Identification and Assessment of Critical Habitats and Development of Biodiversity Management and Monitoring Plans Based on Performance Standard 6 of the International Finance Corporation

Balama Graphite Project

Mozambique

Open Pit

Overview Facilities

Chipembe Dam

Power Station

Inside Facilities

Tailing Storage Facility

SYRAH RESOURCES

BEP Advisors

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Glossary of Key Terms

Avoidance: actions taken to modify the spatial or temporal design of an operation to protect biodiversity features from impacts

Biodiversity [biological diversity]: the variability among living organisms from all sources, including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems (Convention on Biological Diversity)

Compensation: set of actions that lead to measurable conservation outcomes, designed to compensate for residual biodiversity impacts that arise from the activities of an existing or new operation and that remain after appropriate avoidance, minimization, and rehabilitation measures have been implemented

Critical Habitat Critical Habitat is a description of areas of highest biodiversity conservation importance. It considers both global and national priorities and builds on the conservation principles of 'vulnerability' (threat) and 'irreplaceability' (rarity/restricted distribution). It is recognized that not all Critical Habitat is equal: there are grades of Critical Habitat of varying importance. The IFC distinguishes two main grades: Tier 1 Critical Habitat of highest importance, in which development is very difficult to implement, and offsets are generally not possible except in exceptional circumstances. Tier 2 Critical Habitat of high importance, in which development may be possible and offsets may be possible under some circumstances. Also existing protected areas, areas officially proposed by governments for protection, or unprotected areas of known high conservation value.

Cumulative impacts: impacts on key biodiversity features (valued ecosystem components related to biodiversity) generated by the combined effects of all past, present, and reasonably foreseeable projects, regardless of who has built or financed the other projects

Endemic species are those species that are found only in a limited, restricted, and defined area or habitat, with no traces of its populations in any other part of the world

Environmental impact assessment: the process of identifying, predicting, evaluating, and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made

Important bird area: an area recognized as being globally important habitat for the conservation of bird populations because it holds significant numbers of one or more globally threatened species, is one of a set of sites that together hold a suite of restricted-range species or biome-restricted species, or has exceptionally large numbers of individuals of migratory species or of a species that congregates

Important plant area: natural or semi-natural sites exhibiting exceptional botanical richness and/or supporting an outstanding assemblage of rare, threatened, and/or endemic plant species and/or vegetation of high botanic value

Indirect impacts: impacts on the environment that are not a direct result of the operation, often produced away from or as a result of a complex pathway; sometimes referred to as second- or third-level impacts or as secondary impacts

Key biodiversity area: a globally important site that is large enough or sufficiently interconnected to support viable populations of the species for which it is important; areas are selected based on the presence of globally threatened species, the presence of restricted-range species, congregations of species that concentrate at particular sites during some stage in their lifecycle, and the presence of biome restricted species assemblages

Migratory bird is defined as those species recorded within the IUCN Species Information Service (SIS) and Birdlife World Bird Database (WBDB) as 'Full Migrant', i.e. species which have a substantial proportion of the global or regional population which makes regular or seasonal cyclical movements beyond the breeding range, with predictable timing and destinations

Minimization: measures adopted to reduce the duration, intensity, or extent of impacts that cannot be completely avoided

Mitigation hierarchy: avoid negative environmental impacts; where impacts are unavoidable, apply measures to minimize impacts; for impacts that cannot be avoided or minimized, rehabilitate negatively affected areas; compensation or offsets should be implemented for any residual impacts after avoidance, minimization, and rehabilitation

Modified habitat: biophysical environments where there has been apparent alteration of the natural habitat, often with the introduction of alien species of plants and animals, such as agricultural areas.

Natural habitat: biophysical environments where the ecosystem's biological communities are formed largely by native plant and animal species and where human activity has not essentially modified the area's primary ecological functions

Offset: off-site projects intended to restore degraded habitats or prevent the degradation or loss of those habitats to compensate for an operation's residual impacts on biodiversity features that cannot be addressed through avoidance, minimization, and rehabilitation

Precautionary principle: where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation

Ecosystem services: ecosystem processes, goods, and values that provide benefits to human communities and that may be significantly and adversely affected by an operation or upon which the operation has significant dependence

Protected area: a clearly defined geographical space that is recognized, dedicated, and managed through legal or other effective means to achieve specific long-term conservation objectives

EXECUTIVE SUMMARY

The Balama Graphite Project is operated by Twigg Exploration and Mining Limitada, a wholly owned subsidiary of Syrah Resources Limited. This project has a mining concession of 110 Km^2 located in the Balama district, Cabo Delgado province in Northern Mozambique. By road, the project is about 265 Km from Pemba, 7 Km from the nearest village of Balama and around 50 Km from the town of Montepuez. BEP Advisors understands that the Project is considering expanding operations possibly affecting terrestrial and aquatic habitats. BEP Advisors was approached by Syrah Resources Limited to conduct a desktop Critical Habitat (CHA) diagnosis and assessment of potential impacts to develop mitigation recommendations for the species and CHAs of concern. The assignment was developed following Compliance requirements of International Finance Corporation (IFC) with particular focus on Performance Standards 6 and its guiding notes as dictated by DFC, the primary lender of the expansion operation. As part of the scope of work All flora and fauna records were obtained, compiled, and updated from the Project's EIA, and existing monitoring surveys from 2013 to 2021. In addition, key information from the list of specis was reviewed and validated using IUCN's current taxonomy, conservation status and/or national lists of endangered species, habitat and ecology, and distribution maps. A total of 419 species of the flora and fauna of the Balama Project was updated. Land cover within the Balama Concession was analyzed and it was determined that 83.86% (9,300.58 ha) of the concession currently harbors modified habitat consisting of mine, roads, villages, miombo woodland modified with crops; and 16.14% (1,789.47 ha) of the concession comprises Natural habitat consisting of miombo woodland and riparian woodland. As part of the CHA assessment, all updated taxa were examined according to PS6-IFC criteria C1, C2, C3 in addition to C4, C5 and C6 criteria such us Key Biodiversity Areas, IBAs and existing Protected Areas in the zone of the Balama Project. A sub-set of 40 species was selected/screened in categories EN, CR, VU or endemic, in addition, to migratory or congregational species. Vulnerable species were included (as precautionary principle) in the assessment provided that their populations are declining mostly due to habitat loss and fragmentation. Discrete Management Units (DMU) were developed for groups of species (plants, fish, birds, and mammals). Amphibians and reptiles did not qualify to meet selection criteria since most recorded species have Least Concern (LC) conservation status. The Critical Habitat Threshold analysis generated the existence of Critical Habitat for three endemic species: two plant species*, Monodora stenopetala, Strophanthus hypoleucos* and one new and endemic fish *species Nothobranchius spp.* Land-use change seems to be having a large impact on the natural vegetation of the DMUs (mostly Miombo woodlands) and conservation areas of the project. The cultivation areas "machambas" have increased during the last five years since the 2016 field surveys. The major direct impact within the Balama Concession seems to be habitat degradation or fragmentation due to natural vegetation removal to create new cultivation areas by the local villagers. *The Balama project requires developing a robust risk/mitigation approach to biodiversity using the PS6 based conceptual framework and guidelines*. There is no evidence of how much natural or critical habitat has been or is going to be impacted or lost due to the proposed and planned Balama Mine undertakings.

