PROJECT REVIEW REPORT

This project review report includes findings raised during Verra's review of the project specified below. The VVB must address the findings before the project request can be considered for approval by Verra. The project review report will be made publicly available on the Verra Registry. Confidential information may be provided in separate attachments.

Project ID	2401
Project name	Reforestation of Degraded Lands in Sierra Leone
Review Type	Verification Approval
Program(s)	VCS Program
Verification Period	11 January 2020–20 September 2022
Project Proponent	MFSL Developments Ltd.
Methodology	AR ACM0003, Afforestation and reforestation of lands except for wetlands, *v2.0*
VVB	KBS Certification Services Ltd.
Assessment Criteria	*VCS Standard v4.4*
Date of First Issue	15 November 2023

Date of Second Issue	17 April 2024
Date of Third Issue	27 July 2024
Review Conclusion	Approved
Date of Final Issue	17 October 2024

FINDINGS

Miro Forestry Sierra Leone (MFSL)

#	Finding Description	VVB Response	Status
1	**Inconsistencies in the project area across the project documents and the verifications**		
	Issue 1. It is unclear why the project area reported in the 2nd monitoring report (MR) (5,030.85 ha) is larger than the number of validated hectares (4,005.86 ha).	**Round 1** **PP Response** *The 4,005.86 ha comes from t*he validated PD, in the paragraph "*The project intends to establish approximately 12,000 ha of commercial plantations. By the date of development of this document, there were 5,600.99 ha planted and of that 4,005.86 ha are eligible under the selected methodology"* [1] (See image below). This means: - The project will reach approximately 12,000ha, as stated in the	Closed

[1] Referring to PDD Reforestation of Degraded Lands in Sierra Leone, in section 1.1.

	Action Required 1. The VVB must ensure that the project area in this 2nd 2. verification is revised to match the validated project area. The PP must exclude the non-validated area, i.e., 1,024.99 ha, considering this is a non-grouped project. 3. The VVB must ensure that the ERR calculations are revised to reflect the changes in action item 1. 4. The VVB must assess the revised MR and update the VR as needed. Program Rule(s) *VCS Standard, v4.4*, Sections 3.20 & 3.6.5	PD, and as it was also calculated in the original Ex-ante[2] (First image below). - By the first MR date the eligible areas were 4,005.86 from the total of 5,600.99 ha[3] planted at that moment (Second Image below). - For the second verification there was an inclusion of the expected planted areas inside the 12,000 ha expected for the project. These new areas correspond to 1,024.99 ha to sum a total of eligible areas of 5,030.85 hectares (from a total of 8,611[4] hectares). (MR updated with section 1.1) 1 PROJECT DETAILS 1.1 Summary Description of the Project Miro Sierra Leone Commercial Plantations Project consists of the establishment of high-quality commercial forestry plantations with short rotation species, for producing sawn timber, poles, plywood and biomass, for domestic and international markets, and providing environmental, social and economic benefits to local communities. To reinforce this, the Company holds the Forest Stewardship Council (FSC) Forest Management Certification[1] and follows the International Finance Corporation (IFC) standards. The project is developed in the northwest of the country by Miro Forestry Sierra Leone (MFSL). The Company has been in Sierra Leone since 2012 and started its Greenhouse Gas (GHG) reduction project in 2016. The project area comprises of 26,897 ha under land lease agreements in the Tonkolili and Port Loco Districts. The project intends to establish approximately 12,000 ha of commercial plantations. By the date of development of this document, there were 5,600.99 ha planted and of that 4,005.86 ha are eligible under the selected methodology[2]. By the end of 2020, there were developed 8,902.94 ha.	

[2] Supporting information/1st verification/201108_Miro_SL_ex-ante_LES
[3] Referring to PDD Reforestation of Degraded Lands in Sierra Leone, in section 1.3.
[4] Supporting information/PO Information/EHSS and Reports/Technical review of plantation assets: forest inventory and woodflows. MFSL Developments.

		The total area under monitoring for first verification was 2812.4 ha and 155,923 tCO2e was estimated during the first monitoring (16-05-2016 to 10-01-2020). The objective of this document is to describe the project activities that have been carried out during the second monitoring period, (11-01-2020-20-09-2022). For the second verification, together with the area belonging to the first, there was an inclusion of some of the planted areas during the first and the second verification . These new areas correspond to 1,024.99 ha to sum a total of eligible areas of 5,030.85 hectares (from a total of 8,611[5] hectares) for the second verification. Meanwhile, the total area under the second monitoring verification is 5030.85 ha. The species considered for increased area are *Acacia mangium, Eucalyptus pellita, Gmelina arborea* and other species which includes Corymbia, *Eucalyptus urophylla and Neolamarkia cadamba.* In the updated ex-ante, the project is expected to plant a total of 11,658 ha (below the 12,000 ha stated in the initial PDD). See table below with the expected plantation per year:	

Year	Project Year	Area (ha)
2016	1	580
2017	2	878
2018	3	1355
2019	4	1202
2020	5	1054
2021	6	1084
2022	7	1005
2023	8	1500
2024	9	1500
2025	10	1500
2026	11	
2027	12	
2028	13	
2029	14	
2030	15	
2031	16	
2032	17	
2033	18	
2034	19	
2035	20	
2036	21	
2037	22	
2038	23	
2039	24	
2040	25	
2041	26	
2042	27	
2043	28	
2044	29	
2045	30	
2046	31	
2047	32	
2048	33	
2049	34	
2050	35	
2051	36	
2052	37	
2053	38	
2054	39	
2055	40	
2056	41	
Total		11,658

		VVB Response It has been referred and confirmed from the registered PD and from Joint Validation and first verification report that the project has been designed as a single instance, non-grouped project. Also, it was verified that "The project intends to establish approximately 12,000 ha of commercial plantations and has been validated considering the same assumption. At the time of registration of the PDD, 5,600.99 ha were already planted and validated by the validating VVB. During validation, VVB had raised – CAR 1 and accepted that "After a re-confirmation on this matter with the Project Developer, there is no intention for increasing the planted area beyond 12,000 ha". During the first joint validation and verification, 4,005.86 ha were eligible under the selected methodology, Verification team has confirmed the same during the site visit. During this present second verification total of 5030.85 ha has been reported eligible area for the verification and ER estimation has been done for the stated project area. The verification team took the note of this additional 1,024.99 ha and cross checked with the KML files[5] to ensure that the geographical location is within the boundary of 12000 ha[6] stated in the registered PD. Verification team also cross verified and confirms that there is no diversified impact on the applicability conditions. Verification team confirms that - at the time of registration of the PDD, 5,600.99 ha were	

[5] Supporting information/GIS klm/2nd ver areas eligible.kml (Dt 11-01-2024)
[6] Supporting information/GIS klm/Total PA.kml

		already planted and validated by the validation VVB. (ref sec 1.1 of registered PDD). These conformations are now re-stated in the verification report. (sec -1.4 Summary description of the Project) Verra Response The VVB validates that the project area is a single instance of approximately 12,000 ha that was validated at the time of registration and that ER estimation has been done for the stated project area. However, this finding cannot be closed. Issue The connection between the eligible area (4,005 ha) and monitored area (2,812 ha) in the previous period and the areas presented in the current monitoring report, namely 1,024.99 hectares, 8,611 hectares, and 5,030.85 hectares, is unclear. Action Required 1. The VVB must ensure that the PP clarifies the connection between the various highlighted areas. 2. The VVB must assess the revised MR and update the verification report accordingly.	
		Round 2	
		VVB Response Now for better understanding and clarity, the explanation is detailed with the chart in the MR and the FVR. PP has categorised these areas (as managed at site) in the revised MR as planted area, eligible (and non) area, and verified/monitored area. FVR is updated with detailed independent onsite assessment : • **Planted area:** the area where planting activities have occurred at the moment of the verification. The final goal of the project is	

		that the planted area reaches the plantation area (12,000 ha). • **Eligible area:** the area that is eligible from the total planted area. The eligibility was performed as stated in the registered PDD Section 1.3 • **Non-eligible area**: the area that is not eligible from the total planted area. • **Verified/monitored area**: the areas selected from the eligible (planted) areas to be included in the verification. In the case of MFSL, all the strata younger than 2 years old are not included. This reason is because at this age of 2, is when the individual compartments are reviewed against the target product end market a suitable thinning regime is initiated as stated in the management plan[7], and the first pre-commercial thinning are carried out. Before this age, most of the trees could not be measured due to very low diameter at breast height (DBH) and/or reduced height that makes not possible its measurement and the application of the biomass equation. This is aligned with the forest monitoring for biomass and carbon literature that remarks that *Forest stands composed primarily of small-diameter stems, which often are also high density, can be challenging to inventory efficiently. Examples of such stands can include young plantations*[8]. Furthermore, around this age is when the first precommercial thinning are carried out reducing the density of the trees per hectare. Therefore, MFSL have not included strata younger than 2 years old, as detailed in the Ex-	

[7] NPRT/internal risks/MFSL Forestry Mgt Plan V8 FINAL 2019
[8] Hoover, C. M., & Smith, J. E. (2020). *Selecting a Minimum Diameter for Forest Biomass and Carbon Estimation: How Low Should You Go?*. US Department of Agriculture, Forest Service, Northern Research Station.

		post calculations[9] (See the ER ΔCt tab). This rule explains why not all the eligible area was selected at the moment of the verification (1st and 2nd). The areas that were not included in the verification because they had less than 2 years at the moment of the verification. Thus, they will be added to subsequent verifications/monitoring. During the verification audit, KBS team noted that there is no definition for forest cover in the host country. This was cross verified by published article from Department of Biological Sciences, Njala University, Njala, Sierra Leone dt 09 May 2019. KBS team also referred to the internal SOP (MMS FP 007-01 dt 01/10/2022) of PP for not consideration of plantations less than 2 years old. This SOP stated the guideline for consideration of the plantation stratum referenced by FSC P&C. As per the SOP guidelines, commercial plantation considered for the project will achieve min required height and breadth within 2 years of plantation. The plantation reaching min of 1.37m in height, with 04 - 10cm DBH (Diameter at breast height) and 20-30cm GBH (Girth at breast height) are considered for monitoring and measurement. During the onsite the total eligible plantation cover area (ha) was validated, and only eligible area (ha) were taken for monitoring as per the SOP of PP were considered. Thus, KBS opinion is that the consideration is very conservative since the emissions are not over estimated.	

[9] Supporting information\2nd verification\April2024SL Ex-post_2nd Verification_Sierra Leone.xlms

Areas (ha)	Validation & 1st verification (16/05/2016 – 10/01/2020)		2nd verification (11/01/2020 – 20/09/2022)	
Planned plantation area	12,000		12,000	
Planted area	5,600.99		8,611[1] (planted by April 2022)	
Eligibility	Eligible area	Non-eligible area	Eligible area	Non-eligible area
	4,005.86	1,595.13	5,889.41	2,721.59
Verified/ monitored forest area	2,812.4[1] (only 2,812.4 ha were measured/ monitored, the 1,193,46 ha remaining to reach all the eligible areas were still below 2 years and couldn´t be measured) **Note that** the 1,193,46 ha remaining to reach all the eligible areas will be added to the 2nd verification	Not included in the verified following the methodology criteria	5,030.85 (2218.6 ha of new areas were added during the 2nd verification to the existing ones (2812.4 ha), to sum a total of 5,030.85[1] ha for the 2nd verification) **Note that** the remaining 859 ha, to reach the total of 5,030.85 were not measured in this verification and ill be added to the next one (3rd)	Not included in the verified following the methodology criteria

Validation and 1st verification

As depicted in the Table below[10] from a total eligible area of 4,005.86 ha, only **2812.4 ha** is selected for the first monitoring period (Strata planted in years 2016, 2017, and 2018). Not all the eligible area was chosen because the trees in some strata (e.g. planted in 2019 or 2020) were too young to be measured, so it was not included on the 1st verification.

[10] Supporting information\Validadtion and 1st ver\211108_Miro_SL_ex-post_LES.xlsx

Year	Species	Area (ha)	Stratum	N° Plots	Monitored	Intensity	Monitoring
2016	Aman	205.3	**1.1**	56	**2.24**	1%	01/10/2020
2016	Cctr	63.8	**1.2**	19	**0.57**	1%	01/02/2020
2016	Epel	275.6	**1.3**	101	**3.23**	1%	01/01/2020
2016	GMEL	21.9	**1.4**	45	**1.92**	9%	01/09/2020
2016	Other species	13.0	**1.5**	26	**0.78**	6%	01/04/2020
2017	Aman	134.4	**2.1**	40	**1.20**	1%	01/01/2020
2017	Cctr	51.5	**2.2**	13	**0.39**	1%	01/01/2020
2017	Epel	529.4	**2.3**	389	**11.67**	2%	01/01/2020
2017	GMEL	127.5	**2.4**	32	**1.28**	1%	01/09/2020
2017	Tgra	19.4	**2.5**	18	**0.54**	3%	01/11/2019
2017	Other species	15.5	**2.6**	19	**0.57**	4%	01/01/2020
2018	Aman	88.7	**3.1**	32	**0.96**	1%	01/10/2020
2018	Cctr	113.1	**3.2**	79	**2.37**	2%	01/10/2020
2018	Epel	1032.9	**3.3**	568	**17.46**	2%	01/07/2020
2018	GMEL	60.4	**3.4**	49	**1.79**	3%	01/10/2020
2018	Tgra	3.8	**3.5**	35	**1.05**	27%	01/06/2020
2018	Other species	56.1	**3.6**	59	**1.77**	3%	01/09/2020
		2812.4		**1580.0**	**49.8**		

1st verification areas per strata (plantation year + species)

2nd verification

During the second verification, more strata (corresponding to the plantations from 2019 and 2020) were added to be verified. These new strata added sum a total of 2218.6 ha, to sum a total of **5030.85 ha.**

Year	Species	Area (ha)	Stratum	N° Plots	Average plot size (m2)	Monitored area (Ha)	Intensity (%)	Monitoring date
2016	Aman	205.3	**1.1**	5	500	**0.25**	0.12%	26/09/2022
2016	Cctr	63.8	**1.2**	5	500	**0.25**	0.39%	26/09/2022
2016	Epel	275.6	**1.3**	7	500	**0.35**	0.13%	26/09/2022
2016	Gmel	21.9	**1.4**	3	500	**0.15**	0.68%	26/09/2022
2016	Other	13.0	**1.6**	2	500	**0.10**	0.77%	26/09/2022
2017	Aman	134.4	**2.1**	5	500	**0.25**	0.19%	26/09/2022
2017	Cctr	51.5	**2.2**	5	500	**0.25**	0.49%	26/09/2022
2017	Epel	529.4	**2.3**	30	500	**1.50**	0.28%	26/09/2022
2017	Gmel	127.5	**2.4**	5	500	**0.25**	0.20%	26/09/2022
2017	Tgra	19.4	**2.5**	5	500	**0.25**	1.29%	26/09/2022
2017	Other	15.5	**2.6**	5	500	**0.25**	1.61%	26/09/2022
2018	Aman	88.7	**3.1**	5	500	**0.25**	0.28%	27/09/2022
2018	Cctr	113.1	**3.2**	7	500	**0.35**	0.31%	26/09/2022
2018	Epel	1032.9	**3.3**	49	500	**2.45**	0.24%	26/09/2022
2018	Gmel	60.4	**3.4**	3	500	**0.15**	0.25%	26/09/2022
2018	Tgra	3.8	**3.5**	3	500	**0.15**	3.95%	27/09/2022
2018	Other	56.1	**3.6**	3	500	**0.15**	0.27%	26/09/2022
2019	Aman	242.7	**4.1**	8	500	**0.40**	0.16%	03/04/2022
2019	Epel	705.1	**4.2**	14	500	**0.70**	0.10%	05/10/2022
2019	Gmel	136.0	**4.3**	8	500	**0.40**	0.29%	05/04/2022
2019	other	80.5	**4.4**	4	500	**0.20**	0.25%	08/02/2022
2020	Aman	418.9	**5.1**	12	500	**0.60**	0.14%	14/09/2022
2020	Epel	36.7	**5.2**	15	500	**0.75**	2.04%	14/09/2022
2020	Gmel	385.4	**5.3**	14	500	**0.70**	0.18%	16/09/2022
2020	other	213.3	**5.4**	10	500	**0.50**	0.23%	21/07/2022
		5030.85		**232.0**		**11.6**	0.59%	

1st verification areas per strata (plantation year + species)

2nd verification areas per strata (plantation year + species)

		Verra Response The MR and VR have been updated with an explanation of the areas monitored for the first and second verification. However, this finding cannot be closed. Issue: 1. The project cannot monitor beyond the validated project area of 4,005.86 ha (see background point 1). 2. It is unclear how the trees planted in the non-validated areas (cropland and wetlands) will be monitored to ensure they do not negatively impact the environment and the stakeholders (see background point 2). Action required: 1. The VVB must ensure that only the validated area is included in the current monitoring period. The non-validated area of 1,024.99 ha (i.e., 5,030.85 ha-4,005.86 ha) must be excluded. 2. The ERR calculations spreadsheet and other relevant sections of the MR must be updated accordingly. 3. The VVB must ensure that an updated KML showing the validated project area of 4,005.86 hectares is submitted to Verra. 4. The VVB must ensure Section 2.2 of the MR is revised to clarify how the trees planted in the in non-validated areas (1,024.99 ha) will be monitored to ensure they do not negatively impact the environment and the stakeholders. 5. The VVB must assess the changes above and update the VR as needed.	

