

1 INTERNAL RISK

1.1 Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Reason
Q1	Does the project have an adaptive management plan in place that includes a monitoring plan? If No, the project fails the risk assessment. If Yes, proceed to Q2.	The Orizon Cash Flow Budget excel spreadsheet is included as evidence for the financial management plan aspect of this requirement. The Monitoring Plan is detailed in Section 6.3 in the PDMR.
Q2	Do any of the following project management risks apply to the project ?	
a	Species planted (where applicable) associated with more than 25 percent of the stocks on which GHG credits have previously been issued are not native nor proven to be adapted to the same or similar agro-ecological zone(s) as the project area.	
b	Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50 percent of stocks on which GHG credits have previously been issued.	
c	Management team does not include individuals with significant experience in all skills necessary to successfully undertake the project activities (i.e., any area of required experience is not covered by an individual with at least five years experience in that area).	
d	Management team does not maintain a presence in the country or is located more than one day of travel from the project site, considering all parcels or polygons in the project area.	
e	Management team has previously failed to submit a loss report within two years of detecting a loss event.	
f	ALM projects: Some or all the farmers participating in the project have not received training on the improved ALM practices implemented as part of the project or the monitoring and reporting procedures implemented during the crediting period.	
g	ALM projects: Some or all the farmers participating in the project are unaware of the potential for yields to decrease temporarily due to the transition to improved agricultural practices.	
Q3	Do any of the following mitigations apply to the project?	
h	Mitigation: Management team includes individuals with significant (i.e., more than five years) experience in AFOLU project design and implementation, carbon accounting, and reporting (e.g., individuals who have successfully managed projects through validation, verification, and issuance of GHG credits) under the VCS Program or other approved	

	GHG programs.	
i	Mitigation (ALM projects): A comprehensive training plan for all farmers participating in the project is in place, covering implementation of planned ALM practices, monitoring and reporting obligations and their potential costs.	

1.2 Financial Viability		
Risk Factor	Risk Factor and/or Mitigation Description	Reason
Q1	How long is the project's payback period (i.e., how many years will it take to breakeven)?	
a	The payback period is greater than 20 years from the current risk assessment.	
b	The payback period is greater than 10 years from the current risk assessment, but less than or equal to 20 years.	
c	The payback period is greater than seven and up to and including 10 years from the current risk assessment.	
d	The payback period is greater than four and up to and including seven years from the current risk assessment.	
e	The payback period is four years or less from the current risk assessment.	The project payback period is based on the current predicted income from the potential VCUs generated compared to the expenditure. Taking into consideration potential timeframes for registration and issuance and the prediction that the first VCUs for this project will be issued in 2024, the breakeven period is expected to be less than 4 years. We have started our validation process and based on the estimated VCUs in the current PDD, our projected expenditure up to and including 2024 will be covered by the potential payments from sold credits. Even if 0 VCUs are issued in 2024, the prediction remains that this project will breakeven within 4 years of this risk assessment.
Q2	What percentage of funding has the project secured to cover the total cash out required before the project reaches breakeven?	
f	Project has secured less than 15 percent of the funding needed to cover the total cash out required before the project reaches breakeven.	
g	Project has secured from 15 percent to less than 40 percent of the funding needed to cover the total cash out required before the project reaches breakeven.	
h	Project has secured from 40 percent to less than 80 percent of the funding needed to cover the total cash out required before the project reaches breakeven.	
i	Project has secured 80 percent or more of the funding needed to cover the total cash out before the project reaches breakeven.	The project has secured investment funding that covers all the operational costs of the project. As per the evidence provided regarding the payback period, the project breakeven period is predicted to be less than 4 years but in the very unlikely scenario of this being extended the funding is secured well beyond that timeframe.
Q3	Does the following mitigation apply to the project?	
	Mitigation: Project has available, as	