For financing, the Balama Project must meet the requirements for no net loss of natural habitat to meet the IFC PS6. As a result, it is suggested to the Company developing a Biodiversity Management System [1] that includes a Biodiversity Action Plan (BAP). This document should be done soon before construction stars.

overall objectives of the Balama Project Biodiversity Action Plan should focus on the following:

• _Avoid and minimize impacts on biodiversity from project recently proposed project development and operation activities.
• _Progressively restore natural habitat where possible to recover a level of species richness and biomass to be considered to have recovered significant ecosystem services to pre-project conditions.
• _Protect and conserve biodiversity at the area of influence of the project supported by work at the landscape scale with a particular focus in DMU#1 and DMU#3 within the Concession area.
• _Maintain benefits derived from ecosystem services to support local people's needs while incorporating robust biodiversity conservation goals and expectations of groups of interest.
• _Strengthen sustainable management and agriculture practices of farm plantations integrating the needs of conservation with project development priorities.

Additional and more specific recommendations are also included the report.

[1] Here is an example https://portals.iucn.org/library/efiles/documents/2010-097.pdf

1. INTRODUCTION

The Balama Graphite Project is operated by Twigg Exploration and Mining Limitada, a wholly owned subsidiary of Syrah Resources Limited. This project has a mining concession of 110 Km^2 located in the Balama district, Cabo Delgado province in Northern Mozambique. By road, the project is about 265 Km from Pemba, seven Km from the nearest village of Balama and around 50 Km from the town of Montepuez. The feasibility study carried out in 2015 confirmed that the project holds the largest reserves of graphite in the world, with a Commission of Ore Reserves Joint Australasian (JORC, 2012), of 81.4 MT in 16.2% and Total graphite carbon (TGC) for 13.1 MT contained graphite.

In the surrounding area of the project, there are ephemeral streams and a large water supply dam in a nearby upstream catchment (Montepuez River). The local community uses these water resources to satisfy their daily needs such as water for drinking, washing, etc. In addition, there are some agriculture and fishing activities, which represents the livelihood for some families.

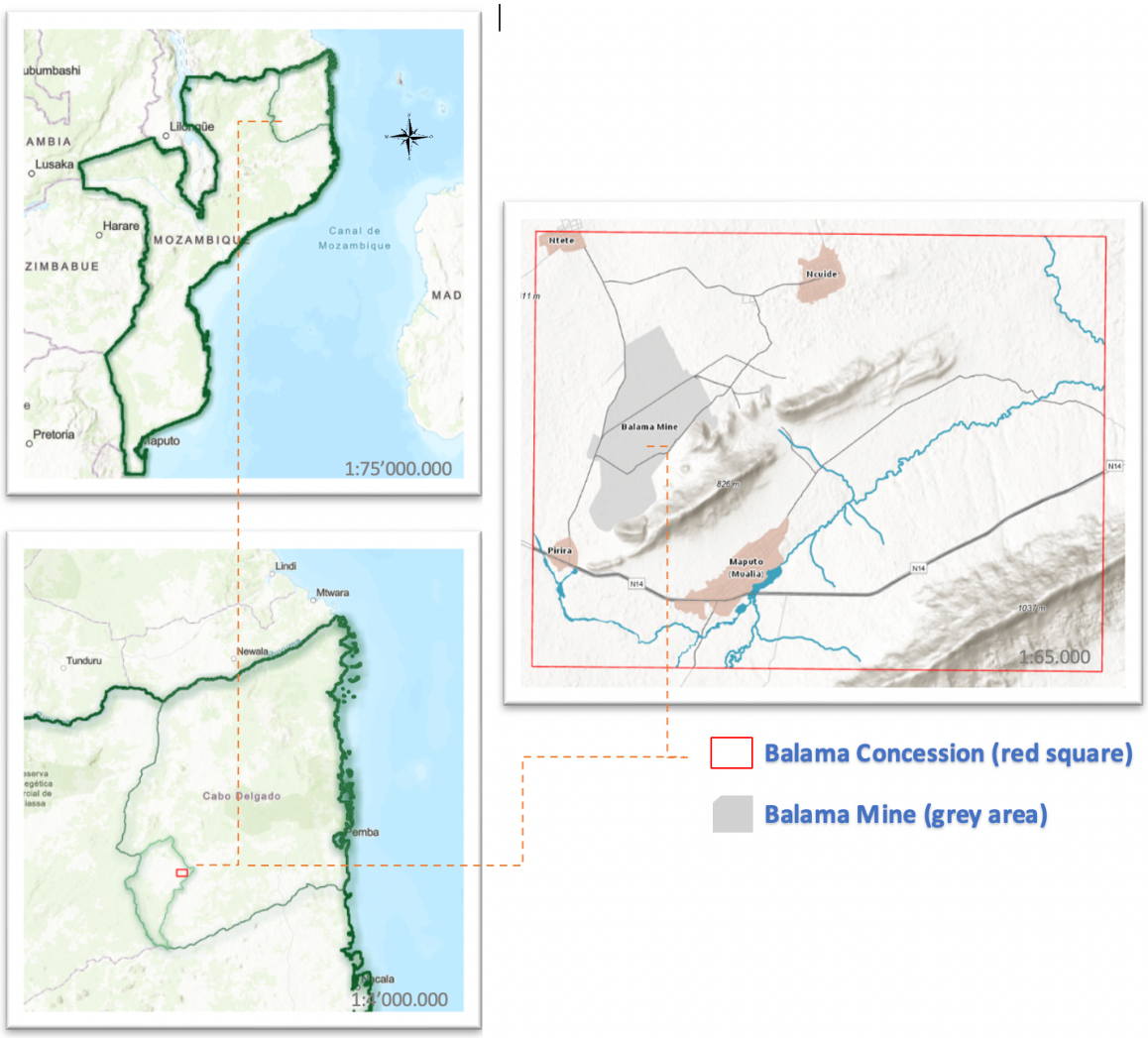
The open-pit mine is being processed using conventional truck and shovel methods. The processing facility of the project is a conventional plant incorporating crushing and screening, grinding, flotation, filtration and drying, classification and screening, and bagging circuits. It is capable of processing two million tonnes per annum (Mtpa) of ore to produce 380,000t of concentrate a year at 95% TGC. The extraction of the graphite requires conventional flotation processing. The Chipembe dam, located approximately 13 km northwest of the project site, is the primary source of water to the mine in supporting the extraction of graphite. It is estimated that 1 cubic meter (m^3) of water will be required per tonne of ore processed. This requirement of water has been discussed between Twigg (Syrah) representatives and ARA-Norte and the availability of two million m^3 has been confirmed (Licence no 07/2012 valid till October 2018). Water is transferred to the project site via a 13 km pipeline. Once the graphite concentrate has been produced, it is transported by road to the deep-water port at Nacala and subsequently exported.