Background:

1) Per the validated PD, the validated project area was 4,005.86 ha.
2) Per the validated PD, of the 5,600.99 hectares planted, 465,03 ha constitute wetlands, and 16,22 ha are croplands.

VVB Response

Issue 1.

The non-validated area of 1,024.99 ha was excluded (Action1).

The MR has been updated to include eligible areas (4,005.86) from the validation, totalling **3,968.07** hectares for the second verification. This could be split into areas included in the first verification (2,812.42 ha – corresponding to plantations from 2016, 2017, and 2018) plus the ones included in the second from the eligible area (1,155.64 ha - corresponding to plantations from 2019). The next chart summarizes the areas during the first and second verifications:

Areas (ha)	Validation & 1st verification (16/05/2016 – 10/01/2020)		2nd verification (11/01/2020 – 20/09/2022)	
Planted area	5,600.99			
Eligibility	Eligible area	Non-eligible area	Eligible area	Non-eligible area
	4,005.86	1,595.13	3,968.07	1,632.92
Verified/ monitored forest area	2,812.42 Only 2812.42 ha were measured/ monitored, the 1193.46 ha was not considered in the eligible	This area was determined as non-eligible and discounted from consideration since it was found that it was	3,968.07 The total area is the sum of the area from the 1st validation and verification (2812.42 ha)	Not included in the verification following the methodology criteria. This accounts for the 1,595.13 from the

		areas since the plantation strata is still younger than 2 years old and couldn´t be measured) Note that the remaining 1193.46 ha remaining to reach all the eligible areas was carried forward to the 2nd verification	cartographically intersected with forest land and wetland. Thus, this area was removed from consideration.	plus most of the remaining eligible areas (1,155.64* ha) *Note that out of 1193.44 ha that were not counted from the 1st verification, only 1155.65 ha are considered. The remaining 37.79 ha are discounted and added under the non-eligible area.	non-eligible areas from the first verification, plus 37.79 ha discounted in the second.	

The following documents have been modified accordingly (and shared with the VVB):

- ER Ex-ante and Ex-post ER sheet → Action 2
- MR updated → Action 2
- KML resubmitted → Action 3

Issue 2.

The planted areas not included in the eligibility (1,632.92 hectares) do not negatively harm the environment nor the stakeholders. As stated in the PD[11], Concerning socio economic impacts, areas of high and diverse values to the communities such as wetlands, streams, forest and permanent agriculture are usually retained by the communities and excluded from the land lease agreements. That means, the communities keep their resources for crop culture. It is important to point out that land selected for lease to MFSL for plantation establishment by the communities is usually degraded, and mostly comprised by grassland or poor farm bush. Keeping that in mind, most impacts related to displacement of agriculture and livelihood means are avoided.

Related to this and concerning the environment, MIRO SL is not causing any

[11] Referring to the PDD Reforestation of Degraded Lands in Sierra Leone, Section 2.1.

		harm to it, as explained in the PDD[12] the area there are very limited tree cover. The rest of the areas are degraded woodlands and wetlands. Environmentally sensitive conservation areas are identified during the planning phase of operations and designated as conservation zones which are protected. All conservation zones are captured into the GIS system and into the Microforest conservation database. Management comprise alien plant control, maintenance of a buffer between plantations and these natural areas and providing protection against further disturbances. Regarding the wetlands Miro conducted a detailed survey using satellite images, aerial drone mapping, and ground truthing to identify and map out all unsuitable areas and also classify vegetation types. If there is a wetland within the potential area the community intend to lease to Miro, then it will be delineated and mapped out as a potential conservation area. Finally, Miro employs the services of a soil scientist who will conduct a detailed soil survey of all potential areas to be leased from communities. Wetlands and swamps within the proposed lease areas are confirmed by the soil scientist then these areas will be marked as unsuitable for planting. This has been confirmed by SGS in a Forest Management Report[13] where they reported that they were very impressed in the way Miro have conducted the reforestation and have ensured that no commercial plantings have occurred within at least 20 m of all wetlands. The MR No Net Harm Section has been updated accordingly (Action 4) The project is not a grouped project. The total area for the project is initially designed and planned for 12000 ha, however the data were not consistent in different sections and the joint validation verification report did not detail the information. Thus FAR 02 was raised for the next verification team to raise the deviation and validate the total project	

[12] Referring to the PDD Reforestation of Degraded Lands in Sierra Leone, Section 3.2.
[13] Supporting information/123151-SL - Miro Forestry SA2019-11 - AD 36-A-19 NM (4).pdf

		planned area. In the 2nd verification – VVB thus took decision along with VERRA to consider only the validated area – 4,005.86 ha and eligible area of 3968.07 were verified. The MR, ER calculation sheets, KML, FVR were updated to reflect the changes. Though SGS (3rd party certification agency) has provided the FSC report stating that the plantations are 20m away from the wetland, the PP had taken the conservative approach, referring to the GIS map / KML and removed the parcel of land non-eligible area. This is conservative and accepted by the VVB during verification. VVB also confirms that they do not negatively impact the environment and the stakeholders. The detailed explanation is now provided under section 1.4 of the FVR <u>Verra Response</u> The non-validated area has been excluded from the documents. ERR spreadsheet, KML file and MR have been updated accordingly. The VVB validates that trees planted in the in non-validated areas (1,024.99 ha) will be monitored to ensure they do not negatively impact the environment and the stakeholders. A FAR has been raised in the VR to ensure that at the next verification the project, if the PP wish to validate additional remaining plantation till 12000ha, the VVB must thoroughly assess the new areas. The finding is now closed.	

2	**Unclear justification and assessment for the Non-permanence Risk Report (NPPR)**		
	Issue	**Round 1**	Closed

1. *Natural risk a):* Lack of evidence to demonstrate that losses due to *Fire* are "Insignificant" for plantations and that the possible severity is being underestimated.
2. *Natural risk c):* Lack of evidence to demonstrate that losses due to *Extreme Weather* are "Insignificant" for plantations and that the possible severity is being underestimated.
3. *Opportunity cost h)* and *i)*; *Land Tenure and Resource Access/Impacts (f):* it is unclear that the legally binding commitment "at the discretion of the tenant" ensures management practices that protect the credited carbon stocks over the crediting period.
4. *Opportunity cost* i)*:* Lack of evidence to demonstrate that the option to renew for another 50 years under the current legal framework will take place considering all the conditions to which such renewal is subject.

Action Required

PP Response

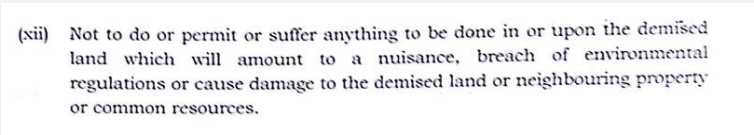
Issue 1.

Beyond the project area, MFSL has planted across the Port Loko and Tonkolili Districts. There were losses of 50.88 ha (See Table below[14]) during the period of the second verification (2020-2022) representing less than 5% of carbon stock losses (1.04 % according to the total area).

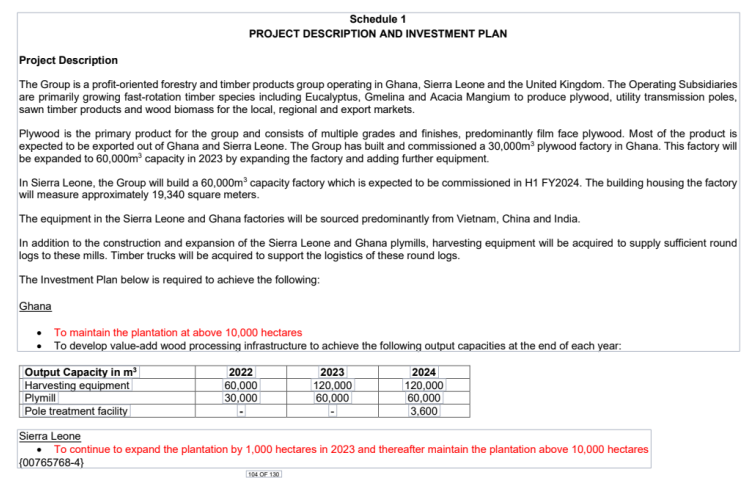
SUM of Fire Affected Area (Ha)			
Species	2021	2022	Total
Afal	0.2		0.2
Aman	5.05	29.02	34.07
Cctr	0.7		0.7
ctor		0.06	0.06
Emix	0.1		0.1
Epel	14.93		14.93
Eter		0.08	0.08
Etxb	0.68		0.68
Tgra	0.06		0.06
Grand Total	**21.72**	**29.16**	**50.88**

Nevertheless, MFSL has a significant focus in the period (December to March) leading up to this to prepare for fires by control burning to reduce potential fuel load and by creating fire breaks around compartments and in strategic locations (See Miro Fire Action Plan[15]). Fire protection is a key issue and focuses on fire prevention, fire risk reduction and fire preparedness and suppression. Fire breaks 10 m or more wide are established around planting units within the plantation. Also pruning is made to reduce the fire hazard by the reducing the amount of fuelwood in the lower canopy[16]. Along with all these measures, a fire management plan is in place[17]. The plan includes firefighting checklists, schedules, firebreak maintenance, water points, maps, and related procedures to

	1. The VVB must describe how they assessed *Natural Risk a)* and *c)* and justify the validity of the significance score based on estimates of historical events and meets the requirements of *AFOLU Non-Permanence Risk Tool*, *v4.0,* Section 2.4. 2. The VVB must demonstrate how it ensures that the legally binding commitment protects the carbon stocks for the period of time mentioned for *Opportunity cost h)* and *i)*; and *Land Tenure and Resource Access/Impacts (f).* 3. The VVB must update Section 4.6 of the VR as per Actions 1 and 2 above. 4. The VVB must demonstrate that project area is insured over at least 100 years. I**f not, the mitigation action is not relevant to the permanence of carbon stocks and the mitigation score should be zero.** <u>Program Rule(s)</u> *AFOLU Non-Permanence Risk Tool*, v4.0	prevent and control forest fires. Analysis shows that annual losses since the project started the fires have been declining. They passed from affecting 2405 ha burned before 2016 (2015-2015 records)[18], continuing by the 491 ha of the first verification (2016-2019)[19] to the 51 ha burned in the last verification. Therefore, the fire risk was considered as insignificant because of the reduce occurrence in the project area, declining rates in the last years, and measures from MFSL to control and stop them in the occasions that it affects the project area (according to the Fire Action Plan[20]) (**Action 1**). <u>Issue 2.</u> The most harmful impact to the plantations of MFSL could be the drought caused by extreme weather events. However, no drought issues happened in Sierra Leone affecting the survival of trees so far, demonstrated trough the Sierra Leone Field Inspection summary[21] which conclusion was that "*There was little evidence of forest health problems along the inspection track with no apparent signs of drought damage".* The trends state that the number of dry (and hot) days will increase, the number of wet days will decrease. Despite this, there is expected little change in the likelihood of severe drought, according to the Knowledge Portal of the World Bank (World Bank Group, 2021), used for the assessment of potential risks to future wood flows in Sierra Leone[22]. Miro has also carefully considered the planting species that it has planted across its plantations. Furthermore, it has researched and explored species that are more successful for its plantation efforts. The focus is to reduce the risks to long-term woodflows, which demonstrates the importance of research and development which is currently being undertaken by MFSL to ensure a long-term sustainable wood supply. This along with the continuous field trials to monitor and evaluate the performance of their trees and plantations allow MFSL to respond to the	

		potential impacts of extreme weather conditions. Furthermore, MFSL has obtained FSC certification for the current verification[23] which is an extension of the previous certification where all the sustainable practices, some of them cited next, are fully described[24]. This is an indication of the efforts and implementation of sustainable forestry management practices. MFSL has applied the fundamental silvicultural practices of plantation management: the provision of quality seedlings, good planting techniques and intensive early vegetation management which results in good early survival, rapid growth and stand uniformity which are three pillars of establishment success. Increased concentrations of atmospheric CO2 have a fertilising effect and tends to increase tree productivity, tree growth and water stress tolerance. Therefore, the risk due to *Extreme Weather* was considered insignificant (**Action 1**). <u>Issue 3.</u> The binding commitment to protect the credited carbon stocks is done through: 1. A clause in the land lease agreements[25] (this clause is found in all the land leases) where it is stated that lessee will not cause damage to the common resources (in this case carbon stocks), or breach the environmental regulations:  (xii) Not to do or permit or suffer anything to be done in or upon the demised land which will amount to a nuisance, breach of environmental regulations or cause damage to the demised land or neighbouring property or common resources. 2. The financial agreement (See Image below) states that MFSL is committed to maintain the plantation above 10,000 hectares, to sustainably manage and to expand it by 1,000 hectares in 2023. Furthermore, this is backed up by the fact that new plymills were built in the plantation by the company, and there is an increase in the need	

of a continuous sustainable management to continue with a constant production for the company's plymills, which are a commitment of the company with the region and the timber market for the country.
The fact that the company is a committed timber company which is just entering into the first cycles of its timber production is a robust guarantee of the commitment and permanence of the carbon project during the crediting period and beyond.



Schedule 1
PROJECT DESCRIPTION AND INVESTMENT PLAN

Project Description

The Group is a profit-oriented forestry and timber products group operating in Ghana, Sierra Leone and the United Kingdom. The Operating Subsidiaries are primarily growing fast-rotation timber species including Eucalyptus, Gmelina and Acacia Mangium to produce plywood, utility transmission poles, sawn timber products and wood biomass for the local, regional and export markets.

Plywood is the primary product for the group and consists of multiple grades and finishes, predominantly film face plywood. Most of the product is expected to be exported out of Ghana and Sierra Leone. The Group has built and commissioned a 30,000m³ plywood factory in Ghana. This factory will be expanded to 60,000m³ capacity in 2023 by expanding the factory and adding further equipment.

In Sierra Leone, the Group will build a 60,000m³ capacity factory which is expected to be commissioned in H1 FY2024. The building housing the factory will measure approximately 19,340 square meters.

The equipment in the Sierra Leone and Ghana factories will be sourced predominantly from Vietnam, China and India.

In addition to the construction and expansion of the Sierra Leone and Ghana plymills, harvesting equipment will be acquired to supply sufficient round logs to these mills. Timber trucks will be acquired to support the logistics of these round logs.

