land.

- 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: Section 10.1 stipulates that: “In order to compact the conservation areas, some of non-forest patches were recommended to be conserved”. Details of how this was done and the criteria applied to do this were not provided.

The final ground verification and conservation area delineation have not been undertaken yet.

Reviewer Recommendation: More details on the rationale to conduct Step 12 and integrated conservation area should be provided once this step is conducted with the revised HCS classification. In doing so, it will be possible to better understand how the adjustments were conducted.