BEP Advisors understands that the Project is considering expanding operations possibly affecting terrestrial and aquatic habitats. BEP Advisors was approached by Syrah Resources Limited to conduct a desktop Critical Habitat (CHA) diagnosis and assessment of potential impacts to develop mitigation recommendations for the species and CHAs of concern. The assignment was developed following Compliance requirements of International Finance Corporation (IFC) with particular focus on Performance Standards 6 and its guiding notes as dictated by DFC, the primary lender of the expansion operation.

2. LOCATION OF THE BALAMA GRAPHITE MINE PROJECT

The Balama project is in the province of Cabo Delgado in the district of Balama (Figure 1). The approximate area of the mining concession (graphite open-pit operation) is 11,090 hectares. The most important river in the area is the Mehupua (Nehupua). The villages Ntete, Ncuide, Pirira, Maputo (Mualia), and the N14 paved road are also part of the concession area.

FIGURE 1. LOCATION Of THE BALAMA GRAPHITE MINE



3. SCOPE OF WORK

1. Review relevant Biodiversity background documents related to the Project.
2. Conduct a desktop assessment to do a Qualitative Critical Habitat Diagnosis and evaluate potential negative impacts on Critical Habitats as well as elaboration of mitigation and monitoring measures
3. Prepare a Critical Habitat Diagnosis Report detailing the findings and recommendations.
4. Developing a preliminary Biodiversity Management and Monitoring Report based on findings.

4. CRITICAL HABITAT IDENTIFICATION APPROACH

Detailed guidance on critical habitat assessment is provided by the IFC Guidance Note 6 (accompanying PS6). For the purposes of this assessment, the approach outlined in Guidance Note 6 (IFC, 2012) was followed whereby the assessment of ecosystem services is conducted separately to the critical habitat assessment.

The fulfilment of one of the following criteria was enough to qualify habitat as critical as follows.

Criterion 1: habitat of significant importance to Critically Endangered, Endangered or Vulnerable species, as defined by the International Union for the Conservation of Nature (IUCN) Red List of threatened species and in relevant national legislation e.g., (national red lists).
Criterion 2: habitat important to the survival of endemic or restricted-range species, or unique assemblages of species
Criterion 3: habitat supporting globally significant migratory and/or congregatory species
Criterion 4: highly threatened or unique ecosystems
Criterion 5: areas associated with key evolutionary processes
Criterion 6: habitat of key scientific value.

Some candidate biodiversity features resulting from the existing EIA baseline within the AOI of the project suggest they might trigger Critical Habitat. Critical habitats can occur in modified and natural habitats. Reflecting the Lender´s performance requirements and Syrahs´ objective to demonstrate best practice, we identified critical, modified and natural habitats within the AOI of the project using a precautionary approach when assessing and qualifying Critical Habitats of the Balama Project.

However, as outlined in paragraph GN56 of Guidance Note 6 (IFC, 2012), the determination of critical habitat included other recognized high biodiversity values that are to be evaluated on a case-by-case basis, including the following examples:

- Areas required for the reintroduction of CR and EN species and refuge sites for these species (habitat used during periods of stress, e.g. flood, drought or fire).

- Ecosystems of known special significance to EN or CR species for climate adaptation purposes concentrations of vulnerable (VU) species in cases where there is uncertainty regarding the listing, and the actual status of the species may be EN or CR.
- Areas of primary/old growth/pristine forests and/or other areas with especially high levels of species diversity including landscape and ecological processes (e.g., water catchments, areas critical to erosion control, disturbance regimes (e.g., fire, flood)) required for maintaining critical habitat and habitat necessary for the survival of keystone species.
- Areas of high scientific value such as those containing concentrations of species that are new and/or little known to science.

Paragraph GN57 of Guidance Note 6 lists internationally and/or nationally recognized areas of high biodiversity value that would likely qualify as critical habitat as follows:

- Areas that meet the criteria of the International Union for the Conservation of Nature's (IUCN) Protected Area Management Categories Ia, Ib and II.
- UNESCO Natural World Heritage Sites that are recognized for their global outstanding value.
- The majority of KBAs that encompass Ramsar sites, Important Bird Areas (IBAs), Important Plant Areas (IPAs) and Alliance for Zero Extinction sites (AZE).
- Areas determined to be irreplaceable or of high priority/significance based on systematic conservation planning techniques carried out at the landscape and/or regional scale by governmental bodies, recognized academic institutions and/or other relevant qualified organizations (including nationally-recognized Non-Governmental Organizations, NGOs).
- Areas identified by the client as High Conservation Value (HCV) using internationally recognized standards, where criteria used to designate such areas is consistent with the high biodiversity values listed above.

i. Screening candidate species

Criteria 1 to 3 methods: The following steps were followed in assessing candidate species against Criteria 1 to 3:

a. Prepare a list of candidate species to include in the assessment

Identify Discrete Management Units (DMUs) and define the overall area of analysis obtain or calculate the global extent of occurrence (EOO), area of occupancy (AOO), population size and/or number of known sites for candidate species.

b. Obtain or calculate:

1. The EOO, AOO, population size and/or number of known sites of each candidate species within all DMUs collectively for CR, EN and VU species that are wide-ranging and/or whose population distribution is not well understood or restricted , an

assessment of the importance of the broader landscape will be based on literature review and professional judgement.

2. Calculate the proportion of the global or national EOO, AOO and/or population represented by these results screen outputs against significance thresholds defining Tier 1 and Tier 2 critical habitat (see Table 1 below).