The Investment Plan below is required to achieve the following:

Ghana

- To maintain the plantation at above 10,000 hectares
- To develop value-add wood processing infrastructure to achieve the following output capacities at the end of each year:

Output Capacity in m³	2022	2023	2024
Harvesting equipment	60,000	120,000	120,000
Plymill	30,000	60,000	60,000
Pole treatment facility	-	-	3,600

Sierra Leone

- To continue to expand the plantation by 1,000 hectares in 2023 and thereafter maintain the plantation above 10,000 hectares

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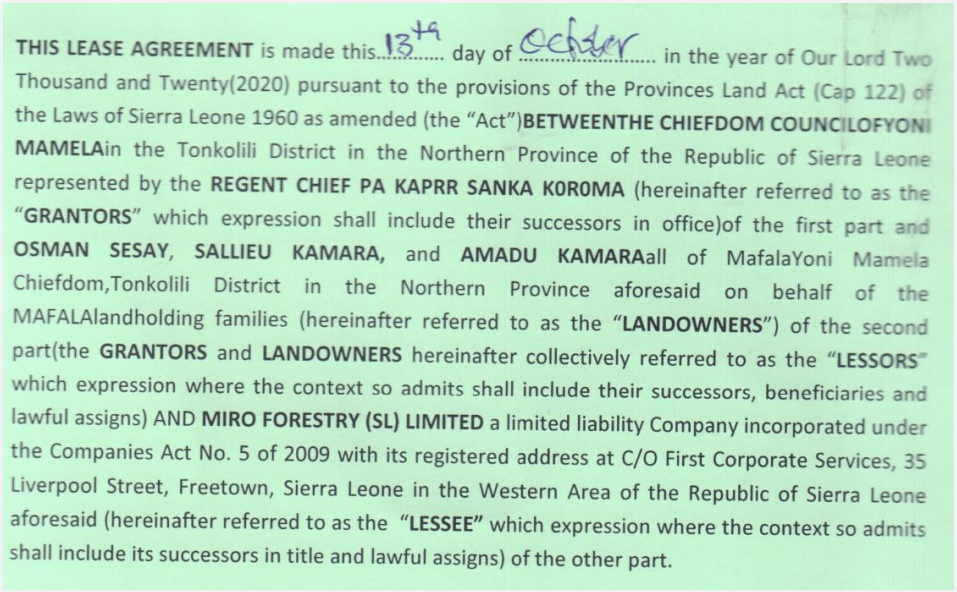
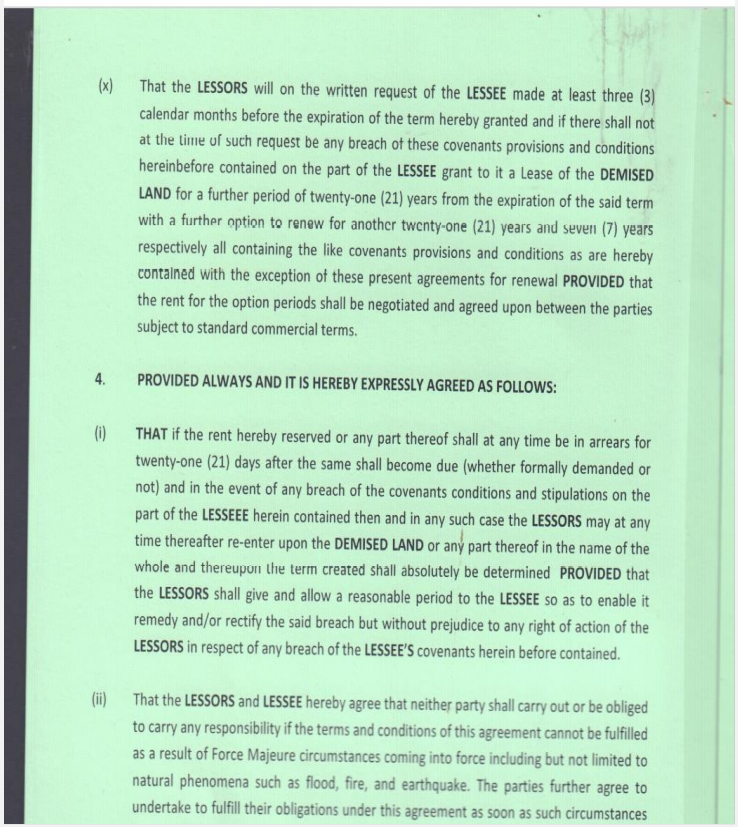
Issue 4.

There are references in all the land lease agreements to continue the activity for longer than the first 50 years. The clause states that after the first 50 years "*for a further period of twenty-one (21) years from the expiration of the said term with a further option to renew for another twenty-one (21) years and seven (7) years respctively*".
As an example, the following screenshots shows the Mafala land lease agreement[26]:

- Signed on the 13th of October 2020 (First Image),

		• Section 1. clause(i): Explaining the initial duration of the land lease (21+21+8=50 years) • Section 3. clause (x) : Explaining the rewal process after the first 50 years and the duration of it (21+21+7=49 years)  **THIS LEASE AGREEMENT** is made this 13th day of October in the year of Our Lord Two Thousand and Twenty(2020) pursuant to the provisions of the Provinces Land Act (Cap 122) of the Laws of Sierra Leone 1960 as amended (the "Act")**BETWEENTHE CHIEFDOM COUNCILOFYONI MAMELA**in the Tonkolili District in the Northern Province of the Republic of Sierra Leone represented by the **REGENT CHIEF PA KAPRR SANKA K0R0MA** (hereinafter referred to as the "**GRANTORS**" which expression shall include their successors in office)of the first part and **OSMAN SESAY**, **SALLIEU KAMARA,** and **AMADU KAMARA**all of MafalaYoni Mamela Chiefdom,Tonkolili District in the Northern Province aforesaid on behalf of the MAFALAlandholding families (hereinafter referred to as the "**LANDOWNERS**") of the second part(the **GRANTORS** and **LANDOWNERS** hereinafter collectively referred to as the "**LESSORS**" which expression where the context so admits shall include their successors, beneficiaries and lawful assigns) AND **MIRO FORESTRY (SL) LIMITED** a limited liability Company incorporated under the Companies Act No. 5 of 2009 with its registered address at C/O First Corporate Services, 35 Liverpool Street, Freetown, Sierra Leone in the Western Area of the Republic of Sierra Leone aforesaid (hereinafter referred to as the **"LESSEE"** which expression where the context so admits shall include its successors in title and lawful assigns) of the other part.	

		1. **NOW THIS DEED WITNESSETH AS FOLLOWS:** (i) That in consideration of the rent, covenants and stipulations hereinafter reserved and contained on the part of the **LESSEE** to be paid observed and performed the **LESSORS** hereby **DEMISE** unto the **LESSEE ALL THAT** piece or parcel of land totaling **24.02**hectares (59.35 Acres) or thereabout situated, lying and being at Yoni Mamela Chiefdom,Tonkolili District in the Northern Province aforesaid more particularly described in the schedule hereunder and intended to form part of this Agreement (hereinafter referred to as "**DEMISED LAND**") **TO HAVE** and **TO HOLD** the same **UNTO** and to the **USE** of the **LESSEE** from the 1st day of January 2019 for a term of twenty-one (21) years followed by another twenty-one (21) years and for a final eight (8) years certain.	



(x) That the **LESSORS** will on the written request of the **LESSEE** made at least three (3) calendar months before the expiration of the term hereby granted and if there shall not at the time of such request be any breach of these covenants provisions and conditions hereinbefore contained on the part of the **LESSEE** grant to it a Lease of the **DEMISED LAND** for a further period of twenty-one (21) years from the expiration of the said term with a further option to renew for another twenty-one (21) years and seven (7) years respectively all containing the like covenants provisions and conditions as are hereby contained with the exception of these present agreements for renewal **PROVIDED** that the rent for the option periods shall be negotiated and agreed upon between the parties subject to standard commercial terms.

4. **PROVIDED ALWAYS AND IT IS HEREBY EXPRESSLY AGREED AS FOLLOWS:**

(i) **THAT** if the rent hereby reserved or any part thereof shall at any time be in arrears for twenty-one (21) days after the same shall become due (whether formally demanded or not) and in the event of any breach of the covenants conditions and stipulations on the part of the **LESSEEE** herein contained then and in any such case the **LESSORS** may at any time thereafter re-enter upon the **DEMISED LAND** or any part thereof in the name of the whole and thereupon the term created shall absolutely be determined **PROVIDED** that the **LESSORS** shall give and allow a reasonable period to the **LESSEE** so as to enable it remedy and/or rectify the said breach but without prejudice to any right of action of the **LESSORS** in respect of any breach of the **LESSEE'S** covenants herein before contained.

(ii) That the **LESSORS** and **LESSEE** hereby agree that neither party shall carry out or be obliged to carry any responsibility if the terms and conditions of this agreement cannot be fulfilled as a result of Force Majeure circumstances coming into force including but not limited to natural phenomena such as flood, fire, and earthquake. The parties further agree to undertake to fulfill their obligations under this agreement as soon as such circumstances

Therefore, the project will continue a total of 99 years (50+21+21+7). However, as stated in Issue 3, MFSL's idea is to maintain and develop the project for a longer time than 100 years. This formula is repeated constantly in all the land lease agreements of MFSL (See referenced folder[27] with the land lease agreements of Baray-Nin, Chaiducom-Turay, Manila Bana, Mafala, Makundi, Manjehum, Masabay, Masankay, Petifu-Mayorgbor, Rokembie 2, Romaka, Romess, Rosary and Yanabay).

		Therefore, the projects is able to prove and guarantee the longevity for a period of 99 years. The following changes has been done both in the NPRT[28] and Report[29]: ● In opportunity cost section i) *Mitigation: Project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over at least 100 years (see project longevity)* the value has changed from -8 to 0 to give a final value for the opportunity costs of -2. ● In the project longevity section the following questions have been changed giving a final value of 4 (See Image below): ○ Does the project have a legally binding agreement that covers at least a 100 year period from the project start date? It has been changed from YES to NO ○ What is the project Longevity in years? 99 years ○ Legal Agreement or requirement to continue management practice? It has been changed from YES to NO	

		g)	**Mitigation:** Project proponent is a non-profit organization	0
		h)	**Mitigation:** Project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over the length of the project crediting period (see project longevity)	-2
		i)	**Mitigation:** Project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over at least 100 years (see project longevity)	0
		Total Opportunity Cost [(a, b, c, d, e or f) + (g + h or i)]		-2
		Note: When a risk factor does not apply to the project, the score shall be zero for such factor Total may be less than zero		

	Project Longevity	
Q	Does the project have a legally binding agreement that covers at least a 100 year period from the project start date?	No
Q	What is the project Longevity in years?	99
Q	Legal Agreement or requirement to continue management practice?	No
a)	Without legal agreement or requirement to continue the management practice	4
b)	With legal agreement or requirement to continue the management practice	0
Total Project Longevity		**4**
Note: Total may not be less than zero. Any project with a legally binding agreement that covers at least a 100 year period from the project start date will be assigned a score of zero. Any project with a project longevity of less than 30 years fails the risk assessment		

Total Internal Risk (PM + FV + OC + PL)	**0.20**
Note: Total may not be less than zero	

This changes make the final result for the Total Internal Risk is 0.2. The Overall risk rating is 12.7, which is round up to 13 (See Image below).

STEP 2: OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

Risk Category		Rating
a)	Internal risk	0.20
b)	External risk	0.00
c)	Natural Risk	12.50
Overall risk rating (a + b + c)		**13.00**
Note: Overall risk rating shall be rounded up to the nearest whole percentage		
The minimum risk rating shall be 10, regardless of the risk rating calculated		
If the overall risk rating is over 60 then the project fails the entire risk analysis		
Total Risk Assessment		
Net change in the project's carbon stocks		
TOTAL NUMBER OF CREDITS TO BE DEPOSITED IN THE AFOLU POOLED BUFFER ACCOUNT		**0**

The Monitoring Report[30] has been updated using this value in section 3.2:

Risk factor

The risk factor was assessed using the VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination. Project risks and activities described to uphold the project permanence are described in the PDD in section 4.4. Identification of risks that may substantially affect the project's GHG emission reductions or removal enhancements. For this verification, the buffer risk was set at 13 %[46] (Accounting 0.2% for Internal risks, 0% for external risks and 12.5 % for natural risks)[47] according to the potential risk and mitigation measurements of the project. Detailed information is presented in the supporting information, Non-Permanence Risk Tool assessment.[48]

VVB Response

1.

A) Verification team had reviewed and analysed the supporting

		evidences to conclude that the risk due to fire are insignificant and risk score recorded of 1 is appropriate - -Technical review of plantation assets: forest inventory and woodflows- It confirms that annual losses are relatively low and are due in part to effective fire mitigation and prevention strategies - Miro FOREST MANAGEMENT PLAN v12,2022- MFSL considers fire protection a key issue since it poses the greatest physical risk to the company's biological assets as well as to the already heavily-degraded reserve. To date, the company has suffered minor losses as a result of fires and considers its fire management plan to be fit for purpose and effective (see section 4.1. Fire protection, MFSL Forestry Mgt Plan. The plan further details the risks, mitigation strategies and individuals responsible for carrying out mitigation. - Miro Fire Action Plan- It sates that Fire preparedness is of high importance during the fire season (December – April). MFSL has acquired equipment to manage fire outbreaks. Two firefighting machines and one tank have been purchased to date. Firefighting staff and tools are already in place and fully functional. Also, The company has introduced a fire index system that takes temperature, wind speed, and humidity into account and all staff will be alerted every morning as to the current index and the fire risk for the day. - Think Hazard report (web-based tool enabling non-specialists to consider the impacts of disasters on new development projects)- Analysis shows that annual losses since 2018 have been declining and are under 40 hectares per annum, corresponding to less than 0.4% of the plantation estate With review of above documents Verification team had concurred that annual losses are relatively low and are due in part to effective fire mitigation and prevention strategies The section 4.2.1 is further updated to provide more clarity on verification	

		regarding no net harm. B) Assessment of Natural Risk- Weather Verification team had reviewed and analysed the supporting evidence to conclude that the risk due to weather are significant and the probability of the occurrence of extreme events in Sierra Leone are high and hence the risk score recorded of 2 is appropriate based on following review of documents- 1. CLIMATE RISK PROFILE WEST AFRICA. Retrieved from https://www.climatelinks.org/sites/default/files/asset/document/West_Africa_CRP_Final.pdf 2. Think Hazard report (web-based tool enabling non-specialists to consider the impacts of disasters on new development projects)- 4. The verification team has assessed the Mafala agreement to confirm that MFSL is committed to maintaining the plantation for the stated 99 years and ensures that the legally binding commitment protects the carbon stocks for the period stated agreement to confirm that MFSL is committed to maintaining the plantation for the stated 99 years and ensures that the legally binding commitment protects the carbon stocks for the period stated. The 99 years instead of 100 years is due to the common practices in land lease agreements in Sierra Leone. The same was confirmed with govt. officials during the verification site visit. In the lease contracts, there is an extension clause that adds up to 49 years (21 + 21 + 7 years), It is not explicit that there is a 100-year	

		agreement, but there is a presumption that this can be extended demonstrating the permanence and the long-term commitment of Miro. Thus, this provides a commitment for at least 100 years to protect the carbon stocks. Also, it was inferred that the company is a committed timber company which is just entering into the first cycles of its timber production is a robust guarantee of the commitment and permanence of the carbon project during the crediting period and beyond. 3. The Verification report has been updated under section 4.6.1 (under Opportunity cost "h") with the added explanation as above.	

		Verra Response The VVB has confirmed the appropriateness of the score assigned to issues #1 and #2, natural risk due to fire a) and extreme whether c). Opportunity cost h) and i); land tenure and resource access/impacts f) have been updated according to the length of the legally binding commitment. The VR has been updated accordingly. However, this finding cannot be closed. Issue Natural risk, extreme whether c): it is stated in the VR and NPRR that "the risk due to weather is significant and the probability of the occurrence of extreme events in Sierra Leone are high". However, the assigned risk score of 2 does not correspond to the value in Table 10 of the Non-permanence risk tool. Action Required: 1. The VVB ensure that assigned risk score for extreme whether c) matches the justification provided in the NPRR. 2. The VVB must assess the revised NPRR and Section 4.6 of the VR as needed. Program Rule(s) *AFOLU Non-Permanence Risk Tool*, v4.0 **Round 2**	

		VVB Response After reviewing all the existent information and considering conservativeness, the natural risk of *c) Extreme weather (W)* has been updated to 5 for Likelihood and significance (LS). According to Table 10 of the NPRT, the significance of extreme weather events is minor (5% to less than 25% loss of carbon stocks), and the likelihood is less than every 10 years. For the floodings, the effects are considered minor for the forest (and the carbon stocks) because most of the harmful effects affect the urban (and rural) areas, mainly livestock, and cropland land-uses areas[31]. In fact, the forest (and its sustainable management) in Sierra Leone serves as a platform for natural disaster prevention such as flooding[32]. Therefore the final score 5 is chosen	

Natural Risk Score (LS)						
		Likelihood				
		Less than every 10 years	Every 10 to less than 25 years	Every 25 to less than 50 years	Every 50 to less than 100 years	Once every 100 years or more, or risk is not applicable to project area
Significance	Catastrophic (70% or more loss of carbon stocks)	FAIL	30	20	5	0
	Devastating (50% to less than 70% loss of carbon stocks)	30	20	5	2	0
	Major (25% to less than 50% loss of carbon stocks)	20	5	2	1	0
	Minor (5% to less than 25% loss of carbon stocks)	5	2	1	1	0
	Insignificant (less than 5% loss of carbon stocks) or transient (full recovery of lost carbon stocks expected within 10 years of any event)	2	1	1	0	0
	No Loss	0	0	0	0	0

[31] Stated in the NPRT report: NPRT/NPRT_Miro_SL.docx
[32] Sam, M., & Zhiqiang, Z. (2018). The trend of forest cover removal: Case study of Tonkolili district, Northern Sierra Leone. *Journal of Environment and Earth Science*, *8*(11).