j	callable and secured financial resources, at least 80 percent of total cash out before the project reaches breakeven.	
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1.3 Opportunity Cost		
Risk Factor	Risk Factor and/or Mitigation Description	Reason
Q1	Are the baseline activities subsistence-driven? If No, proceed to Q2. If Yes, proceed to Q3.	
Q2	What is the NPV of the most profitable alternative land use activity compared to the NPV of the project activity? A response is only required if the answer to Q1 is No.	
a	Net present value (NPV) of the most profitable alternative land use activity is expected to be at least 100 percent more than that of the project activities.	
b	NPV of the most profitable alternative land use activity is expected to be greater than 50 percent and up to 100 percent more than that of project activities.	
c	NPV of the most profitable alternative land use activity is expected to be greater than 20 percent and up to and including 50 percent more than that of project activities.	
d	NPV of the most profitable alternative land use activity is expected to be 20 percent or less than that of project activities.	The NPV analysis considers the most profitable alternative land use versus the current implementation of project activities. The only alternative profitable land use based on our additionality assessment is that of commercial conventional farming methods on all 22 project instances. Based on the results of our productivity analysis and GHG reductions and removals quantifications for the monitoring period of 1 August 2018- 31 July 2022, the current land use is at least as productive, if not slightly more productive, than the conventional methods or baseline would be when considering the main cash crops which are the measure of productivity in these current instances. However, based on reductions in liming and fossil fuel usage versus the baseline scenario and with cash crop yield productivity remaining stable and even slightly increasing, the profitability of the current land use versus the alternate is conservatively at least the same if not higher than the alternate option. For this reason we have assigned the option d - NPV of the most profitable alternative land use activity is expected to be 20 percent or less than that of project activities.
e	NPV of project activities is expected to be greater than 20 percent and up to 50 percent more profitable than that of the most profitable alternative land use activity.	
f	NPV of project activities is expected to be over 50 percent more profitable than that of the most profitable alternative land use activity.	
Q3	Does the project have net positive community impacts? A response is only required if the answer to Q1 is Yes.	

g	Net positive community impacts of project activities are not demonstrated.	
h	Net positive community impacts of project activities are demonstrated.	
Q4	Do any of the following mitigations apply to the project?	
i	Mitigation: Project is protected by a legally binding agreement (see Section 2.2.4) to continue management practices that protect the credited carbon stocks over the duration of the project crediting period.	This section of the contract highlights that the agreement is for the entire project length. For the purposes of this risk assessment we have assigned this level of mitigation as a conservative measure although the contract does state that the agreement continues until payout from the final crediting period, which is technically in 2118 (100 year project length).
j	Mitigation: Project is protected by legally binding agreement (see Section 2.2.4) to continue management practices that protect the credited carbon stocks for at least 100 years.	
k	Mitigation: Where there is a potential for revenue loss compared to the most profitable alternative land use activity, project is a non-profit or has additional financial support (e.g., via grants, government funding, ecosystem services payments or SD VISTa assets) to overcome expected revenue loss.	

1.4 Project Longevity		
Risk Factor	Risk Factor and/or Mitigation Description	Reason
Q1	Did the project request registration on or after 1 January 2024?	
Q2	Does the project have a legally binding agreement that covers at least a 100-year period from the project's start date? If Yes, the project is given a zero score for this risk category. If No, proceed to Q3.	
Q3	What is the project longevity in years? If you answered Yes to Q1 and the project longevity is less than 40 years, the project fails the risk assessment. If you answered No to Q1 and the project longevity is less than 30 years, the project fails the risk assessment. Please note that projects with project longevity of less than 40 years will be ineligible for the Core Carbon Principles label.	
Q4	Does the project have a management, financial and monitoring plan for the entire project longevity? If No, the project fails the risk assessment. If Yes, proceed to Q5.	These files have been uploaded as evidence for other aspects of the Non-permanence risk tool. Files that have been uploaded here as evidence for a management, financial and monitoring plan for the entire project longevity are: 1. Adaptive Management Plan 2. Orizon Cash Flow Budget (Redacted for commercial sensitivity) 3. VCS PDMR 3368 01082018_31072022
Q5	Is the project an ARR or IFM project with harvesting? If No, proceed to Q7. If Yes, proceed to Q6.	
Q6	Can the project demonstrate a commitment to continue the management practice, replant or allow re-growth? If No, the project fails the risk assessment. If Yes, proceed to Q7.	
Q7	Does the project have a legal Agreement or requirement to continue the management practice(s)? If No, proceed to a. If Yes, proceed to b.	
a	Without legal agreement or requirement to continue the management practice.	
b	With legal agreement or requirement to continue the management practice.	
Q8	Is the project a grouped project where contract durations with individual project activity instances are less than the project longevity?	