TABLE 1. QUANTITATIVE THRESHOLDS FOR LEVELS 1 AND 2 OF CRITERION 1 (CR AND EN SPECIES) TO CRITICAL HABITATS OF PS6

Criteria 1	Tier 1	Tier 2
Endangered or Critically Endangered (CR) Species	(a) The Habitat must sustain ≥ 10 percent of the world population of a CR or EN species/subspecies when there are known and regular occurrences of the species and when such habitat could be considered a discrete management unit for that species. (b) Habitat with known and regular occurrences of CR or EN species must correspond to one (1) of ten (10) or fewer discrete management sites worldwide for that species.	(c) Habitat contains the regular occurrence of a single individual of a CR species and/or is a habitat containing regionally important concentrations of a Red List EN species, therefore such habitat could be considered a discrete management unit for that species/subspecies.
	b) Habitat with known and regular occurrences of CR or EN species must correspond to one (1) of ten (10) or fewer discrete management sites worldwide for that species.	(d) Habitat is of significant importance for CR or EN species with a wide range and/or whose population distribution is not well known; therefore, the loss of such habitat could potentially affect the long-term survival of the species.
		(e) It is a habitat containing significant concentrations at the national/regional level of individuals of one or more species included in a national/regional category EN, CR or equivalent

Quantitative Thresholds for Levels 1 and 2 of Criterion 2 (Endemic Species) for the Determination of Critical Habitats of PS6

Criteria 2	Tier 1	Tier 2

Endemic species or restricted range species	(a) Habitat is known to sustain ≥ 95 percent of the world's population of a species endemic or restricted to certain areas; therefore, such a habitat could be considered a discrete management unit for that species (e.g. by having an endemic species in a single location).	(b) Habitat is known to sustain ≥ 1 percent but < 95 percent of the world's population of a species endemic or restricted to certain areas; therefore, this habitat could be considered a discrete management unit for that species, based on the available information and/or on the basis of expert judgment.

Quantitative Thresholds for Levels 1 and 2 of Criterion 3 (Migratory Species) for the Determination of Critical Habitats of ND-PS6

Criteria 3	Tier 1	Tier 2
Migratory/ congregating species	(a) Habitat is known to sustain, on a cyclical or regular basis, ≥ 95 per cent of the world's population of a migratory or congregating species at any point in its life cycle; that habitat could therefore be considered a discrete management unit for that species.	(b) Habitat known to sustain, on a cyclical or regular basis, ≥ 1 percent but < 95 percent of the world's population of a migratory species or that congregates at any point in its life cycle; therefore, such a habitat could be considered a discrete management unit for that species, where adequate data are available and/or on the basis of expert judgment. (c) Habitat that meets BirdLife International Criterion A4, for bird congregations, and/or Ramsar Criterion 5 or 6 to identify wetlands of international importance. (d) A provisional threshold ≥ 5% of the world's population is set for species with large distributions but dense cores, for both terrestrial and marine species. (e) Places of origin of one or more species contributing ≥ 1 percent of the world's population.

As specified in PS6 Guidance Note NO62, the internationally agreed numerical thresholds are not yet sufficiently developed for Criteria Four (C4) and Five (C5). Therefore, it is suggested to adopt the principles of vulnerability and irreplaceability of ecosystems based on the following aspects:

• Vulnerability is a temporary factor associated with the potential degradation of the ecosystem in response to anthropic impacts and threats.

• The irreplaceability of an ecosystem means the degree by which the loss of values of the ecosystem (whether functioning together or alone) at a site containing threatened or at risk species or communities diminishes the ability of that species or community to survive.

c. Define DMUs

For each species qualifying for consideration under Criteria 1 to 3, the relevant DMUs will be identified. DMUs may be similar for many species but, if appropriate, different DMUs will be defined for each candidate species. A variety of data sources including satellite imagery, GIS maps of physical and biological features (such as topography, rivers, watersheds, vegetation types, etc.), human landscape features (such as settlements, roads, etc.), and project facilities will be reviewed.

d. Once critical habitat is identified, impacts and risks were assessed using the Mitigation Hierarchy based on project activities during construction and operation phases. A set of recommendations to mitigate risks are presented as part of Biodiversity Action Plan (BAP).

5. SOURCES OF INFORMATION

During the desktop analysis, observations (satellite imagery based and georeferenced information shared by the Company) were made about the condition of the existing and contiguous vegetation of the Balama Project Site, local villages, and overall land-used patterns within the concession and surroundings. All flora and fauna records were obtained, compiled, and updated from the Project's EIA, and existing monitoring surveys from 2013 to 2021 (see Figure 5, and Annex 1). In addition, key information from the biotic list was reviewed and validated using IUCN's current taxonomy, conservation status and/or national lists of endangered species, habitat and ecology, and distribution maps (see consulted links in this report).

6. RESULTS

6.1 Updated Biodiversity Baseline

The final list of updated species (flora and fauna) amounts to 419 species as shown in Appendix 1 and Table 2.