Furthermore, the fire risk has also been modified using a value of 2 for Likelihood and significance (LS):

- Significance: Insignificant (less than 5% loss of carbon stocks) or transient (full recovery of lost carbon stocks expected within 10 years of any event). Proved by MFSLfire affected compartment records[33], and in the MR Section 3.
- Likelihood: Less than every 10 years

As Miro has mitigation measures in place (See NPRT report) the final score for the fire is 2

Natural Risk Score (LS)						
		Likelihood				
		Less than every 10 years	Every 10 to less than 25 years	Every 25 to less than 50 years	Every 50 to less than 100 years	Once every 100 years or more, or risk is not applicable to project area
Significance	Catastrophic (70% or more loss of carbon stocks)	FAIL	30	20	5	0
	Devastating (50% to less than 70% loss of carbon stocks)	30	20	5	2	0
	Major (25% to less than 50% loss of carbon stocks)	20	5	2	1	0
	Minor (5% to less than 25% loss of carbon stocks)	5	2	1	1	0
	Insignificant (less than 5% loss of carbon stocks) or transient (full recovery of lost carbon stocks expected within 10 years of any event)	2	1	1	0	0
	No Loss	0	0	0	0	0

Accounting it into the NPRT[34] the total natural risk is 16%

[33] Supporting information/Risks/Fire Affected Compt.xlsx
[34] NPRT/MIRO_SL_VCS-Risk-Report-Calculation-Tool-v4.0.xlms

		 **3 NATURAL RISK** **Risk Category Factors** — Risk Rating a) Fire (F) — 2 — 0.50 — 1.00 b) Pest and Disease Outbreaks (PD) — 20 — 0.50 — 10.00 c) Extreme Weather (W) — 5 — 1.00 — 5.00 d) Geological Risk (G) — 0 — 0.00 e) Other natural risk (ON1) — 0.00 f) Other natural risk (ON2) — 0.00 g) Other natural risk (ON3) — 0.00 **Total Natural Risk [F + PD + W + G + ON]** — **16.00** Note: When a risk factor does not apply to the project, the score shall be zero for such factor Risk rating is determined by [LS x M] **Total Natural Risk (F + PD + W + G + ON)** — **16.00** Note: Total may not be less than zero If the Total Natural Risk is above 35 then the project fails the entire risk analysis Finally, the total buffer is 16.2 that has been rounded up to 17% as depicted below (capture from the NPRT[35] v4.0 Step 2: Overall non-permanence risk rating and buffer determination) resulting in a total of 95128 credits in the AFOLU pooled buffer account	

[35] NPRT/MIRO_SL_VCS-Risk-Report-Calculation-Tool-v4.0.xlms

STEP 2: OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

Risk Category		Rating
a)	Internal risk	0.20
b)	External risk	0.00
c)	Natural Risk	16.00
Overall risk rating (a + b + c)		**17.00**
Note: Overall risk rating shall be rounded up to the nearest whole percentage		
The minimum risk rating shall be 10, regardless of the risk rating calculated		
If the overall risk rating is over 60 then the project fails the entire risk analysis		
Total Risk Assessment		**0.17**
Net change in the project's carbon stocks		559578
TOTAL NUMBER OF CREDITS TO BE DEPOSITED IN THE AFOLU POOLED BUFFER ACCOUNT		**95128**

The MR, ER ex-post[36], NPRT and NPRR have been updated accordingly. FVR is also updated accordingly with independent assessment. The ER sheet is updated to accommodate the NPRR percentage value.

Verra Response

The actions required were addressed and the VVB ensured that the score was modified accordingly. However, this finding cannot be closed.

Issue:

1. The score for "Significance" on natural risk extreme weather (W) is inconsistent across the documents; VR reports "High" and "Major" significance, while MR reports "Insignificant". However, the correct score should be "Minor" as reflected in this PRR.
2. The score for "Significance" on natural risk fire (F) is inconsistent across the documents; The VVB conclusion in the VR reports

[36] Supporting information\2nd verification\April2024SL Ex-post_2nd Verification_Sierra Leone.xlms

		"Minor" significance, while the MR reports "Insignificant". However, the correct score should be "Insignificant" as reflected in this PRR. Action Required: 1. The VVB must ensure that the NPRR and the VR are updated to reflect the correct score assigned for 'Significance' for natural risk c) (W) extreme Weather ('Minor') and for (F) fire ('Insignificant') Program Rule(s) *AFOLU Non-Permanence Risk Tool*, v4.0	
		Round 3	
		VVB Response The inconsistency in words in FVR, MR, NPRR was corrected in all documents, stating that the significance of the extreme weather (W) is minor and the fire (F) is insignificant.	
		Verra Response No further action is required. The VVB's response is sufficient to close the finding.	

3	**Insufficient assessment for accuracy & quality of data**		
	Issue	**Round 1**	Closed

	1. The VR does not clearly describe the steps taken to assess: a. Accuracy of GHG emission reductions and removals, including accuracy of spreadsheet formulae, conversions and aggregations b. The appropriateness of any default values used in the monitoring report. c. Whether manual transposition errors between data sets have occurred. 2. The VR does not provide an overall concluding statement with respect to the sufficiency of quantity, and appropriateness of quality, of the evidence used to determine the GHG reductions and removals. <u>Action Required</u> 1. The VVB must update Sections 4.4 and 4.5 of the VR as per issues #1 and #2 above and must provide the detailed steps of their	<u>VVB Response</u> Verification team has now updated the relevant section 4.4 of the Verification Report to address the identified issue. The project used default values for the combustion factor, the emission factors, and the global warming potential of non-CO2 GHGs resulting from fire occurrences within the project boundary, as recommended by the applied methodology AR-ACM0003. The project monitored the data parameters such as diameter at breast height, height, plot location, plot area, and biomass of trees in temporal sample plots, according to the frequency and methods described in the monitoring plan (section 5.3 of the Registered PDD). The project estimated the net GHG removals by sinks using conservative methods and equations in line with the applied methodology and tools, such as AR-TOOL14, AR-TOOL15, and AR-TOOL16. The verification team cross-verified the monitored data and parameters, the calculation of project emissions, leakage emissions, and net GHG removals by sinks, and the uncertainty assessment, using the relevant sources of data, documents, and records. <u>Verra Response</u> Section 4.4 has been updated to include the steps taken to assess a), b) and c). No further action is required. The VVB's response is sufficient to close the finding.	

	assessment. Program Rule(s) *VCS Standard, v4.4*, Section 4.1.8, *VCS Verification Report Template, v4.2,* Sections 4.3 and 4.4		

4	**Non-use of the most updated version of IPCC GUIDELINES**		
	Issue Section 5 of MR references and uses default values from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, and IPCC 2003, Good Practice Guidance for Land Use, Land-Use Change, and Forestry, which are not the last version of that document. Action Required 1. The VVB must ensure that Section 5 of MR and all other related sections are updated to reference and use IPCC's	**Round 1** **PP Response** The following Table shows the old (IPCC, 2003[37] and 2006[38]) and the new values (Refinement of the 2006[39] or other accepted sources) from the last version of the IPCC.	Closed

Parameter	Old value (and source of reference)	New value (and the source of reference)
Root to shoot ratio for mixed tropical broadleaf	**0.42** (IPCC "Good Practice Guidance for	**0.232** (TABLE 4.4 (UPDATED) RATIO OF BELOW-GROUND BIOMASS TO ABOVE-GROUND BIOMASS

[37] IPCC "Good Practice Guidance for LULUCF". 2003
[38] Eggleston, H. S., Buendia, L., Miwa, K., Ngara, T., & Tanabe, K. (2006). 2006 IPCC guidelines for national greenhouse gas inventories.
[39] Gitarskiy, M. L. (2019). The refinement to the 2006 IPCC guidelines for national greenhouse gas inventories. *Fundamental and Applied Climatology*, *2*, 5-13.

most updated default values (except values that are fixed ex-ante).
2. The ERR calculations should be updated accordingly in all applicable sections of MR and spreadsheets.
3. The VVB must ensure that verification report is updated accordingly in all applicable sections to provide an assessment of the updated parameters and default values used.

Program Rule(s)
VCS Methodology Requirements v4.3, Section 2.5

Background
IPCC 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Vol 4. AFOLU can be found here:
https://www.ipcc-nggip.iges.or.jp/public/2019rf/vol4.html

species ($Rmix$)	LULUCF". 2003. Table 3A.1.850)	(R) [TONNE ROOT D.M. (TONNE SHOOT D.M.)-1])[40]
Biomass expansion factor (BEF)	**1.5** (IPCC 2003, Good Practice Guidance for Land Use, Land-Use Change, and Forestry51. Table 3A.1.10. Page 3.178.)	There was **no change** in the BEF in the refinement version of 2019[41] (See Image below).
Carbon fraction	**0.47** (2006 IPCC Guidelines for National Greenhouse Gas Inventories52. Table 4.3. Page 4.48.)	There was **no change** in the BEF in the refinement version of 2019[42] (See Image below).

As depicted in the image below, these were the only tables that were

[40] 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Link: https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch04_Forest%20Land.pdf
[41] Gitarskiy, M. L. (2019). The refinement to the 2006 IPCC guidelines for national greenhouse gas inventories. *Fundamental and Applied Climatology*, 2, 5-13.
[42] Gitarskiy, M. L. (2019). The refinement to the 2006 IPCC guidelines for national greenhouse gas inventories. *Fundamental and Applied Climatology*, 2, 5-13.

		updated in 2019. Only root-to-shoot ratio was modified from the IPCC values used in the project. Therefore, Biomass Expansion Factor (BEF) and Carbon Fraction remains the same values as before: **Tables** Table 4.4 (Updated) Ratio of below-ground biomass to above-ground biomass (R) ..... 4.18 Table 4.7 (Updated) Above-ground biomass in natural forests ..... 4.22 Table 4.8 (Updated) Aboveground biomass (AGB) in forest plantations..... 4.26 Table 4.9 (Updated) Above-ground net biomass growth in natural forests ..... 4.34 Table 4.10 (Updated) Above-ground net biomass growth in tropical and sub-tropical plantation forests .... 4.39 Table 4.11 (Updated) Reported Mean Annual Increment (growth rate of merchantable volume) values for some plantation forest species..... 4.42 Table 4.12 (Updated) Biomass values from tables 4.7–4.10 ..... 4.47 The only file where the values are not updated is the ex-ante of the 2nd verification[43] that still used the old value of the IPCC the root-to-shoot ratio so it will be updated using the formula provided by the CDM (See image below):	

[43] Supportinginformation/1st verification/SL_ex-ante_2ndverification.xlsx

	Species	Key data	Reference
Carbon fraction	*All*	0.47	IPCC "Good Practice Guidance for
Biomass Expansion Factor	*All*	1.5	IPCC "Good Practice Guidance for
Wood density (kg/m3)	*E.pellita*	0.59	1. Prasetyo, A., Aiso, H., Ishiguri, F., 2.Para citar este artículo: Giraldo 3.Menucelli, J.R., Amorim, E.P., Freitas, 4. Hung et al. (2015).Estimates of
	A.mangium	0.5	Hedge et al. Journal of Forest Science
	Tectona Grandis	0.7	Guendehou, G., Lehtonen, A.,
	Gmelina arborea	0.41	Dvorak, 2004. A PRELIMINARY
	Corymbia	0.63	Garcia_Florez, Lina & Vanclay, Jerome
	Other sp.	0.5	IPCC "Good Practice Guidance for
Root/Shoot Ratio (R)	*Trees*	0.42	IPCC "Good Practice Guidance for LULUCF". 2003. Table 3A.18
	Shrubs	0.40	IPCC "Good Practice Guidance for LULUCF". 2003. Table 3A.18

Old version

	Species	Key data	Reference
Carbon fraction	*All*	0.47	IPCC "Good Practice Guidance for
Biomass Expansion Factor	*All*	1.5	IPCC "Good Practice Guidance for
Wood density (kg/m3)	*E.pellita*	0.59	1. Prasetyo, A., Aiso, H., Ishiguri, F., 2.Para citar este artículo: Giraldo 3.Menucelli, J.R., Amorim, E.P., Freitas, 4. Hung et al. (2015).Estimates of
	A.mangium	0.5	Hedge et al. Journal of Forest Science
	Tectona Grandis	0.7	Guendehou, G., Lehtonen, A.,
	Gmelina arborea	0.41	Dvorak, 2004. A PRELIMINARY
	Corymbia	0.63	Garcia_Florez, Lina & Vanclay, Jerome
	Other sp.	0.5	IPCC "Good Practice Guidance for
Root/Shoot Ratio (R)	*Trees*	0.232	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (TABLE 4.4 (UPDATED) RATIO OF BELOW-GROUND BIOMASS TO ABOVE-GROUND BIOMASS (R)
	Shrubs	0.40	IPCC "Good Practice Guidance for LULUCF". 2003. Table 3A.18
	Grassland	1.60	IPCC "Good Practice Guidance for LULUCF". 2003. Table 3.4.3

Updated version

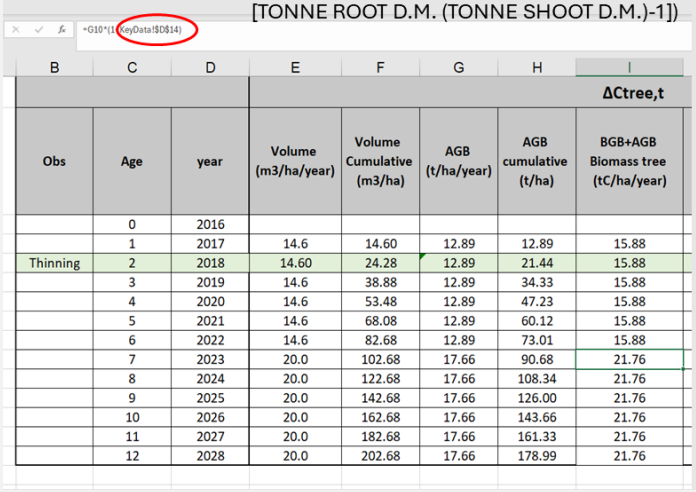
This information was updated in the MR[44] (See first image below). Also the calculations for the ex-ante[45] (See second image below), and the

[44] Referring to the Sierra Leone Monitoring Report (20230818_Monitoring-Report_V4.1_MIRO Sierra Leone), in section 4.2.
[45] Supportinginformation/1st verification/SL_ex-ante_2ndverification.xlsx

ex-post (See third Image below) were updated; as well as the Verification report were updated (**Actions 1,2,3**)

Data / Parameter	Root to shoot ratio for mixed tropical broadleaf species ($Rmix$)
Data unit	Dimensionless
Description	Converts the above-ground biomass to the above and belowground biomass
Source of data	*2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (TABLE 4.4 (UPDATED) RATIO OF BELOW-GROUND BIOMASS TO ABOVE-GROUND BIOMASS (R) [TONNE ROOT D.M. (TONNE SHOOT D.M.)-1])*
Value applied	**0.232**
Justification of choice of data or description of measurement methods and procedures applied	Conservatively chosen for tropical moist forest to calculate the belowground biomass.
Purpose of Data	Calculation of project emissions
Comments	NA

Root-to-shoot value = 0.232 (from 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (TABLE 4.4 (UPDATED) RATIO OF BELOW-GROUND BIOMASS TO ABOVE-GROUND BIOMASS (R) [TONNE ROOT D.M. (TONNE SHOOT D.M.)-1])



=G10*(1+KeyData!D14)

	B	C	D	E	F	G	H	I
								ΔCtree,t
	Obs	Age	year	Volume (m3/ha/year)	Volume Cumulative (m3/ha)	AGB (t/ha/year)	AGB cumulative (t/ha)	BGB+AGB Biomass tree (tC/ha/year)
		0	2016					
		1	2017	14.6	14.60	12.89	12.89	15.88
	Thinning	2	2018	14.60	24.28	12.89	21.44	15.88
		3	2019	14.6	38.88	12.89	34.33	15.88
		4	2020	14.6	53.48	12.89	47.23	15.88
		5	2021	14.6	68.08	12.89	60.12	15.88
		6	2022	14.6	82.68	12.89	73.01	15.88
		7	2023	20.0	102.68	17.66	90.68	21.76
		8	2024	20.0	122.68	17.66	108.34	21.76
		9	2025	20.0	142.68	17.66	126.00	21.76
		10	2026	20.0	162.68	17.66	143.66	21.76
		11	2027	20.0	182.68	17.66	161.33	21.76
		12	2028	20.0	202.68	17.66	178.99	21.76