2 EXTERNAL RISK

2.1 Land Tenure and Resource Access/Impacts		
Risk Factor	Risk Factor and/or Mitigation Description	Reason
Q1	Has due process been undertaken to discover any disputes over ownership and land, resource access, or use rights? If No, the project fails the risk assessment. If Yes, proceed to Q2.	A desktop assessment has been carried out of all the included project fields to determine, by means of title deed evidence, whether any of the project instances have disputes currently. Furthermore, our farmers are requested to disclose any change or potential risk to the ownership of their property to Orizon.
Q2	Has the project executed a binding legal agreement(s) (such as a contract) securing the legal right to control and operate project activities over the entire project area with all entities that have verified ownership claims or verified land, resource access or use rights (such as customary rights holders)? If No, the project fails the risk assessment. If Yes, proceed to Q3.	This screenshot is taken from section 11 of the contractual agreement between Orizon and the farmers. We have also attached an example of the contract entered into between the grower and Orizon.
Q3	Do the same or different entities hold land ownership and resource access or use rights?	
a	Ownership and resource access or use rights are held by the same entity(ies).	
b	Ownership and resource access or use rights are held by different entity(ies) (e.g., the government owns the land, and the project proponent holds a lease or concession).	As per the Ownership Assessment: 65.66% of the fields are owned directly by the farmers and companies in the farmer's name(s) 34.34% of the total fields assessed are leased by the farmers. An important note regarding this assessment is that it was carried out on all fields and not only the included fields and the % reflects all fields and not only the included fields. This was done so that ownership and any risks can be identified in advance for fields that potentially will be added in future by the current farmers.
Q4	Is the project in a country/jurisdiction with a history of national, sub-national, or local government ("Government") intervention in land or resource use?	
c	Government has previously expropriated significant areas of land (i.e., 10% or more) in the project area in the past 20 years.	
d	Government has previously changed land rights in the project's jurisdiction (e.g., cancelled, or blocked land titles, expropriated land or issued overlapping	South Africa has an official Land Reform program to redistribute land rights, in particular to those illegally removed from their homelands during Apartheid. This program has operated under the 'willing buyer, willing seller' principle with no extreme expropriation as happened in neighboring Zimbabwe. Since 2003 government has adopted a Proactive land Acquisition Strategy focusing mostly on land that is not currently in use for agriculture. There have been targets set but these do not meet the 10% threshold as set out in option C of this section. For this reason we apply option d to this risk criteria. According to the Commission on

	land titles) in the past 20 years.	Restitution of Land Rights, in the 2021/2022 financial year, approximately 7000 ha were transferred. If Table 3 is considered as well, see attachment page 17, then it is a total of approximately 61 000 ha. Considering that South Africa is approximately 122 million hectares in extent , of which approximately 79 million ha is commercial agricultural land, this is an insignificant amount but does show that there are land right changes carried out by government and therefore it further confirms our choice of option d for risk.
e	No instances of Government intervention in the past 20 years or specific instances of expropriation and government intervention in land rights in the project area have been conclusively resolved against the government in a court of competent jurisdiction.	
Q5	What percent of the project area is affected by disputes over land tenure or ownership?	
f	Disputes exist in more than 5 percent of the project area.	
g	Disputes exist in up to and including 5 percent of the project area.	
h	No disputes exist.	This is based on the ownership summary assessment of all the fields of the 22 project instances. Please refer to the Land Ownership Assessment Summary document for further information.
Q6	What percent of the project area has disputes over access or use rights?	
i	Disputes exist in more than 5 percent of the project area.	
j	Disputes exist in up to and including 5 percent of the project area.	
k	No disputes exist.	This is based on the ownership summary assessment of all the fields of the 22 project instances.
Q7	Have the risks of upstream and sea impacts undermining the carbon stocks of a WRC project been demonstrated as insignificant or effectively mitigated for the ten years that follow the risk assessment?	
l	Potential upstream and sea impacts are not demonstrated to be insignificant or effectively mitigated.	
m	Potential upstream and sea impacts are demonstrated to be insignificant or effectively mitigated.	
Q8	Do any of the following mitigations apply to the project?	
n	Mitigation: Project area is protected by a legally binding agreement (e.g., a conservation easement, conservation servitude or protected area) to continue management practices that protect carbon stocks for the duration of the project crediting period.	
	Mitigation: Where disputes over land tenure, ownership or access or use rights exist, documented evidence is provided	

o	that demonstrates the project is taking action to try to resolve the disputes or clarify overlapping claims.	
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2.2 Stakeholder Engagement