TABLE 2. CONSERVATION STATUS OF CUMULATIVE RECORDED SPECIES OF THE BALAMA PROJECT

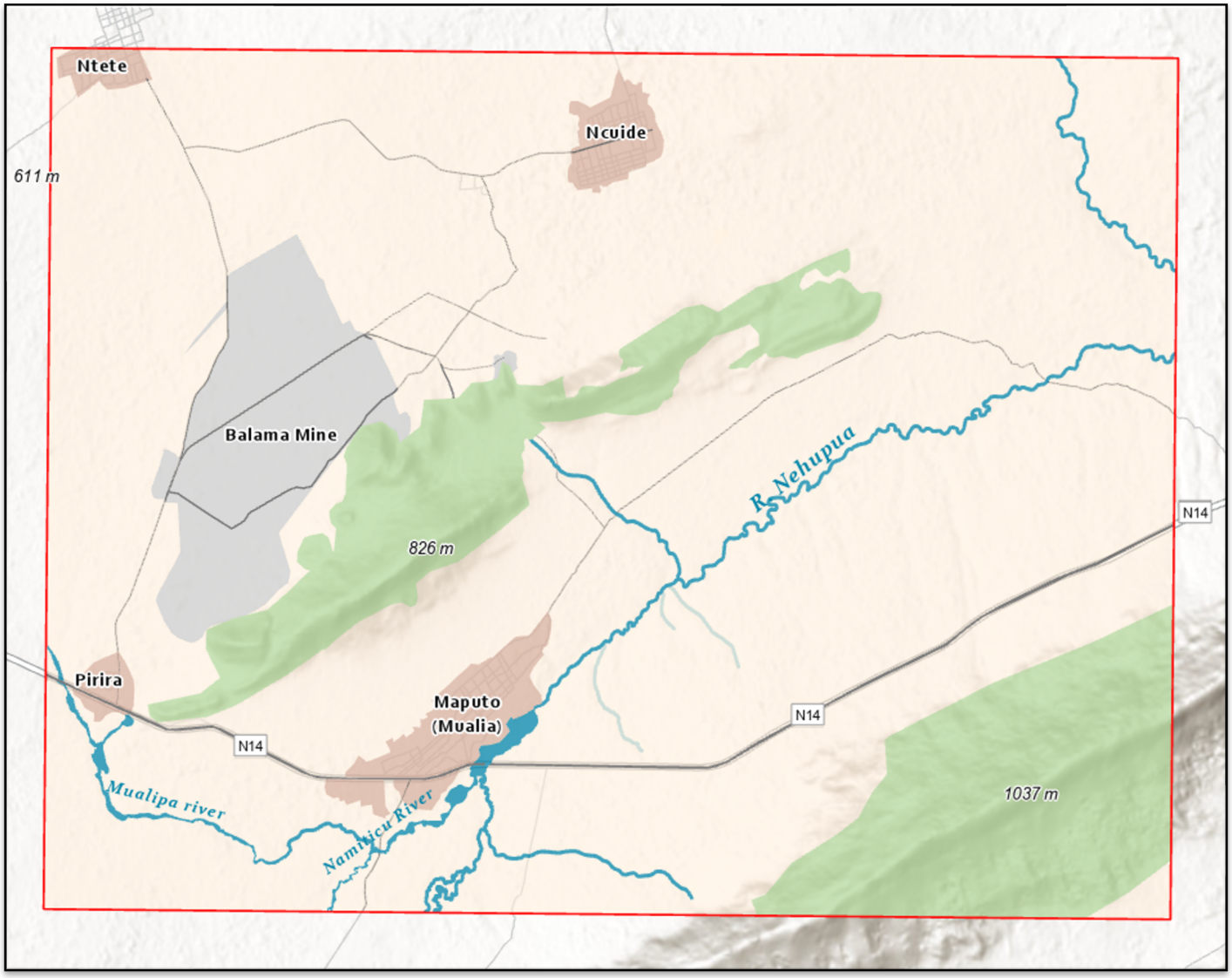
Group	Total of Species Recorded - Balama Project	IUCN Categories						Total of Threatened C1 Species (CR,EN, VU)	Total of Endemic C2 Species	Total of Migratory C3 Species
		CR	EN	VU	NT	LC	DD			
Plants	165	0	0	3	3	95	64	3	3	0
Fish	18	0	0	1	3	12	2	1	1	3
Amphibians	22	0	0	0	0	22	0	0	0	0
Reptiles	35	0	0	0	0	35	0	0	0	0
Birds	145	0	1	0	0	144	0	1	0	29
Mammals	34	0	0	1	0	33	0	1	0	0
Grand Total	**419**	**0**	**1**	**5**	**6**	**341**	**66**	**6**	**4**	**32**

Note: two plant species are both Vulnerable and Endemic

6.2 Determination of Natural and Modified Habitats

A very high-resolution satellite image (Maxar, WV2, 50 cm spatial resolution, dated 07/21/22) was used to identify the land cover to derive the classification of natural and modified habitat validated with reference information found in the Mozambique's GIS National Network (https://www.mozgis.gov.mz/) and complementary data sources (livingatlasoftheworld.com, resourcewatch.org). The result of the land cover classification (Figure 2) identified the presence of mostly miombo woodlands modified with crops with approximately 75% of the entire concession area. The area corresponding to miombo woodlands is 15% and is located mainly in the local inselbergs.

FIGURE 2. DISTRIBUTION OF LAND COVER TYPES IN THE BALAMA CONCESSION



The following is the classification by land cover.

TABLE 3. LAND COVER CLASSIFICATION

Land Cover Classification	Area (ha)	%
Mine	594.39	5.36
Miombo woodland modified with crops	8336.55	75.17
Road	45.44	0.41
Villages	324.19	2.92
Miombo woodland	1625.11	14.65
Riparian woodland	164.36	1.48
	11090.05	**100.00**

To determine the natural and modified habitat, the coverages identified in the previous classification were grouped as follows.

- Modified habitat: consisting of mine, roads, villages, miombo woodland modified with crops corresponding to 83.86% approx.
- Natural habitat: consisting of miombo woodland and riparian woodland, corresponding to 16.14% approx. (FIGURE 3).