Plantation Year	Species	Stratum	Eligible area (ha)	Average biomass (AGB) (t/tree)	Root to Shoot Ratio (R)	Average biomass (AGB+BGB) (t/tree)
2016	Aman	1.1	205	0.175	0.232	0.216
2016	Cctr	1.2	64	0.095	0.232	0.117
2016	Epel	1.3	276	0.208	0.232	0.256
2016	Gmel	1.4	22	0.128	0.232	0.157
2016	Other	1.6	13	0.052	0.232	0.064
2017	Aman	2.1	134	0.109	0.232	0.135
2017	Cctr	2.2	52	0.110	0.232	0.135
2017	Epel	2.3	529	0.089	0.232	0.110
2017	Gmel	2.4	128	0.173	0.232	0.214
2017	Tgra	2.5	19	0.012	0.232	0.015
2017	Other	2.6	16	0.045	0.232	0.056
2018	Aman	3.1	89	0.099	0.232	0.122
2018	Cctr	3.2	113	0.059	0.232	0.072
2018	Epel	3.3	1033	0.070	0.232	0.086
2018	Gmel	3.4	60	0.150	0.232	0.184
2018	Tgra	3.5	4	0.015	0.232	0.018
2018	Other	3.6	56	0.053	0.232	0.065
2019	Aman	4.1	243	0.071	0.232	0.087
2019	Epel	4.2	705	0.031	0.232	0.039
2019	Gmel	4.3	136	0.056	0.232	0.069
2019	other	4.4	80	0.045	0.232	0.055
2020	Aman	5.1	419	0.069	0.232	0.085
2020	Epel	5.2	37	0.026	0.232	0.032
2020	Gmel	5.3	385	0.055	0.232	0.068
2020	other	5.4	213	0.077	0.232	0.095
			5030.85	**0.08**		

VVB Response

CAR has been issued against the inconsistency in the selection of the IPCC values. Against the CAR, PP has now updated section 5 of the MR using latest IPCC's updated default value as per CDM_AR_tool_14. As only root-to-shoot ratio value was modified in the IPCC values hence it remains only one value which has been updated and used in

		the project. Therefore, Biomass Expansion Factor (BEF) and Carbon Fraction remains the same values as before. VVB confirms that these values are conservatively chosen for all forest to calculate the belowground biomass and it offers dynamics values according to the age and volume of the aboveground biomass. Hence CAR has been accepted and closed. The same has been reconfirmed in the section 4.4 of FVR. Verra Response The VVB has reviewed the IPCC values and confirms that replacing the BEF value with the most updated value by IPCC 2019 is appropriate. The VVB also confirms that the other values should not be updated because there have been no changes across the new versions. The VVB has assessed the update of the calculations, including the new BEF. No further action is required. The VVB's response is sufficient to close the finding.	

5	**Long-term average updated with ex-post monitored data**		
	Issue	**Round 1**	Closed

	1. The LTA has not been calculated in the current monitoring/verification period. Action Required 1. The VVB must ensure that the LTA is calculated for this monitoring/verification period and reported in the MR and VR. 2. The VVB must indicate whether the LTA has been reached for the current verification. Program Rule(s) *VCS Standard, v4.4*, Section 3.2.25 (7)	PP Response The LTA calculation was included both in the MR[46] , as part of the supporting documents, in concrete the one named SL_ex-ante_2ndverification[47]. In this file the values from the ex-post (monitoring) were used for the calculations of the Long-term average (LTA). The value of the LTA for the first verification (ex-ante)[48] was 1,907,051 tCO2e, and in the second verification this value has been updated introducing the changes (Root-to-shoot ratio - See answer to finding 4) to sum a total of 1,486,114 tCO2e[49]. 1st verification – ex ante Total VCUs 1,544,711.1 Annual VCUs 51,490.4 VCUs/ha/year 3.9 **LTA: 1,907,051** 2nd verification – ex ante Total VCUs 1,292,919.4 Annual VCUs 43,097.3 VCUs/ha/year 3.7 **LTA 1,486,114.2**	

[46] Referring to the Sierra Leone Monitoring Report (20230818_Monitoring-Report_V4.1_MIRO Sierra Leone), in sections 5.3.
[47] Supportinginformation/2nd verification/SL_ex-ante_2ndverification.xlsx
[48] Supportinginformation/1st verification/201108_Miro_SL_ex-ante_LES.xlsx
[49] Supportinginformation/2nd verification/SL_ex-ante_2ndverification.xlsx (Tab LTA)

Project scenario: to date GHG emission reductions and removals (t)	Annual change in GHG benefit	Expected total GHG benefit to date	Total credit available to be issued each year	Total VCUs - Buffer (13%)
179	179	179	179	155
18,105	17,926	17,926	17,926	15,596
60,688	42,584	42,584	42,584	37,048
140,913	80,224	80,224	80,224	69,795
253,669	112,756	112,756	112,756	98,097
395,591	141,923	141,923	141,923	123,473
568,911	173,319	173,319	173,319	150,788
776,307	207,396	207,396	207,396	180,435
1,032,985	256,678	256,678	256,678	223,310
1,343,904	310,919	310,919	310,919	270,499
1,705,362	361,458	142,211	142,211	123,723
2,064,233	358,871			-
2,426,640	362,407			-
2,542,028	115,387			-
2,555,075	13,047			-
2,363,800	(191,275)			-
2,238,669	(125,132)			-
2,206,584	(32,085)			-
2,131,630	(74,954)			-
2,087,638	(43,992)			-
1,850,933	(236,705)			-
1,615,171	(235,762)			-
1,385,310	(229,861)			-
1,746,768	361,458			-
2,105,639	358,871			-
2,468,047	362,407			-
2,583,434	115,387			-
2,596,482	13,047			-
2,405,207	(191,275)			-
2,280,075	(125,132)			-
2,129,380	(150,695)			-
1,987,645	(141,735)			-
1,845,801	(141,844)			-
1,483,066	(362,735)			-
1,078,795	(404,271)			-
638,870	(439,925)			-
738,887	100,017			-
838,904	100,017			-
938,921	100,017			-
788,619	(150,301)			-
511,820	(276,799)			-
		1,486,114.2	**1,486,114**	**1,292,919**
1,486,114			**49,537**	
LTA:				

Total VCUs	1,292,919.4
Annual VCUs	43,097.3
VCUs/ha/year	3.7
LTA	**1,486,114.2**

The LTA has not been reached in the current verification (Action 2) given that the current VCUs in the second verification is just 486,833 tCO2e50 (updated version using leakage - See answer to finding 9 for more information) after buffer, and in the 1st verification there were issued a total of 126,29751 credits after buffer. The sum of the 1st and the 2nd verification sum 613,130 tCO2e. Therefore 872,984 tCO2e remain until the LTA is reached.

Concept	Number of VCU's (tCO2e)	Supporting documents
1st Verification	126,297	Referring to PDD Reforestation of Degraded Lands in Sierra Leone, Section 6.5 ,Table 58. VCU's eligible for issuance
2nd Verification	486,833	Supportinginformation/2nd verification/SL Ex-post_2nd Verification.xlsb (Tab NET GHG ER)
LTA updated 2nd verification	1,486,114	Supportinginformation/2nd verification/SL_ex-ante_2ndverification.xlsx (Tab LTA)
VCU's until the LTA is reached	872,984	Result of:

[50] Supportinginformation/2nd verification/SL Ex-post_2nd Verification.xlsb (Tab NET GHG ER)
[51] Referring to PDD Reforestation of Degraded Lands in Sierra Leone, Section 6.5 ,Table 58. VCU's eligible for issuance

		LTA update 2nd ver - (1st verification VCU's + 2nd verification VCU's)

The LTA and the Ex-ante were calculated at this verification using the growth data of each species until year 6 and the literature data used during the validation. This information can be confirmed here:
Values from the ex-post (0-6 years) in the tab named "MAI" of the "SL_ex-ante_2ndverification.xlsx" file (Figure below).

N°	Species	Short name		MAI	Reference
1	*Eucalyptus pellita*	*Euc.pellita*	0-6	14.6	From Ex Post calculations 2022
			from 6 years ontward	20	Yepes et al. (2011). Protocol for national and subnational
2	*Acacia mangium*	*Aman*	0-6	19.94	From Ex Post calculations 2022
			from 6 years ontward	26	Yepes et al. (2011). Protocol for national and subnational
3	*Corymbia citriodora*	*Cory*	0-6	11.02	From Ex Post calculations 2022
			from 6 years ontward	16	FAO - Forest Resources of Tropical Africa (The MAI value employed is
4	*Gmelina arborea*	*Gmel*	0-6	20.68	From Ex Post calculations 2022
			from 6 years ontward	13.7	UST, P. (1994). Growth and biomass production of Gmelina
5	*Tectona grandis*	*Teak*	0-6	1.43	From Ex Post calculations 2022
			from 6 years ontward	10.3	Mattia, S. B., & Sesay, S. (2020). Ground Forest Inventory and
6	*Other Species*	*Others_sp*	0-6	12.85	From Ex Post calculations 2022
			from 6 years ontward	12.85	From Ex Post calculations 2022

Index | Stratums | MAI | KeyData | Euc. pellita | Aman | Gmel

Checking into the individual species tabs, the values used correspond to the ex-post (See the column E in the tabs: 6. E. pellita, 7. Aman, 8. Gmel, 9. Teak, 10. Cory, and 11. Other, for more information)

		Both the Monitoring Report52 (See Image below) and the Verification Report have been updated, adding one paragraph about the LTA not being reached for the current verification (Action 1). **VVB Response** The LTA calculation was included in FVR under section 4.4. The calculations have been detailed and assessed by assessment of project excel sheet which has been updated to reflect LTA result as 1,540,288 tCO2e since the current VCUs in the second verification is now reported as 572,863 tCO2e after buffer, there are 841,128 tCO2e remaining until reach the LTA. Therefore, the LTA has not been reached in the current verification. This has been cross verified by excel sheet submitted by PP during verification.	
		Verra Response The numbers in the response provided above by the VVB: • 1,540,288 tCO2e (LTA) • 572,863 tCO2e after buffer for 2nd verification and • 841,128 tCO2e remaining until reach LTA **do not correspond** to what is stated in the VR and MR. However, the VVB has updated the VR and MR with the correct LTA information. No further action is required. The finding can be closed.	

[52] Referring to the Sierra Leone Monitoring Report (20230818_Monitoring-Report_V4.1_MIRO Sierra Leone),

6	**Insufficient assessment of AFOLU safeguards**		
	Issue 1. Section 4.2.1 of the VR does not discuss the following: a) The potential adverse impacts of-using chemical pesticides and other inputs and the steps to mitigate them. b) The potential adverse impacts of using non-native species and whether reasonable steps have been taken to mitigate them. 2. The activities implemented to mitigate risks to local stakeholders due to project implementation are unclear. 3. It is unclear whether with the extension of the project area in the 2nd verification period, there will be no changes affecting local stakeholders with respect to: a. The project design and implementation, including the results of monitoring. b. The risks, costs and benefits the project may	**Round 1** PP Response Issue 1. a) MFSL is an FSC compliant company[53], therefore chemicals are only used under the FSC's rules. Moreover, where chemicals are used the aim is to minimise their use to be cost-efficient. Pesticides and fungicides are only used in the tree nurseries and sealed greenhouses. Also they are used in low quantities (using them in a controlled environment and stored in bunded and locked, controlled access, storage buildings). In the Forest Management Plan[54] there are references that supports that the impact of chemicals is minor and the reductions that Miro has implemented: i) The company is committed to employing non-chemical weed control wherever practical, and a strategy of reduction in chemical use over time where chemical control is considered necessary for current pest and weed problems. MFSL will only use eco-friendly products for weed control that are acceptable in terms of the FSC Principles, Criterion, Policies and guidelines. ii) Where necessary, pesticides and fungicides are employed to combat pathogen outbreaks. It is aware that chemical control is mostly unsuccessful unless backed up by thorough cultural management strategies, and aims to ensure that the company's staff are aware of the need for plant sanitation throughout all	Closed

[53] Supporting documents/EHSS and Reports//FSC/FSC MFSL Certificate
[54] NPRT/internal risks/MFSL Forestry Mgt Plan V8 FINAL 2019

	bring to local stakeholders. c. All relevant laws and regulations covering workers' rights in the host country. d. The process of VCS Program validation and verification and the validation/verification body's site visit. 4. It is unclear if conflicts arose between the project proponent and local stakeholders and whether such conflicts were resolved via the established grievance redress procedure and have been made publicly available. <u>Action Required</u> 1. The VVB must justify how there has been no change in the safeguards compared to the previous verification period if the project area has changed.	operations. b) Despite Acacia mangium, Tectona grandis and Gmelina arborea being on the list of invasive alien species in Sierra Leone[55], MFSL has been taking the appropriate measures to mitigate the possible adverse effects of them. For that, prior to the project start date an ESIA (Environmental and Social Impact Assessment on Plantation Forestry) was done by Environmental Consultant Services[56], which after was approved by the government of Sierra Leone[57]. First the native vegetation has been protected when implementing the project: ● The project area was composed of mostly non-native grasslands, and a mix of farm bush and secondary vegetation. ● Additionally, there were no rare, threatened or endangered species within the project areas. ● Nevertheless, vegetation removal is only recommended for essential works. As much as possible large trees and vegetative cover should be retained. Second, once the project started MFSL has no records on these species propagating in the locations in which the company operates, and in case they found some of these species naturally propagating (inside and outside the project area) they have measures to avoid it. On that MFSL states[58]: Regarding natural areas, environmentally sensitive and conservation	

[55] Norman, P. E., Johnny, J., Moiforay, S. K., & Norman, Y. S. (2021). Invasive Alien Species of Sierra Leone. *Invasive Alien Species: Observations and Issues from Around the World*, *1*, 242-262.
[56] Supporting information/Risks/MFSL ESIA Final Report (ECS 2014).pdf
[57] Supporting information/Risks/MFSL EPA Permit (2014.11.12)
[58] Referring to PDD Reforestation of Degraded Lands in Sierra Leone, in section 1.11.