Risk Factor	Risk Factor and/or Mitigation Description	Reason
Q1	Are local populations, including those living in the project area or within 20 km of the boundary of the project area, reliant on the project area? If No, the risk rating for stakeholder engagement is zero and you can proceed to political risk. If Yes, proceed to Q2.	The attached report outlines the Stakeholder Safeguards and why none of the local populations are directly reliant on the project area.
Q2	Have more or less than 50 percent of stakeholders living within and reliant on the project area been consulted?	
a	Less than 50 percent of stakeholders living within the project area and who are reliant on the project area have been consulted.	
b	More than 50 percent of stakeholders living within the project area and who are reliant on the project have been consulted.	
Q3	Have more or less than 20 percent of stakeholders living outside the project area within 20 km of the project area, and who are reliant on the project area been consulted?	
c	Less than 20 percent of stakeholders living outside the project area within 20 km of the project area, and who are reliant on the project area have been consulted.	
d	More than 20 percent of stakeholders living outside the project area within 20 km of the project area, and who are reliant on the project area have been consulted.	

2.3 Political Risk

Risk Factor	Risk Factor and/or Mitigation Description	Reason
Q1	What is the governance score for the country?	
a	Governance score of less than -0.79	
b	Governance score of -0.79 to less than -0.32	
c	Governance score of -0.32 to less than 0.19	
d	Governance score of 0.19 to less than 0.82	
e	Governance score of 0.82 or more	
Q2	Does the following mitigation apply to the project?	
f	Mitigation: The project is in a country that: 1) is party to the Paris Agreement and has submitted an NDC to the UNFCCC Secretariat in the last five years, 2) includes AFOLU commitments (conditional or unconditional) in its NDC, and 3) has a documented and active climate change plan that includes the project activity.	Evidence of signing up to the Paris Agreement: https://www.un.org/sustainabledevelopment/blog/2016/04/parisagreementsingatures/ Active climate change plan and mentions sustainable agriculture https://unfccc.int/sites/default/files/resource/South-Africa_NAP.pdf

3 NATURAL RISK

3.1 Natural Risk Assessment		
Risk Factor	Risk Factor and/or Mitigation Description	Reason
natural-risk-assessment-fire	Fire (F)	Six of the current 22 project instances are located in the Free State and North West provinces which carry a much higher risk of wildfires than the other provinces in the current project instances. Firebreaks are a requirement as a prevention measure by law and these are implemented but do not always prevent the larger runaway fires. Fires will mostly impact the grassland areas and are only a significant threat to croplands with a high number of residues as most fires take place in the drier winter months when crops have been harvested in our project area. We have attached a prominent fire risk assessment report done by the CSIR as evidence. In the areas where our project instances are located, the majority are in the parts of the savanna and grassland biomes that see annual fire activity as the standard pattern. The damage done to carbon stocks is categorized as Insignificant (less than 5 percent loss of carbon stocks) or transient (full recovery of lost carbon stocks expected within 10 years of any event). This is due to the fact that even a large fire would be considered transient. The attached report provides a detailed view of veldfires in South Africa. In the section Trends in veldfire risk factors (Y) pg 7 of 102, The successful establishment of Working on Fire and the progressive deployment of Fire Protection Associations are contributing to the mitigation of risk factors.
natural-risk-assessment-pest	Pest and disease outbreaks (PD)	Over the past decade, there have been outbreaks of Fall Armyworm, Brown Locust and Foot and Mouth Disease in provinces where the current project instances are located. Whilst FMD has no material impact on carbon stocks, the damage that insect outbreaks can have are estimated at more than 5 but less than 25 percent in the project area. This is based on outbreaks in the past 10 years. With regards to mitigation, please refer to the Grain SA website for the actions taken regarding Fall Armyworm. https://www.grainsa.co.za/pages/grain-research/fall-armyworm-update This article also elaborates on some of the impacts of Fall Armyworm in the Limpopo province: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8603208/ Although this is not in the area of the current project instances, it does provide information that can be applied to the project area. We have also attached a report on the Brown Locust management plan. This species is controlled by active management but this has not resulted in effective containing of some of the most recent outbreaks. Please refer to Section 5.2 Locust control measures on pages 7 and 8 where measures for control/mitigation are outlined in more detail.
		Droughts are a frequent occurrence in South Africa. An extract from Meza et al 2021 states: Our results show that all municipalities have been affected by drought in the last 30 years. The years 1981-1982, 1992, 2016 and 2018 were marked as the driest years during the study period (1981-2018) compared to the reference period (1986-2015). In general, the irrigated systems are remarkably less often affected by drought than rainfed systems; however, most farmers on irrigated land are smallholders for whom drought impacts can be significant. The drought risk of rainfed agricultural systems is exceptionally high in the north, central and west of the country, while for irrigated systems, there are more separate high-risk hotspots across the country.