FIGURE 3. DISTRIBUTION OF NATURAL AND MODIFIED HABITATS WITHIN THE BALAMA CONCESSION

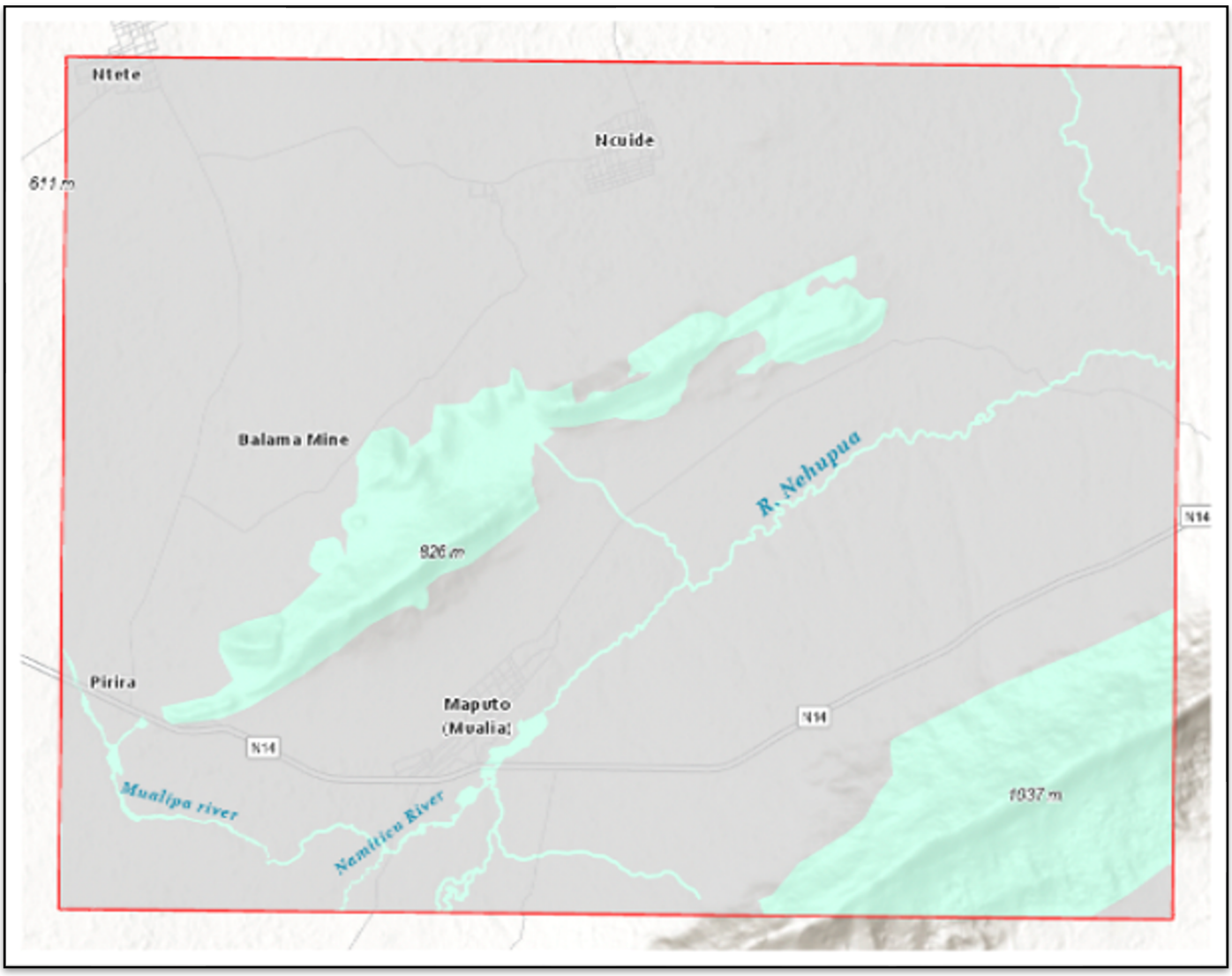


TABLE 4. AREA OF MODIFIED AND NATURAL HABITATS WITHIN THE BALAMA CONCESSION

Habitat Type according to PS6-IFC	Land Cover Classification	Area LC (ha)	Area Hab (ha)	%
Modified Habitat	Mine	594.39	9300.58	83.86
	Miombo woodland modified with crops	8336.55		
	Road	45.44		
	Villages	324.19		
Natural Habitat	Miombo woodland	1625.11	1789.47	16.14
	Riparian woodland	164.36		
		11090.05	**11090.05**	**100.00**

6.3 Determination of Critical Habitats

All selected taxa were examined according to PS6-IFC criteria C1, C2, C3 in addition to C4, C5 and C6 criteria such us Key Biodiversity Areas, IBAs and existing Protected Areas in the zone of the Balama Project.

A sub-set of 40 species was selected/screened in categories EN, CR, VU or endemic, in addition, to migratory or congregational species (Table 5). Vulnerable species were included (as precautionary principle) in the assessment provided that their populations are declining mostly due to habitat loss and fragmentation. Discrete Management Units (DMU) were developed for groups of species (plants, fish, birds, and mammals). Amphibians and reptiles did not qualify to meet selection criteria since most recorded species have Least Concern (LC) conservation status.

TABLE 5. SCREENED CANDIDATE SPECIES[2]

Group	Scientific name	Common Name	Criteria - Threatened C1 Species			Criteria Potential Endemic C2 Species	Criteria Migratory C3 Species
			CR	EN	VU		
Plants	*Ansellia africana*	Leopard Orchid			X		
	Mimosa busseana					X	
	Monodora stenopetala	Oval green apple			X	X	
	Strophanthus hypoleucos				X	X	
Fish	*Anguilla bicolor*	Short-fin Eel					X
	Anguilla bengalensis	Indian Mottled Eel					X
	Anguilla mossambica	African long-fin Eel					X
	Oreochromis cf mossambicus	Mozambique tilapia			X		
	*Nothobranchius sp 'orange fins'**	Annual killifish (new species)				X	
Birds	*Acrocephalus arundinaceus*	Great Reed-warbler					X
	Apus affinis	Little Swift					X
	Apus apus	Common Swift					X
	Cecropis abyssinica	Lesser Striped Swallow					X
	Cinnyricinclus leucogaster	Violet-backed Starling					X
	Circaetus cinereus	Brown Snake-eagle					X
	Circaetus pectoralis	Black-chested Snake- eagle					X
	Cuculus clamosus	Black Cuckoo					X
	Cuculus gularis	African Cuckoo					X
	Cuculus solitarius	Red-chested Cuckoo					X
	Eurystomus glaucurus	Broad-billed Roller					X
	Falco eleonorae	Eleonora's Falcon					X
	Falco peregrinus	Peregrine Falcon					X
	Halcyon leucocephala	Grey-headed Kingfisher					X
	Halcyon senegalensis	Woodland Kingfisher					X
	Hieraaetus ayresii	Ayres's Hawk-eagle					X
	Hieraaetus pennatus	Booted Eagle					X
	Hieraaetus wahlbergi	Wahlberg's Eagle					X
	Hirundo rustica	Barn Swallow					X
	Hirundo smithii	Wire-tailed Swallow					X
	Ispidina picta	African Pygmy-kingfisher					X
	Merops persicus	Blue-cheeked Bee-eater					X
	Muscicapa striata	Spotted Flycatcher					X
	Phylloscopus trochilus	Willow Warbler					X
	Platysteira peltata	Black-throated Wattle-eye					X
	Riparia riparia	Collared Sand Martin					X
	Streptopelia capicola	Ring-necked Dove					X
	Streptopelia semitorquata	Red-eyed Dove					X
	Terathopius ecaudatus	Bateleur		X			
	Treron calvus	African Green-pigeon					X
Mammals	*Smutsia temminckii*	Ground Pangolin			X		

6.4 Determination of Discrete Management Units[3]

Based on the identification of Modified and Natural habitat according to PS6, in addition to landscape/topography features, georeferenced survey data points, and recorded species, it

[2] Screened candidate species comprise biological attributes and conservation status in accordance to overall PS6-IFC criteria

[3] The area assessed for Critical Habitat involves a 'Discrete Management Unit' (DMU) that includes the direct footprint and potential secondary/indirect impacts. DMUs may be ecologically defined (e.g. certain habitat type or a watershed) or politically-defined (e.g. a protected area). This approach is precautionary, intending to take direct and indirect impacts into account, and to acknowledge the inherent connectivity of ecosystems.

was possible to delimit which areas may contain adequate ecological attributes to support multiple screened species.

Two Discrete Management Units (DMU) were developed within the study area inclosing Miombo Woodland Natural Habitat (Figure 4) including the following.[4].