	2. The VVB must assess the information in #1, #2, #3 and #4 and ensure the MR and the VR are updated accordingly. 3. The VVB must ensure that relevant sections of the NPRR are updated. Program Rule(s) *VCS Standard, v4.4*, Sections 3.18.18, 3.18.19, 3.18.17(2) b) c) and 3.19.4	areas are identified during the planning phase of operations and designated as conservation zones which are protected to encourage natural regeneration. It is the Company's policy to enable natural recovery and succession of conservation zones, and as such the primary management activity is to protect these areas, removing alien invasive exotics. Based on the desired vegetation classification and status, management plans will be developed annually to remove alien invasive species depending on the infestation levels identified in the Microforest weed management module. This module facilitates the identification of current infestation levels and plans to ensure that these areas are returned to maintenance level. Therefore, there is a very low risk of these species propagating outside of the project area (Action 2). Issue 2 According to the ESIA[59], the activities for which mitigation measures have been designed are the following: The development of a community development action plan (CDAP) whose idea is to provide opportunities for welfare improvement. In the image below the measures to achieve it are detailed:	

[59] Supporting information/Risks/MFSL ESIA Final Report (ECS 2014).pdf

		• The use of improved crop varieties and livestock management practices is to ensure increase agricultural productivity; • Improve health standards through the timely provision of quality, affordable and accessible health care services; safe drinking water, improved sanitation and waste disposal; • Enhance access to formal education through the establishment /rehabilitation of educational infrastructure and facilities; • Youth empowerment schemes • Provisions of adult literacy facilities in order to improve adult literacy • Provision of training for enhanced organizational, managerial and leadership capacities; • Provision of technical and vocational skills training opportunities for the development of middle level manpower; • The establishment and effective implementation of a reliable health and safety policy that will adequately address health and safety requirements of MFC (SL) Ltd employees in accordance with established national and international standards; • Targeted sensitization and awareness raising on the transmission and prevention of HIV/AIDS ,STDs and Ebola virus • Ensuring the maintenance of an effective communication channel with the beneficiary community through regular meetings of the Community Relations Committee (CRC). For more information in Table 35 of the ESIA it is depicted the list of actions and the annual cost. Furthermore for the workers employed at Miro the following measures for health and safety during the different forestry operations have been offered:	

10.9.1 Mitigation

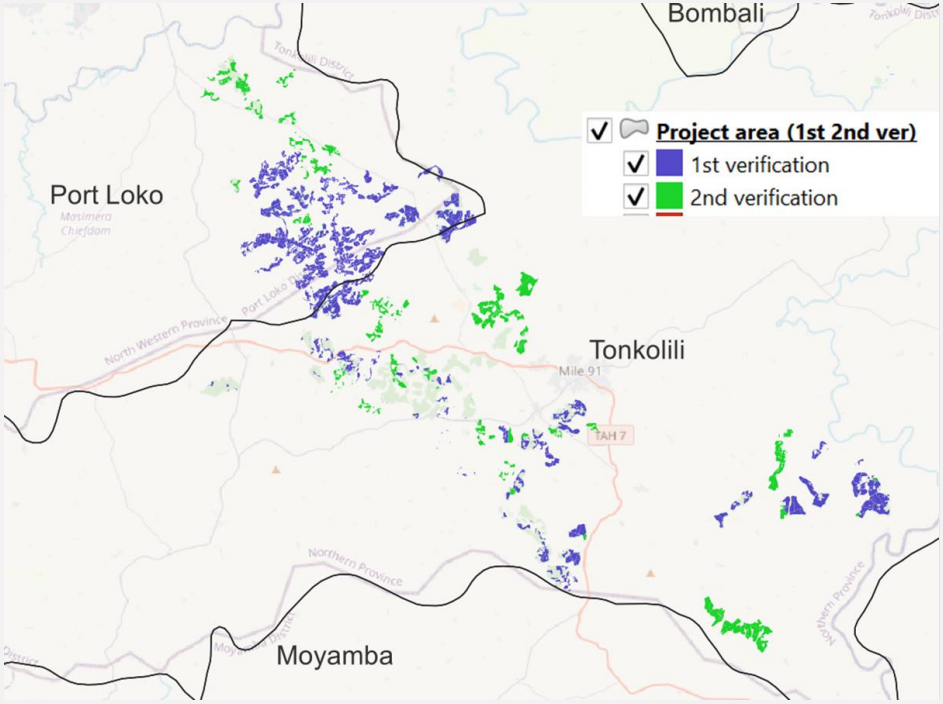
The following recommendations are offered:

1	MFC (SL) Ltd abides by the guidelines set out in the Occupational Health and Safety Act of Sierra Leone
2	Act to ensure that workers wear the necessary protective gear at all times.
3	Trained personnel in First Aid are on site at all time during the working hours.
4	Facilities for employees should include drinking water toilet and shower.
5	A First Aid Post is established on-site with the requisite drugs and equipment to cater for any emergencies or occurrences.
6	Liaison is established with the Government Hospital or Health Centre in Mile 91 town in case of any emergencies
7	Emergency Response and Medical Evacuation measures are established to cater to serious emergency situations
8	Identify and train a Health and Safety Officer or Consulting firm to implement this aspect of your MFC project in Yoni Chiefdom of the Tonkolili District.
9	Potential employees should require a complete medical examination to ascertain whether they have respiratory condition.

Therefore, the mitigation measures for the local stakeholders have been planned and implemented correctly (Action 2).

Issue 3:
The new areas are following the same regulations as before when MFSL produced an Environmental, Social and Health Impact Assessment (ESHIA) Study for its operations to meet the Environment Protection Agency's national requirements for securing an EIA license. For that reason, as stated in the ESIA[60] MFSL contracts the services of GeoData SL to research for the purpose of extending the EIA licenses to cover new areas within the same districts. Therefore, GeoData SL produce the

[60] Supporting information/Additional/MFSL ESIA for Miro New Leases - GeoData 020082018.pdf

		ESHIA document for public disclosure, previous submission to the Environmental Protection Agency (EPA) and extension of the EIA licenses. The extension of the project area in the second verification is still the same analysed during the first verification and did not have any impact affecting new local stakeholders because the new areas are located within the same plantations and in the same districts (Tonkolili and Port Loko) therefore no changes are expected (See image below and map in the supporting information61).  The new planted areas are chosen based on the legal availability for being	

[61] Supporting information/Map/MIRO SL Location map.jpg

		leased, with free prior informed consent, and where the social, topographic and soil conditions are suitable for forestry establishment. As it is written in the FMP[62] of Yoni and Masimera from 2019, Communities are given advance notice before any afforestation program and MFSL only plants land that is allocated by the free will of the communities. Furthermore, the forest management certification report by SGS South Africa in 201863 confirmed that the FPIC was a common practice of MFSL to get new lands, renewing the certificate for 4 more years (See image below). **PRINCIPLE 2: TENURE AND USE RIGHTS AND RESPONSIBILITIES** ***Criterion 2.1 Demonstration of land tenure and forest use rights*** **Strengths** **Compliance**: The forest land is leased from the traditional landholders and ratified by the Government. A general lease agreement over 20 980 ha is in place for a period of 50 years. In addition specific land lease agreements are entered into with landowners for planting of defined areas within the area of the general lease agreement. The company is legally registered as a company. The company only plants land that is allocated by the free will of the communities. Legal/customary tenure provisions are in place and respected to control the process of land allocation by the communities to the company. This ensures that a free prior and informed consent process is followed. a) The risks, costs and benefits the project may bring to local stakeholders The risks associated to the stakeholders were assessed by an Policy, Implementation Framework and Social Risk Assessment[64] report (See image below).	

[62] Supporting information/Additional/MFSL Forestry Mgt Plan V8 FINAL 2019.pdf
[63] Supporting information/Additional/123151-SL - MFSL SA2019-11 - AD 36-A-19 NM.pdf
[64] Supporting information/Risks/MFC Land Development - Policy, Implementation Framework and E_S Risk Assessment Guidelines.pdf

Social Risk Assessment Sierra Leone

- In Sierra Leone the situation is somewhat more simple due to the land agreements, the land area and demarcation is always decided based on thorough consultation with the community themselves
- Land is only leased from communities on a willing seller, willing buyer basis
- It is however, of critical importance that Miro assesses each new parcel of land to ensure that there are no discrepancies in the process and that demarcation has been a joint decision amongst all community members
- The Company will conduct a workshop with a selection of community members to gather basic information, especially in regards to ecosystem services
- Miro will conduct the **Village Mapping Workshop** across a demographic in each new settlement, a similar activity has been done for all communities to date
- During the workshop Miro will ask some additional questions that are useful for our internal information on the Company's development effects
- Awareness of the Company grievance procedure is a part of the workshops, this enables everyone to have a voice in case of any differences in opinion regarding land leases
- Company Community Liaison Officers (CLO's) pay an active role in the process and are trained in engagement and grievance procedures, these measures are taken to ensure it is a willing seller, willing buyer situation

The social costs for the stakeholders were included:
The economic viability took into account the full environmental, social, and operational costs in the FM certification report (See image below)[65].

PRINCIPLE 5: BENEFITS FROM THE FOREST	
Criterion 5.1	***Economic viability taking full environmental, social, and operational costs into account***
Strengths	
Compliance	A cost-benefit analysis was done for the project which showed that significant fiscal incentives can be achieved. The company is a direct investment of two European banks with long term commitments and thus any financial risk is very low. An annual budget is prepared that also provides for environmental and social costs.

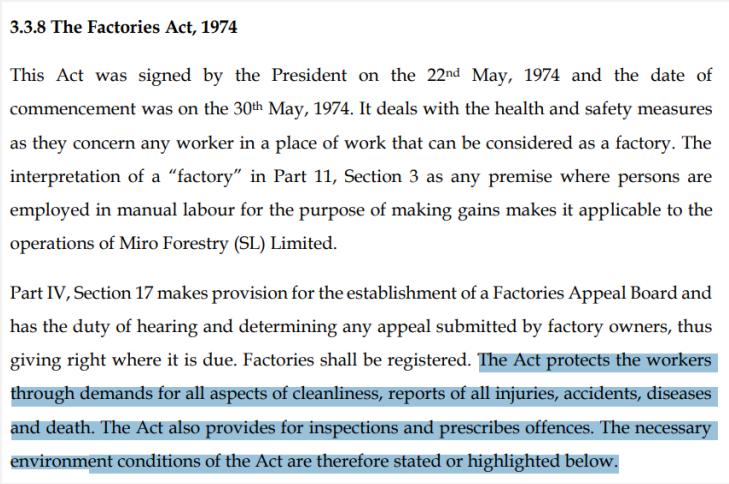
The benefits for the local stakeholders are:

[65] Supporting information/Additional/123151-SL - MFSL SA2019-11 - AD 36-A-19 NM.pdf

		They are derived from land development primarily by way of permanent job creation, delivering evergreen monetary liquidity to such communities. Maintenance of the value of forest services and resources: these are benefits to social values such as local employment opportunities, small and medium-scale support businesses that have been created and improvement in health, education and general welfare of the local communities that have been affected (Criterion 5.5 of the FM certification report) . Forest conversion to plantations or non-forest land uses: it shows significant environmental benefits in terms of protection of the remaining degraded woodlands (Criterion 6.10 of the FM certification report). Across all districts over which the company operates it provides CSR support typically these were education and sanitation related – such as the building of schools, latrine and freshwater infrastructure. As part of the company's activities roads to communities are also rehabilitated and improved, which is a very significant benefit to the communities, as this provides them greater access to markets to trade their goods as well as access to schools and medical facilities (thus, for example, the amount of child-birth related incidents has dramatically dropped in areas of the company's operation). To sum up, the Environmental and Social Risk Assessment for 2018 Land Development states that: The conclusion that can be drawn is that the communities are willing to lease their lands to Miro and allow Miro operate fully without any disturbance; community members are willing to move any previous land use to other areas which have been identified. Furthermore, community members are content with the possibility of	

		employment opportunities and pleased at the prospect of development in their communities66. Therefore no changes are expected for the local stakeholders (Action 2). b) All the new areas fall under the mentioned districts in the PDD (Tonkolili and Port Loko districts) (See Map[67] in the supporting information folder). The most recent leases (2019) were shared as part of the supporting information[68]. Furthermore, information about all the land leases is depicted in the PDD[69]. As the project continues its activity within the same administrative boundaries the laws and regulations covering the workers rights remain the same proved by the ESIA report for new leases[70] including The Factories Act, 1974 (first image below) (Action 1).	

[66] Supporting information/Risks/MFD Land Development Risk Assessments 2018
[67] Supporting information/Map/
[68] Supporting information/Leases/
[69] Referring to PDD Reforestation of Degraded Lands in Sierra Leone(Table 10. Details of the land lease agreements), in section 1.7.
[70] Supporting information/Additional/MFSL ESIA for Miro New Leases - GeoData 020082018.pdf

		 **3.3.8 The Factories Act, 1974** This Act was signed by the President on the 22nd May, 1974 and the date of commencement was on the 30th May, 1974. It deals with the health and safety measures as they concern any worker in a place of work that can be considered as a factory. The interpretation of a "factory" in Part 11, Section 3 as any premise where persons are employed in manual labour for the purpose of making gains makes it applicable to the operations of Miro Forestry (SL) Limited. Part IV, Section 17 makes provision for the establishment of a Factories Appeal Board and has the duty of hearing and determining any appeal submitted by factory owners, thus giving right where it is due. Factories shall be registered. The Act protects the workers through demands for all aspects of cleanliness, reports of all injuries, accidents, diseases and death. The Act also provides for inspections and prescribes offences. The necessary environment conditions of the Act are therefore stated or highlighted below. Using all the information provided in the aforementioned points the MR, and NPRT are updated accordingly (Action 3). **VVB Response** Issue 1. : refer section 4.2.1 of FVR (a) It has been assessed during verification process that in order to assure a responsible and sustainable forest management standard, the Miro has obtained an FSC certification in 2017 also Miro Forestry has identified its environmental and socio-economic impacts through the development of an Environmental and Social Impact Assessment (ESIA)71, which has been cross verified by Verification team. Hence it was inferred that that chemicals are only used under the FSC's rules.	

[71] For old leases: Supporting information/Additional/MFSL ESIA Final Report (ECS 2014).pdf ; for new leases: Supporting information/Additional/MFSL ESIA for Miro New Leases - GeoData 020082018.pdf

		Moreover, where chemicals are used the aim is to minimise their use to be cost-efficient. Pesticides and fungicides are only used in the tree nurseries and sealed greenhouses. Also they are used in low quantities (using them in a controlled environment and stored in bunded and locked, controlled access, storage buildings). In the Forest Management Plan72. It also has been concluded by assessment of the Forest Management Plan that impact of chemicals is minor and the company is committed to employing non-chemical weed control wherever practical, and a strategy of reduction in chemical use over time where chemical control is considered necessary for current pest and weed problems. MFSL will only use eco-friendly products for weed control that are acceptable in terms of the FSC Principles, Criterion, Policies and guidelines. MFSL is verified to be a company compliant with the Forest Stewardship Council (FSC) rules. The company is committed to minimizing the use of chemicals and aims to be cost-efficient. Pesticides and fungicides are used in controlled environments such as tree nurseries and sealed greenhouses, and their usage is kept to a minimum. The company's Forest Management Plan indicates that the impact of these chemicals is minor. MFSL is dedicated to reducing chemical use over time and employs non-chemical weed control wherever practical. Only eco-friendly products acceptable under FSC Principles, Criterion, Policies, and guidelines are used for weed control. In cases of pathogen outbreaks, pesticides and fungicides are used, but the company acknowledges that chemical control is mostly unsuccessful	

[72] Supporting information/Additional/MFSL Forestry Mgt Plan V8 FINAL 2019.pdf

		without thorough cultural management strategies. Therefore, MFSL ensures that its staff are aware of the need for plant sanitation throughout all operations. This commitment to environmental responsibility and employee education further verifies MFSL's adherence to FSC rules and its dedication to sustainable practices. (b) The potential adverse impacts of using non-native species (Acacia mangium, Tectona grandis and Gmelina arborea) have been pre assessed and mitigation measures been addressed by PP in the Environmental and Social Impact Assessment on Plantation Forestry report which defines precautionary measures to ensure a very low risk of these species propagating outside of the project area. It was also concluded that the company's policy to enable natural recovery and succession of conservation zones, and as such the primary management activity is to protect these areas, removing alien invasive exotics. Issue 2. In accordance with paragraph 3.18.3 of VCS standard v 4.4 and based on the on-site assessment, the verification team assessed the mitigation risk, and detailed steps were taken to assess the activities implemented by the PP to mitigate the risk to local stakeholders due to project implementation, and the same has been described in the revised validation report. The verification team has interacted with local stakeholders and discussed about risks and mitigation processes. (refer section 4.3) Issue 3: Section 4.3 is updated to give the detail confirmation on how the increased area within the project boundary does not affect the baseline, additionality, legal regulation and applicability. Verification	

		team echoes and underlines the claim by PP that the extension of the project area in the second verification follows the same regulations for initial verification process and is as per Environmental, Social and Health Impact Assessment (ESHIA)[73] Study and operates in similar manner to meet the Environment Protection Agency's national requirements for securing an EIA license [74]. Verification team has included the newly identified areas for the onsite assessment sample plots and were able to confirm the same. Further it did not have any impact affecting new local stakeholders because the new areas are located within the same plantations and in the same districts (Tonkolili and Port Loko) therefore no changes have been recorded. (refer section 4.3 of the FVR) Issue 4. The relevant sections of MR and VR has been now updated and rephrased (s(section2.2, 4.2.3)	
		<u>Verra Response</u> - Action #1: The VVB has assessed and confirms the information provided by the PP on possible pesticide effects, non-native species, and risk mitigation measures. In line with this, the MR and VR have been updated. - Action #2: The VVB confirms that the mitigation measures are sufficient, and the VR has been updated. - Action #3: The VVB confirms that there will be no changes affecting the local stakeholders with respect to factors a), b), c) and d, as the new areas are validated follow the same regulations and are in the same plantations and in the same districts. - Action #4: The VVB confirms that no conflicts arose between PP and stakeholders and relevant sections of MR and VR have been	