natural-risk-assessment-weather	Extreme weather (W)	The vulnerability assessment identified potential entry points for disaster risk reduction at the local municipality level, such as increasing environmental awareness, reducing land degradation and increasing total dam and irrigation capacity. This confirms the frequency of <10 years per drought. Flooding risk is largely not applicable to our current project instances and we therefore focus on droughts for the current risk assessment. The impact on carbon stocks is expected to be less than 10% and a score of 5 is applied. In terms of mitigation, the strategy has gone from largely reactive to more proactive. However, as evidenced by the start of another El Nino cycle in the previous season (2023/24), the effects of drought can be significant. Our farmers, in transitioning, are moving towards being able to show complete capability in containing this risk by building up more drought-resistant systems through regenerative practices. The attached peer-reviewed article provides an excellent insight into the context of droughts in South Africa. It further goes on to detailing mitigation as part of the strategy of dealing with droughts in future in South Africa.
natural-risk-assessment-geological-risk	Geological risk (G)	
natural-risk-assessment-on1	Other natural risk (ON1)	
natural-risk-assessment-on2	Other natural risk (ON2)	
natural-risk-assessment-on3	Other natural risk (ON3)	

3.2 Adaptive Capacity

Risk Factor	Risk Factor and/or Mitigation Description	Reason
ADAPTIVE-CAPACITY-CRITERIA	(i) Availability of a range of policy options to address climate change that apply directly to the project scope or activity (ii) Participation of different actors, levels, and sectors in the climate change governance process	
ADAPTIVE-CAPACITY-CRITERIA	(i) Ability to address future climate events and learn from past experiences to improve routines regarding climatic experiences (ii) Evidence of changes in assumptions that support actions regarding climate change experiences.	
ADAPTIVE-CAPACITY-CRITERIA	(i) Continuous access to climate information at different spatio-temporal scales (e.g. early warning systems, climate change projections)	
ADAPTIVE-CAPACITY-CRITERIA	(i) Long-term vision on climate change (ii) Stimulus for action, entrepreneurship, and collaboration from different stakeholders	
ADAPTIVE-CAPACITY-CRITERIA	(i) Availability of climate change expertise, knowledge and human labor force in the field of environmental sciences (ii) Availability of financial resources to support policy measures and financial incentives to address climate change	
ADAPTIVE-CAPACITY-CRITERIA	(i) Evidence of policies, practices, and behaviors that address climate change effectively. (ii) Availability of accountability procedures to implement climate change orientated-actions	
ADAPTIVE-CAPACITY-CRITERIA	(i) Availability of novel solutions to reduce the threat or take advantage of climate change.	