- DMU # 1 encompassing main ecosystems of the inselbergs, where the Miombo woodlands are identified as Natural Habitat showing ecological attributes shared by the screened candidate species, and a significant elevation gradient (up to 800 m) compared to the characteristic savanna plains of the area modified with crops; DMU # 1 Miombo Woodland: 7.3 km^2

- DMU # 2 encompassing main ecosystems of the inselbergs, where the Miombo woodlands are identified as Natural Habitat showing ecological attributes shared by the screened candidate species, and a significant elevation gradient (up to 1,188 m) compared to the characteristic savanna plains of the area modified with crops ; DMU # 2 Miombo Woodland: 21.7 km^2

Mount Namissala and Mt. Corage represented by DMU # 1, contain multiple records of screened candidate species and overall records (from 2013-2021 surveys) for all species of the biodiversity baseline. DMU # 2 does not have any biotic monitoring records or sampling sites within the Balama Concession and study area. It is assumed that most of the recorded species in Mt. Namissala and Mt. Corange are shared with DMU# 2 located to the southeast of the Balama Concession.

[4] Mozambique, located along the southeast coast of Africa, has a total land area of 801,590 km^2 encompassing three major biomes: the Afrotropical Highlands biome in the montane areas, the East African Coast biome in the lowlands, and the Zambezian biome represented by *Brachystegia* woodlands (Miombo) at mid elevations (Fishpool and Evans 2001).

FIGURE 4. DISCRETE MANAGEMENT UNITS (DMUs) INCLOSING MIOMBO WOODLAND NATURAL HABITAT

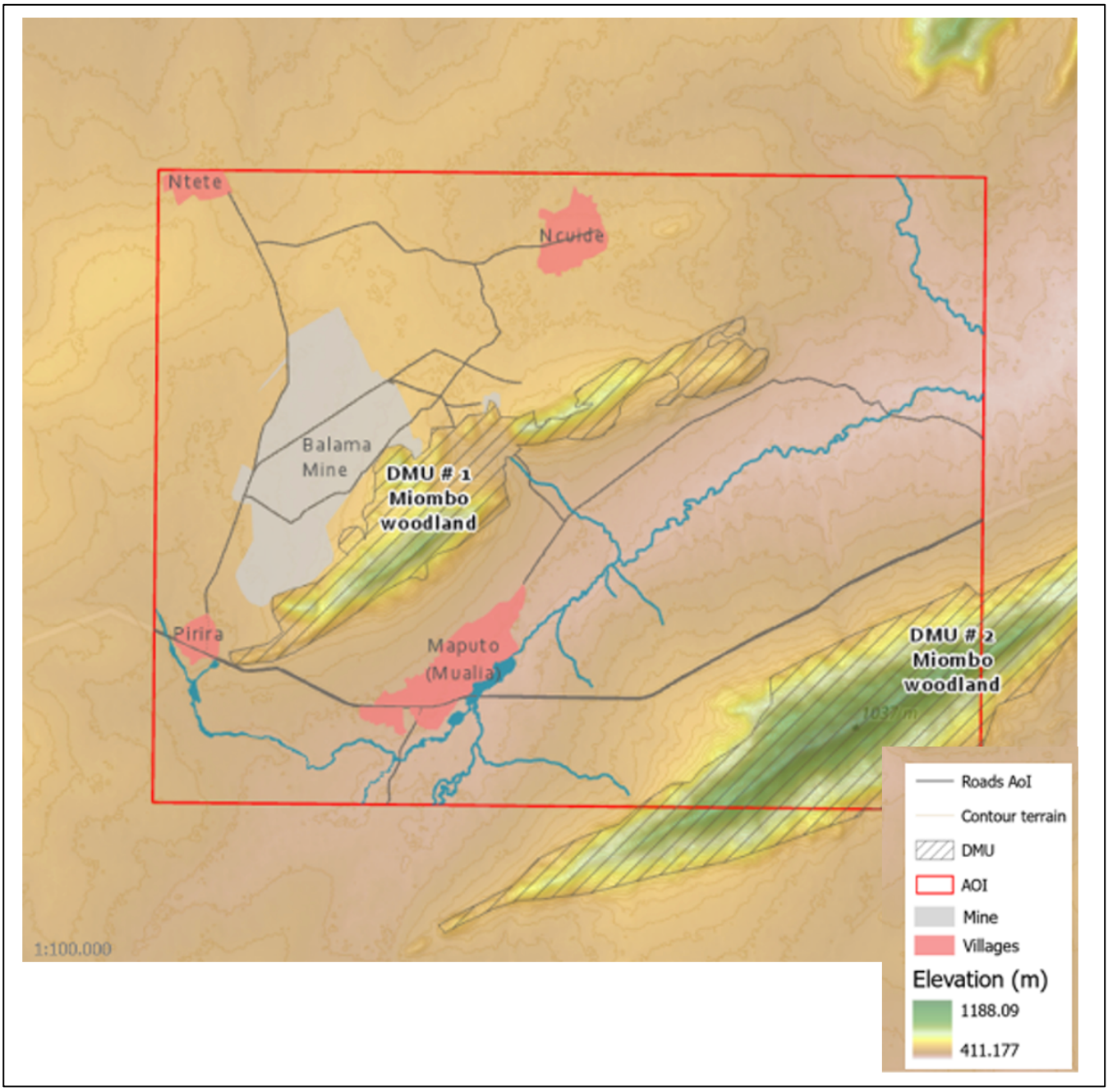
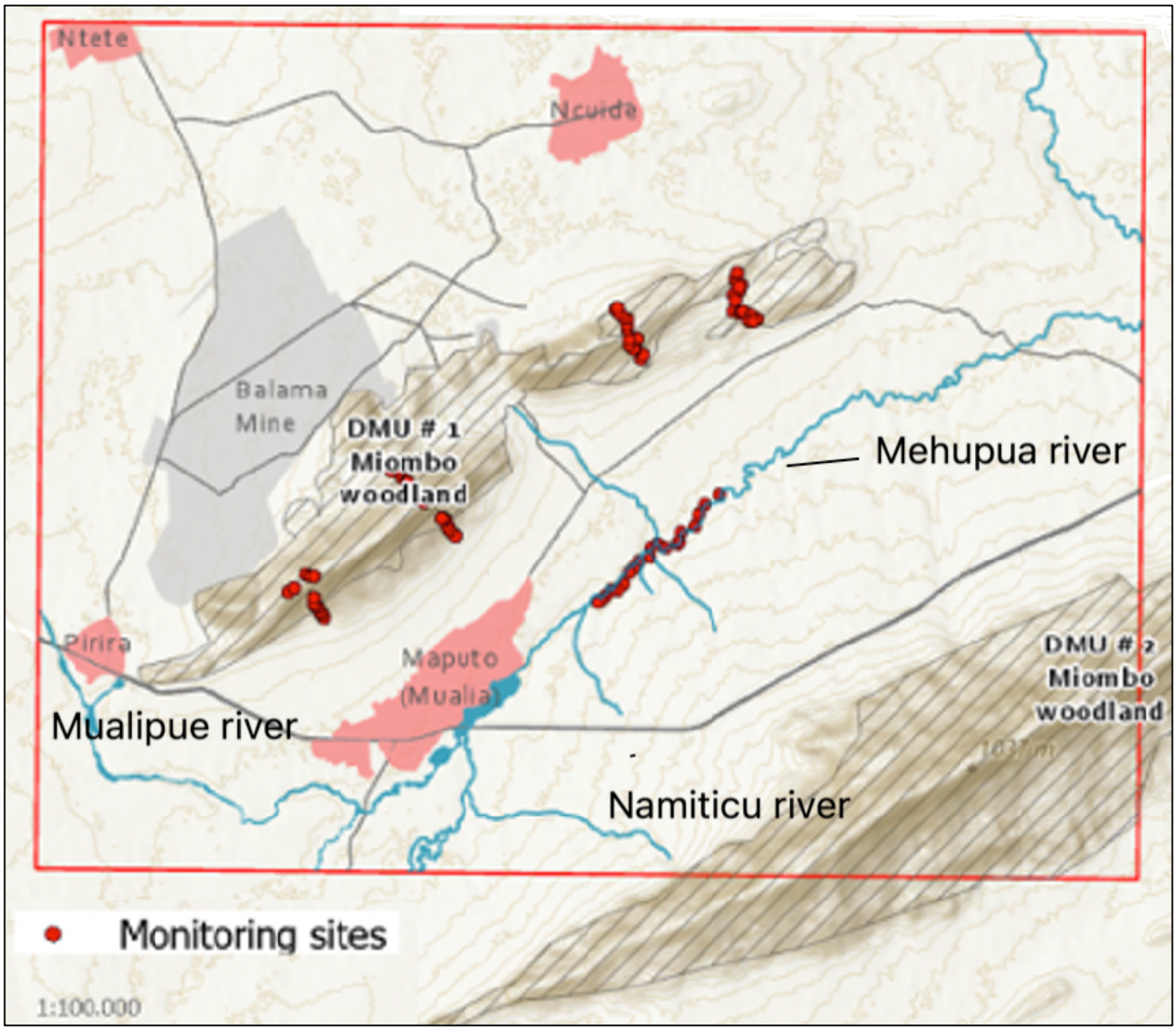