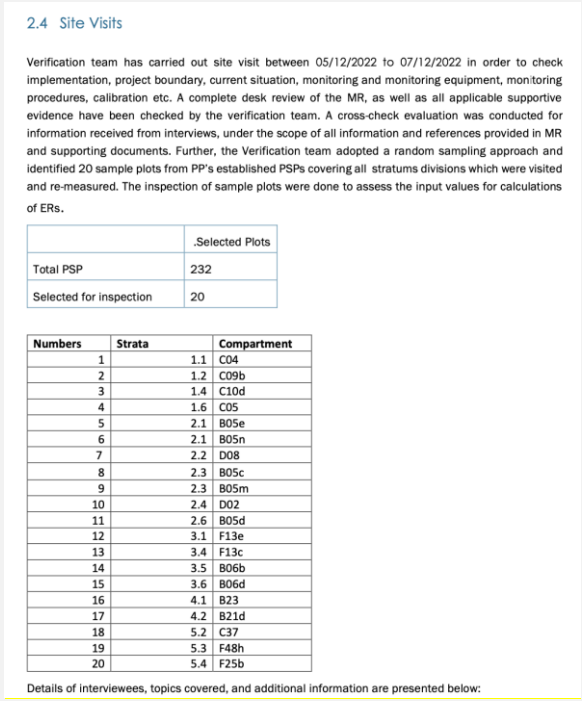
[73] Supporting information/Additional/MFSL ESIA for Miro New Leases - GeoData 020082018.pdf or MFSL ESIA Final Report (ECS 2014).pdf
[74] Supporting information/Additional/MFSL EPA Permit (2014.11.12).pdf

		updated. No further action is required. The VVB's response is sufficient to close the finding	

7	**Clarification is needed on the sampling approach**		
	Issue 1. Under Section 2.4 of the VR, it is unclear how the VVB has guaranteed the sample's representativeness in quality without interviewing the community stakeholders. 2. It is unclear how the random selection of the PP's established PSPs guarantees the independency of the audit. Action Required 1. The VVB must justify how the sample's representativeness in quality was guaranteed without interviewing the community stakeholders.	**Round 1** VVB Response 1. The validation team interviewed the community stakeholder during the on-site assessment and the same has been stated in the verification report. Interviews with stakeholders were done and the details have been reported in FVR under sec 2.4. 2. Verification team did random sampling approach and identified 20 sample plots were sampled and selected form PP's established PSPs covering all stratums divisions which were visited and re-measured. The inspection of sample plots was done to assess the input values for calculations of ERs. The following sampling plan was drawn covering all 4 stratums divisions from PP's Permanent sampling plots. In each plot the trees were remeasured to detect differences between the monitoring performed by the field team and the measurements done by the verification team. Details are presented in the verification report section 2.4	Closed

3. The VVB must justify how the selection of sample plots guarantees the independency of the audit.

Program Rule(s)
VCS VVB Manual, v3.2, Section 3.3.1.2,
VCS Standard, v4.4, Section 4.1



2.4 Site Visits

Verification team has carried out site visit between 05/12/2022 to 07/12/2022 in order to check implementation, project boundary, current situation, monitoring and monitoring equipment, monitoring procedures, calibration etc. A complete desk review of the MR, as well as all applicable supportive evidence have been checked by the verification team. A cross-check evaluation was conducted for information received from interviews, under the scope of all information and references provided in MR and supporting documents. Further, the Verification team adopted a random sampling approach and identified 20 sample plots from PP's established PSPs covering all stratums divisions which were visited and re-measured. The inspection of sample plots were done to assess the input values for calculations of ERs.

	.Selected Plots
Total PSP	232
Selected for inspection	20

Numbers	Strata	Compartment
1	1.1	C04
2	1.2	C09b
3	1.4	C10d
4	1.6	C05
5	2.1	B05e
6	2.1	B05n
7	2.2	D08
8	2.3	B05c
9	2.3	B05m
10	2.4	D02
11	2.6	B05d
12	3.1	F13e
13	3.4	F13c
14	3.5	B06b
15	3.6	B06d
16	4.1	B23
17	4.2	B21d
18	5.2	C37
19	5.3	F48h
20	5.4	F25b

Details of interviewees, topics covered, and additional information are presented below:

Total PSP	230
Selected for inspection	20

Numbers	Strata	Compartment	Strata
1	1.1	C04	1.1
2	1.2	C09b	1.2

		3	1.4	C10d	1.4		
		4	1.6	C05	1.6		
		5	2.1	B05e	2.1		
		6	2.1	B05n	2.1		
			2.2	D08	2.2		
		8	2.3	B05c	2.3		
		9	2.3	B05m	2.3		
		10	2.4	D02	2.4		
		11	2.6	B05d	2.6		
		12	3.1	F13e	3.1		
		13	3.4	F13c	3.4		
		14	3.5	B06b	3.5		
		15	3.6	B06d	3.6		
		16	4.1	B23	4.1		
		17	4.2	B21d	4.2		
		18	5.2	C37	5.2		
		19	5.3	F48h	5.3		
		20	5.4	F25b	5.4		

		The quality of the sample's representativeness was ensured through a systematic and random sampling approach. The verification team selected 20 sample plots from the project proponent's (PP's) established Permanent Sampling Plots (PSPs), which cover all stratum divisions. These plots were visited and re-measured, providing a comprehensive and representative sample of the entire project area. This approach ensures the accuracy of the input values used for the calculations of Emission Reductions (ERs). The independence of the audit was maintained by the verification team's objective selection of sample plots, which were chosen randomly from all stratum divisions. This method prevents any potential bias in the selection process and ensures that the sample plots are representative of the entire project area. While community stakeholders were interviewed during the on-site assessment, the verification of the sample's representativeness in quality did not rely solely on these interviews. Instead, it was based on the objective and systematic inspection of the selected sample plots. This approach ensures that the verification process is independent and unbiased. The details of the stakeholder interviews and the sampling process have been reported in the FVR under section 2.4. This transparency further guarantees the independence of the audit.	
		<u>Verra Response</u> The VVB has justified how the quality and independence of the sample has been guaranteed, stating that the sampling has been randomly performed and planned according to the requirements of ISO 14065, covering all strata and with an adequate number of PSPs selected for inspection. The VVB's response is sufficient to close the finding, no further action required.	

<table>
<tr><td>8</td><td colspan="3">Clarification is needed on the selected volume equations</td></tr>
<tr><td></td><td>Issue
1. It is unclear how the new volume equations for the Eucalyptus pellita and Gmelina arborea meet the requirements of AR-TOOL 18, v 1.0.1, paragraph 5.

Action Required
1. The VVB must describe how they assessed the selected volume equations and justify how their selection meets the AR-Tool 18, v1.0.1 requirements.

Program Rule(s)
AR-TOOL 14, v4.2, paragraph</td><td>Round 1

PP Response

In the joint PD and MR[75] (of the first verification) are shown the old equations used for the biomass volume calculation:

<table>
<tr><th>Species</th><th>Allometric equation</th><th>Source</th></tr>
<tr><td>Eucalyptus pellita</td><td>$Vt = 0.000051265 \times DBH^{1.8753} \times Ht^{0.9888}$

Vt = Individual tree volume (m3)

DBH = Diameter at breast height (cm)

H_t = Tree height (m)</td><td>Nieto, Victor & Giraldo Charria, Diana & Oviedo, Monica & Borralho, Nuno. (2016). Effects of provenance and genetic variation on the growth and stem formation of eucalyptus pellita in Colombia. Journal of Tropical Forest Science.</td></tr>
<tr><td>Gmelina</td><td>$V = 0.0206 + 0.00004(DBH^2 * Ht)$</td><td>Mattia, Stephen & A., and. (2015). Allometric</td></tr>
</table></td><td>Closed</td></tr>
</table>

[75] Referring to the Joint Project Description & Monitoring Report: Reforestation of Degraded Lands in Sierra Leone, section 5.3.

	7, *AR-TOOL 18, v 1.0.1*, paragraph 5. Background Per AR-TOOL 14, v4.2, paragraph 7, for ex-post estimation, the volume equation used must be demonstrated to be appropriate for estimating tree biomass by applying the tool "Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities."		

arborea	*DBH* = Diameter at breast height (cm) Ht = Tree height (m)	equations for volume estimation of *Gmelina arborea* Roxb wood at Singamba forest reserve in Njama, Sierra Leone. Journal of Sustainable Environmental Management. 7. 1 - 10.

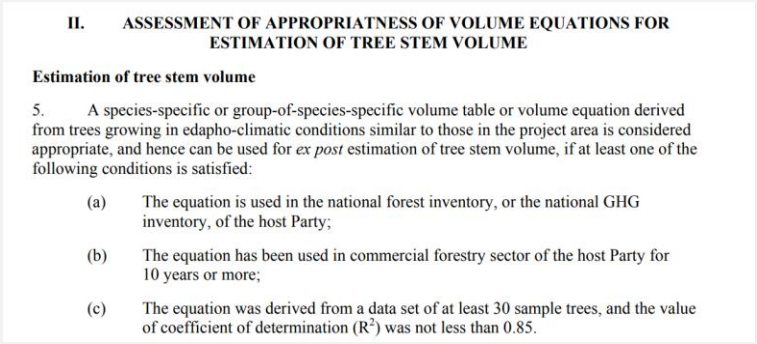
However both equations were changed in the 2nd verification included as project deviation in the VR[76], the new equations are:

Species	Allometric equation	Source
Eucalyptus pellita	$v = (DBH^2*H) / (23163.87+149.03*DBH)$ DBH = Diameter at breast height (cm) H = Tree height (m)	Isnaini, H. N. (2018). Growth and yield modelling for unthinned *acacia mangium, acacia crassicarpa* and *eucalyptus pellita* plantations in Indonesia
Gmelina arborea	2 equations were applied: • Trees with DBH's < 12 cm	Mattia, Stephen & A., and. (2015). Allometric equations for volume estimation of *Gmelina*

[76] Referring to the VCS.22.VER.050_2nd Verification Report, section 3.3.

			V=0,000537511*(DBH^0,943497899) *(H^1,229083295) • Trees with DBH's > 12 cm V=0,24950005 + 0,000018027 ((DBH ^2) * Height) DBH = Diameter at breast height (cm) H = Tree height (m)	*arborea* Roxb wood at Singamba forest reserve in Njama, Sierra Leone. Journal of Sustainable Environmental Management. 7. 1 - 10.	
			(These equations are applied in the ex-post calculation of the 2nd verification[77])		
			According to the A/R Methodological Tool "Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities" (Version 01.0.1)		

[77] Supporting information/2nd verification/SL Ex-post_2nd Verification.xlsb (Data base tab)

		 **II. ASSESSMENT OF APPROPRIATNESS OF VOLUME EQUATIONS FOR ESTIMATION OF TREE STEM VOLUME** **Estimation of tree stem volume** 5. A species-specific or group-of-species-specific volume table or volume equation derived from trees growing in edapho-climatic conditions similar to those in the project area is considered appropriate, and hence can be used for *ex post* estimation of tree stem volume, if at least one of the following conditions is satisfied: (a) The equation is used in the national forest inventory, or the national GHG inventory, of the host Party; (b) The equation has been used in commercial forestry sector of the host Party for 10 years or more; (c) The equation was derived from a data set of at least 30 sample trees, and the value of coefficient of determination (R^2) was not less than 0.85. • **For *Eucalyptus pellita*:** The equation was changed because of the underestimation of the age of older trees. As detailed in the MR[78] the equation from Nieto et al. (2016) was underestimating the volume of older trees. The comparison between the old and the new could be seen in the supporting information[79]. The equation provided in the article written by Isnaini (2018)[80] comes from the volume estimations of *Eucalyptus pellita* by the company	

[78] Referring to the Monitoring report: 20221223_Monitoring-Report_V4.2_MIRO Ghana, section 3.3. (Sub section 3.3.2. Project description deviation, Change in volume equation for Eucalyptus pellita)

[79] Supporting information/2nd verification/Epel and Gmel Equation comparison

[80] Isnaini, H. N. (2018). Growth and yield modelling for unthinned acacia mangium, acacia crassicarpa and eucalyptus pellita plantations in Indonesia

		Arara Abadi[81]. The company founded in 1979, is incharge of sustainably managed a total of 296,373.94 ha[82] in Riau Province (more concretely in Bengkalis Regency, Kampar Regency, Pekanbaru Regency, Pelalawan Regency and Siak Regency[83]). It received a permission for managing the plantation forest in these areas in 1996 by the Ministry of Forestry[84] (Wibisono, 2015[85]). The Research and Development Department[86] developed the aforementioned equation for commercial purposes and due to the requirement for timber companies to create a growth and yield model for the species[87] for timber companies by the government of Indonesia. For that purpose forest companies need to calculate the volume increment from Permanent Sample Plots (PSP), which in this case for *Eucalyptus pellita* were 358 PSP. After this the	

[81] https://araraforestry.com/

[82] Decree of the Minister of Environment and Forestry with Number: SK.406/MenLHK/Setjen/PLA.2/7/2021

[83] PT Arara Abadi. (2011). Revisi RKUPHHK-HTI periode 2011-2010 PT Arara Abadi. PT Arara Abadi.

[84] Minister of Forestry Decree No. 743/Kpts-II/1996

[85] Wibisono, A., Putra, A. N., Soeharto, B., Kadeni, A., Mujahid, A., & Lubis, A. U. (2015). Public audit report - sustainable forest management (PT Arara Abadi) Retrieved from http://awsassets.panda.org/downloads/public_report_ifcc___pt_arara_abadi.pdf

[86] PT. Arara Abadi, Sinarmas Forestry, Perawang, Riau 28685, Indonesia

[87] Perdirjen BUK P.8/2012 and the latest version P.14 /2016

		equation has been used in recent publications from Kartikaningtyas et al. (2020)[88] or Nadalia et al. (2021)[89]. ➔ The equation has been used in the commercial forestry sector for more than 10 years. Since 1996 the company (Arara Abadi) has been managing that concession and from 2012[90] It has been mandatory to develop equations for growth and yield. After that it has been used in different scientific publications. Therefore the condition 5.c) of the AR-Tool 18, v1.0.1 is fulfilled so the equation is appropriate for the estimation of the aboveground biomass. • **For *Gmelina arborea*:** The equations provided by the article written by Mattia et al. (2015) fulfil the condition 5.c) of the AR-TOOL 18: *The equation was derived from a data set of at least 30 sample trees, and the value of coefficient of determination (R2) was not less than 0.85.* ➔ A total of 35 sample trees of *Gmelina arborea* were felled at random using the destructive method in a reserved plantation of about 19 years old in the study area. For trees with DBH>12cm the R^2 is 0.9637 and for trees with DBH<12cm the	

[88] Kartikaningtyas, D., Nirsatmanto, A., Sunarti, S., Setyaji, T., & Handayani, B. R. (2020, June). Trends of genetic parameters and stand volume productivity of selected clones of Eucalyptus pellita observed in clonal trials in Wonogiri, Central Java. In IOP Conference Series: *Earth and Environmental Science* (Vol. 522, No. 1, p. 012005). IOP Publishing.

[89] Nadalia, D., Sutandi, A., & Nugroho, B. (2021, March). Suitability criteria of land characteristics related to Eucalyptus pellita production. In *IOP Conference Series: Earth and Environmental Science* (Vol. 694, No. 1, p. 012053). IOP Publishing.

[90] Perdirjen BUK P.8/2012 and the latest version P.14 /2016

R^2 is 0.9476. Therefore the condition 5.b) of the AR-Tool 18, v1.0.1 is fulfilled so the equation is appropriate for the estimation of the aboveground biomass.

According to the MR[91] the mean annual increments used for the ex-post (years 0-6) were calculated after applying the allometric equations mentioned before (See highlighted values). For the ex-ante (from 6 years onwards) a value from the scientific literature was used. This information can be seen in the following table:

Species	MAI (m3/ha/year)	Age interval	Source
Eucalyptus pellita	14.6	0-6 years	From Ex Post calculations 2022
	20	From 6 years onwards	Yepes et al. (2011). Protocol for national and subnational biomass-Carbon estimation in Colombia. Table 11.
Gmelina arborea	20.68	0-6 years	From Ex Post calculations 2022

[91] Referring to the Monitoring report: 20221223_Monitoring-Report_V4.2_MIRO Ghana, section 5.2 (Table 14. Average MAI data per species)

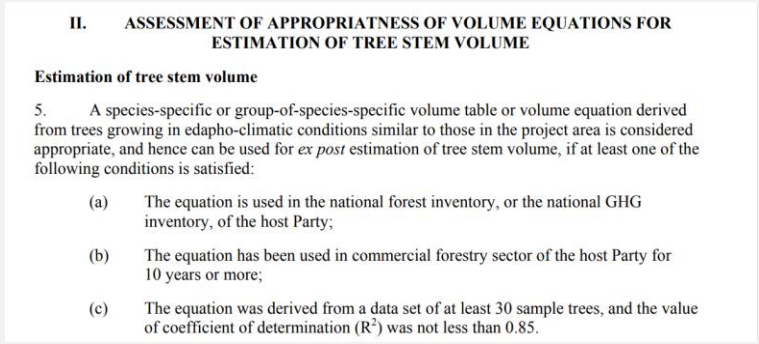
			13.7	From 6 years onwards	UST, P. (1994). Growth and biomass production of Gmelina arborea in conventional plantations in Ghana. Ghana Journal of Forestry, 1, 5.