3.3 Future Climate Impact			
Reference Region 1: E.Southern-Africa	Project Area Coverage(%): 100		
Reason	These are the current locations of the 22 instances in the project. These all fall within the E Southern Africa reference region.		
	Type	Category Index	Reason
Future Climate Impact	Heat and cold (hc)	Mean air temperature	Taken together the increased temperatures and precipitation may enhance maize production in RSA maize growing regions at least in the near future, however, the variable nature of precipitation and threat of unpredictable extreme weather events such as heat waves and floods could severely affect yield stability. (Mangani et al 2023). Overall an increase temperature with an increased number of days of extreme heat will negatively impact dryland areas of the project. As dryland crop areas far outweigh area under irrigation currently, for the purposes of this risk assessment, the focus of is on the dryland areas. Mean precipitation decrease will also have a negative impact on irrigation potential so irrigated lands, although buffered to some extent from drier years when compared to the dryland areas which are likely to be impacted more heavily by change in climate. Overall it is predicted that there will be a negative impact on maize yields. As most of the fields are dryland this can be extrapolated to other crops planted during the hotter summer months in the project.
		Extreme heat	A major factor affecting maize productivity is extreme temperature, with the number of days above 35 °C expected to increase 20-30% at the optimal planting date as climate changes progresses, which will likely limit grain filling and yield. (Mangani et al 2023). This serves as evidence that extreme temperatures will impact summer grain crops such as maize in future. Maize is currently the highest percentage crop planted in the project. We therefore are using this study as a predictor for dryland maize projections with respect to future climate change. This can also be applied to other summer grain crops planted on dryland in the project area. Maize is currently the highest percentage crop planted. We therefore are using this study as a predictor for dryland maize projections with respect to future climate change.
		Cold spells	For maize, under warm, moist conditions seedlings emerge after about six to 10 days, but under cool or dry conditions this may take two weeks or longer. Deficiency symptoms (Phosphorus) usually occur on young plants, especially under cool, wet conditions. A reduction in cold spells , especially early in the planting season will be beneficial for Maize. Fewer cold spells will have an overall positive impact
	Wet and dry (wd)	Mean precipitation	Maize is the most important crop grown in South Africa, but yields can be severely reduced by extreme high summer average temperatures and low precipitation, potentially adversely affecting both domestic consumption and regional food security exports. (Bradshaw et al 2022) This study shows that lower precipitation in combination with increased temperatures negatively impacts maize production. There is therefore a potentially negative impact associated with the projected decrease in annual precipitation.
		River flood	There are no project fields located close to rivers with a risk of flooding that would cause significant damage. The project instances in close proximity to rivers are a significant distance from the coast where rivers are wider and flood extensive areas. For these reasons the risk of river flood is not applicable to the current project instances.
		Landslide	There have been documented landslide events in South Africa, particularly in regions like the Drakensberg Mountains, parts of the Western Cape and some areas of the eastern escarpment of the Highveld region (Mpumalanga) near Kruger National Park. However there is no significant risk to the current 22 project instances. The attached document is a study of landslides in Kwa-Zulu Natal province, mostly along the coast and areas with steep slopes. Our current instances are located mostly on gentle slopes as steep slopes are not suitable for cultivation and this risk is therefore not applicable in that it would result in any carbon stock reversals or significant enough loss events to require reporting.
			Soil moisture stress is the major abiotic stress factor that causes extensive

		Soil Moisture	losses to soybean production worldwide. (Wijewardana et al 2018 Quantifying soil moisture deficit effects on soybean yield and yield component distribution patterns). Increased soil moisture will therefore have a positive impact on soybean production. Maize, the other major crop type present in the project area, is also susceptible to drought stress and higher soil moisture appears to have a positive impact on yield (Kudumo et al 2023). Generally, various physiological and biogeochemical plant processes are affected by drought stress, dry spells and high evaporation rates and this negatively impacts crop production (Purcell et al 2007, https://www.sciencedirect.com/science/article/abs/pii/S0378429006001845). Therefore, higher soil moisture will be less of a limiting factor to these processes and therefore be a positive impact on the project area.
		Agricultural and ecological drought	
		Fire weather	
	Wind (w)	Mean wind speed	Wind erosion is expected to increase if wind speeds on average also increase. Zhao, Chaonan & Zhang, Hanbing & Wang, Man & Jiang, Hong & Peng, Jian & Wang, Yanglin. (2021). Impacts of climate change on wind erosion in southern Africa during 1991–2015. Land Degradation & Development. 32. 10.1002/ldr.3895.
		Tropical cyclone	
	SLR Impact Level	Coastal flood	
		Coastal erosion	

3.4 SLR Risk Assessment	
Adaptation	None of the above
Reason	