Therefore the equation for *Gmelina arborea* and *Eucalyptus pellita* meets the AR-Tool 18, v1.0.1 requirements to be appropriate to be used for the estimation of the aboveground tree biomass (**Action 1**).

VVB Response:

The new volume equation more suitably estimated the growth of E. pellita trees at various age groups and at a wider range of heights and diameters as compared to the old equation. Henceforth, this will be used for further verifications. As per requirement no. 2 of Section 3.20.2 of VCS Standard V4.4, the change in volume equation is not impacting the applicability of the methodology, additionality, or appropriateness of the baseline scenario, and the project remains in conformance with the applied methodology.

VVB was able to accept this as it was in-line with para 5 of the A/R Methodological Tool "Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities" (Version 01.0.1), which states the following-



II. ASSESSMENT OF APPROPRIATNESS OF VOLUME EQUATIONS FOR ESTIMATION OF TREE STEM VOLUME

Estimation of tree stem volume

5. A species-specific or group-of-species-specific volume table or volume equation derived from trees growing in edapho-climatic conditions similar to those in the project area is considered appropriate, and hence can be used for *ex post* estimation of tree stem volume, if at least one of the following conditions is satisfied:

(a) The equation is used in the national forest inventory, or the national GHG inventory, of the host Party;

(b) The equation has been used in commercial forestry sector of the host Party for 10 years or more;

(c) The equation was derived from a data set of at least 30 sample trees, and the value of coefficient of determination (R^2) was not less than 0.85.

VVB response:

To determine volume equation for Eucalyptus Pellita- ➔ The equation has been used in the commercial forestry sector for more than 10 years. Since 1996 the company (Arara Abadi) has been managing that concession and from 2012 . It has been mandatory to develop equations for growth and yield. After that it has been used in different scientific publications. Therefore, the condition 5.c) of the AR-Tool 18, v1.0.1 is fulfilled so the equation is appropriate for the estimation of the aboveground biomass.

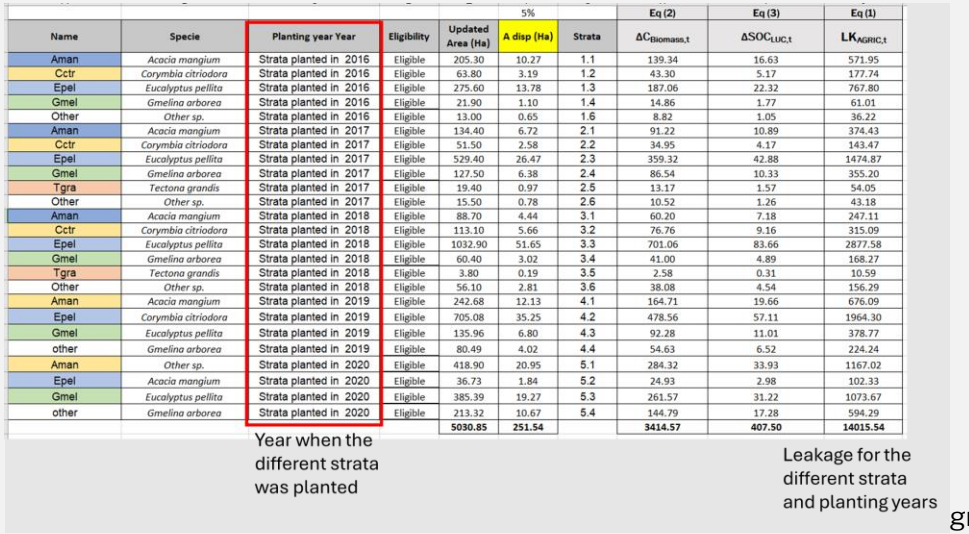
To determine the volume equation of *Gmelina arborea* - A total of 35 sample trees of Gmelina arborea were felled at random using the destructive method in a reserved plantation of about 19 years old in the study area. For trees with DBH>12cm the R2 is 0.9637 and for trees with DBH<12cm the R2 is 0.9476. Therefore, the condition 5.b) of the AR-Tool 18, v1.0.1 is fulfilled so the equation is appropriate for the estimation of the aboveground biomass.

Verra Response

The VVB has assessed the new equations' appropriateness and confirms their selection meets AR-Tool v1.0.1 requirements.

		The VVB's response is sufficient to close the finding, no further action required.	

9	**Zero leakage is not sufficiently justified**		
	Issue	Round 1	Closed

	1. The absence of leakage is justified by intercropping activities. However, it is unclear how a planting density of up to 1,111 trees/ha would allow sufficient crop production to avoid displacement of agricultural activities. Action Required 1. The VVB must assess the expected planting densities and provide further justification that the project activity would displace no agricultural activities. Program Rule(s) VCS Methodology Requirements,4.3, Section 3.7.9 AR-TOOL15, Para 9 Background The literature suggests Eucalyptus spp should be planted at lower densities (i.e., wider spacing) when intercropping1	PP Response As there were uncertainty about the mitigation of the activity displacement by intercropping activities the leakage was calculated using the AR-TOOL 1592. The results of the analysis are a total of 14015.54 tCO2e that would be discounted for the 2nd verification. This result is broken down per starta planted years. Remember that in the second verification of this project the strata belong to plantations happening in the period 2016-2020, despite its verification is for the period of 2020-2022. This is the reason why the leakage has been depicted for years 2016 to 2020. However, this does not mean that it is the leakage per year. It was calculated for the total project timeline. This are the numbers broken down per strata planting years (First Image) and per strata planting year (Table below):  Year when the different strata was planted Leakage for the different strata and planting years gmail	

							Eq (2)	Eq (3)	Eq (1)
					5%				
Name	Specie	Planting year Year	Eligibility	Updated Area (Ha)	A disp (Ha)	Strata	$\Delta C_{Biomass,t}$	$\Delta SOC_{LUC,t}$	$LK_{AGRIC,t}$
Aman	*Acacia mangium*	Strata planted in 2016	Eligible	205.30	10.27	1.1	139.34	16.63	571.95
Cctr	*Corymbia citriodora*	Strata planted in 2016	Eligible	63.80	3.19	1.2	43.30	5.17	177.74
Epel	*Eucalyptus pellita*	Strata planted in 2016	Eligible	275.60	13.78	1.3	187.06	22.32	767.80
Gmel	*Gmelina arborea*	Strata planted in 2016	Eligible	21.90	1.10	1.4	14.86	1.77	61.01
Other	*Other sp.*	Strata planted in 2016	Eligible	13.00	0.65	1.6	8.82	1.05	36.22
Aman	*Acacia mangium*	Strata planted in 2017	Eligible	134.40	6.72	2.1	91.22	10.89	374.43
Cctr	*Corymbia citriodora*	Strata planted in 2017	Eligible	51.50	2.58	2.2	34.95	4.17	143.47
Epel	*Eucalyptus pellita*	Strata planted in 2017	Eligible	529.40	26.47	2.3	359.32	42.88	1474.87
Gmel	*Gmelina arborea*	Strata planted in 2017	Eligible	127.50	6.38	2.4	86.54	10.33	355.20
Tgra	*Tectona grandis*	Strata planted in 2017	Eligible	19.40	0.97	2.5	13.17	1.57	54.05
Other	*Other sp.*	Strata planted in 2017	Eligible	15.50	0.78	2.6	10.52	1.26	43.18
Aman	*Acacia mangium*	Strata planted in 2018	Eligible	88.70	4.44	3.1	60.20	7.18	247.11
Cctr	*Corymbia citriodora*	Strata planted in 2018	Eligible	113.10	5.66	3.2	76.76	9.16	315.09
Epel	*Eucalyptus pellita*	Strata planted in 2018	Eligible	1032.90	51.65	3.3	701.06	83.66	2877.58
Gmel	*Gmelina arborea*	Strata planted in 2018	Eligible	60.40	3.02	3.4	41.00	4.89	168.27
Tgra	*Tectona grandis*	Strata planted in 2018	Eligible	3.80	0.19	3.5	2.58	0.31	10.59
Other	*Other sp.*	Strata planted in 2018	Eligible	56.10	2.81	3.6	38.08	4.54	156.29
Aman	*Acacia mangium*	Strata planted in 2019	Eligible	242.68	12.13	4.1	164.71	19.66	676.09
Epel	*Corymbia citriodora*	Strata planted in 2019	Eligible	705.08	35.25	4.2	478.56	57.11	1964.30
Gmel	*Eucalyptus pellita*	Strata planted in 2019	Eligible	135.96	6.80	4.3	92.28	11.01	378.77
other	*Gmelina arborea*	Strata planted in 2019	Eligible	80.49	4.02	4.4	54.63	6.52	224.24
Aman	*Other sp.*	Strata planted in 2020	Eligible	418.90	20.95	5.1	284.32	33.93	1167.02
Epel	*Acacia mangium*	Strata planted in 2020	Eligible	36.73	1.84	5.2	24.93	2.98	102.33
Gmel	*Eucalyptus pellita*	Strata planted in 2020	Eligible	385.39	19.27	5.3	261.57	31.22	1073.67
other	*Gmelina arborea*	Strata planted in 2020	Eligible	213.32	10.67	5.4	144.79	17.28	594.29
				5030.85	251.54		3414.57	407.50	14015.54

Year	Sum of LKAGRIC,t
Strata planted in 2016	1614.86

Strata planted in 2017	2445.31
Strata planted in 2018	3774.70
Strata planted in 2019	3243.37
Strata planted in 2020	2937.31
Grand Total	14015.54

The full analysis can be found in the supporting information93.
The ex-post calculation94 has been updated (See Image below).

Plantation Year	Species	Stratum	Eligible area (ha)	Total Cabon second verification (tCO2e/strata)	Total Cabon first verification (tCO2e/strata)	Leakage (See Leakage tab for more info) (ton/strata)	Total Cabon second - first verification (tCO2e/strata)	Buffer (13%) (tCO2e)	Net carbon /strata- Buffer 13% NPRT (tCO2e)
2016	Aman	1.1	205	47502	46053	572	877	114	763
2016	Cctr	1.2	64	15217	2341	178	12698	1651	11048
2016	Epel	1.3	276	106217	21864	768	83586	10866	72720
2016	Gmel	1.4	22	4194	2883	61	1250	163	1088
2016	Other	1.6	13	1366	812	36	518	67	450
2017	Aman	2.1	134	19698	8895	374	10429	1356	9073
2017	Cctr	2.2	52	9843	1926	143	7773	1010	6762
2017	Epel	2.3	529	80854	9128	1475	70251	9133	61118
2017	Gmel	2.4	128	38166	15264	355	22547	2931	19616
2017	Tgra	2.5	19	293	185	54	54	7	47
2017	Other	2.6	16	697	478	43	176	23	153
2018	Aman	3.1	89	14279	6524	247	7508	976	6532
2018	Cctr	3.2	113	11720	3587	315	7817	1016	6801
2018	Epel	3.3	1033	133656	30472	2878	100306	13040	87266
2018	Gmel	3.4	60	14861	5019	168	9674	1258	8416
2018	Tgra	3.5	4	70	20	11	39	5	34
2018	Other	3.6	56	4030	471	156	3402	442	2960
2019	Aman	4.1	243	33766	0	676	33090	4302	28788
2019	Epel	4.2	705	40746	0	1964	38781	5042	33740
2019	Gmel	4.3	136	14594	0	379	14215	1848	12367
2019	other	4.4	80	6411	0	224	6187	804	5383
2020	Aman	5.1	419	56295	0	1167	55128	7167	47961
2020	Epel	5.2	37	1876	0	102	1774	231	1543
2020	Gmel	5.3	385	42006	0	1074	40932	5321	35611
2020	other	5.4	213	31161	0	594	30567	3974	26593
			5030.85	**729517**	**155923**	**14015**	**559579**	**72745**	**486833**

Quantifications of net change in carbon stocks for the current monitoring period

Vintage Year	Baseline emissions or removals (tCO_2e)	Project removals (tCO_2e)	Leakage emissions (tCO_2e) Already accounted in ER Ct	VCUs past verification (tCO2e)	Net GHG emission reductions or removals (tCO_2e) second verification	Buffer pool allocation	VCUs eligible for issuance (tCO2e)	Number of days for vintage year (from start of the monitoring period)	Key dates
2016-2020 to 01/11-2020	16/05/2016 - 10/01/2020			155923					
2020	2020	263457.5			202085.90	26271.17	175815	355	Last verification (10/01/2020) - to the end of th
2021	2021	270878.8			207778.46	27011.20	180767	365	1 entire year (2021)
2022	2022	195181.2	14016		149714.34	19462.86	130251	263	From 1/01/2022 till the monitoring date: 20/09/
Total	**0**	**729517.5**	**14015**	**155923**	**559578.69**	**72745.23**	**486833**	**983**	total monitored days

This information has been updated in the MR95(See Image below).

Table 15: Net ex-ante removal of GHG emissions for the second monitoring period[85].

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)	Buffer pool allocation (13%)	VCUs eligible for issuance (tCO_2e)
11-01-2020 to 31-11-2020	0	263457	14015	202085	26721	175815
01-01-2021-31 to 12-12-2021	0	270879		207778	27011	180767
01-01-2022 to 20-09-2022	0	195181		149714	19462	130251
Total		**729517**	**14015**	**559578**	**72745**	**486833**

Note that, the leakage has been updated and discounted to the 1st verification and 2nd verification (summing a total of 14015 t CO_2e)[86] before the buffer adjustments per strata.

		VVB Response The assessment of Leakage has now been revised and attuned based on Verra observations and now main activities that occurred in the pre-project scenario have been considered for any Leakage calculation. The leakage was assessed on the displacement of small-scale agriculture happening illegally inside of the project areas prior to the project start. Despite the efforts of MFSL to not displace agriculture (small-scale subsistence), this has continuing happening at a very reduced scale as an illegal activity. Because of the difficulties to determine the extent of it MFSL undertook an environmental and social risk assessment to determine it. It consisted of a plot-by-plot basis, including but not limited to a survey of land uses and land users. For the sake of conservativeness, it was assumed that illegal farming occurred in 10% of the total project area (corresponding to 503.01 ha). Therefore, the activity-shifting due to project implementation needs to be accounted for the calculation of leakage. Further, after deducting the intercropping areas from the activity displacement the remaining area susceptible of being displaced is 5% of the project area which means that 251.54 hectares of subsistence agriculture have been displaced. As assessed form calculations detailed in ER sheet, the final leakage due to agricultural activities was 14015.54 tCO2e. Verification team has assessed the statement by PP and recalculation OF Leakage is deemed to be conservative approach. As per the clarification and supporting evidence provided by the PP and as per the applied methodology validation team confirms that the leakage calculation emission is conservative nature. The second verification of the project, which pertains to plantations established during the period 2016-2020. The leakage from these plantations is applied for the period of 2020-22. The leakage, calculated using AR-tool 15, amounts to the total fo 14015.54 tCO2e. Its important to note that the leakage is not calculated on a yearly basis, but rather for the entire project timeline. The leakage figures provided are broken down per strata planting years corresponding to the years 2016 to 2020. **Verra Response** The activity-shifting leakage calculation has been updated in the ERR spreadsheet.	

		The VVB has been assessed the calculation and updated the VR accordingly. However, this finding cannot be closed. Issue The MR has not been updated to include further explanation on monitoring and verifying, leakage, per the applied methodology, for all ex-post accounting. Action Required 1. The VVB must ensure Sections 3.2 of MR and 4.4 of the VR are updated to reflect the changes in the monitoring and verifying leakage according to AR-TOOL 15. Program Rule(s) *VCS Standard, v4.4*, Section 3.15.7	
		Round 2	
		VVB Response The MR has been updated including all relevant information regarding the leakage calculation in section 5.4[96]. FVR section 4.4 is also updated to reflect the changes.	
		Verra Response The MR and the VR have been updated. This finding is closed, and no further action is required.	

[96] Referring to last version of the Sierra Leone Monitoring Report (Supporting information\ MR_Reforestation of degraded lands in SL v4.3_30_04_2024 clean.docx