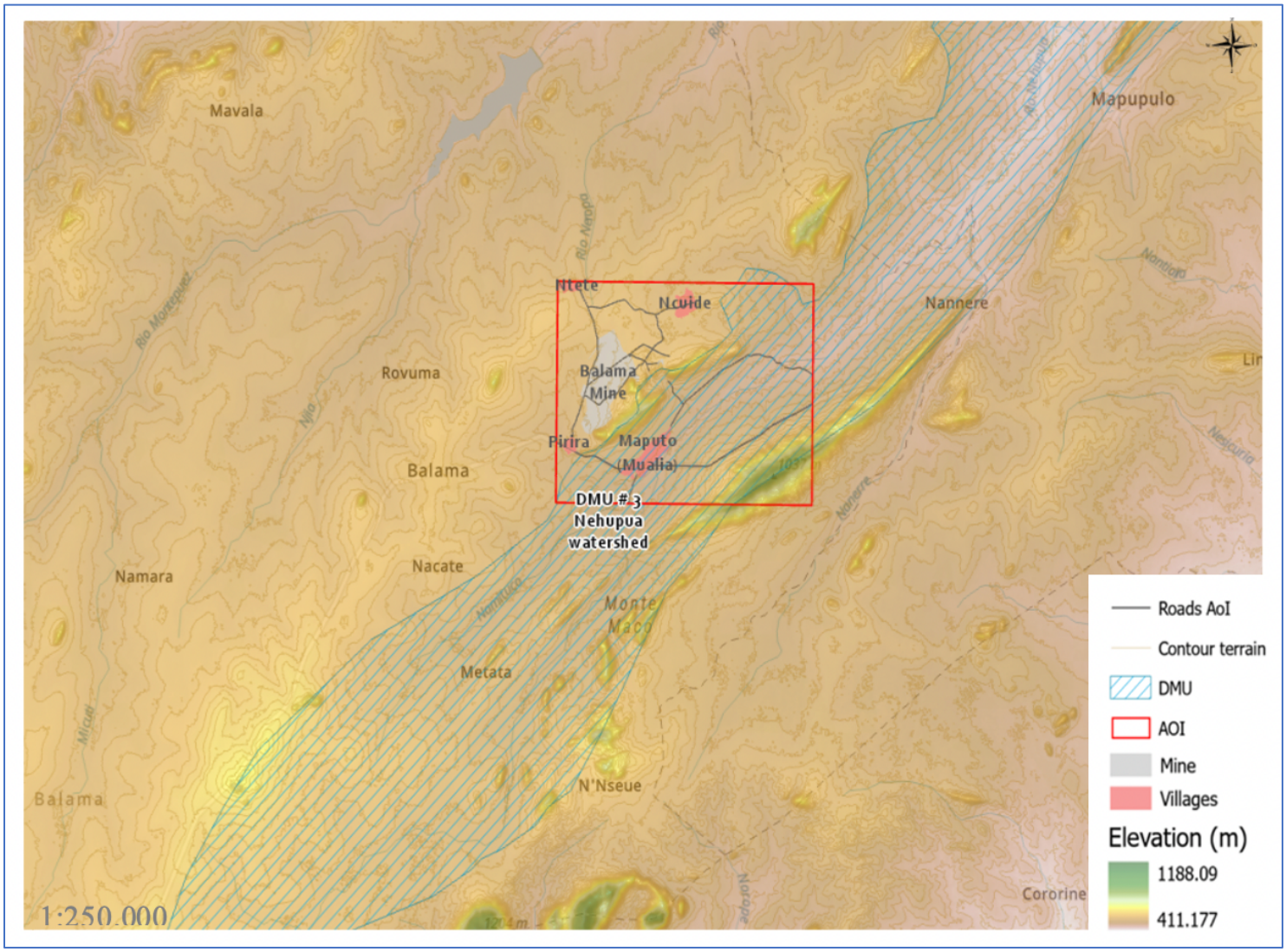
FIGURE 5. DISTRIBUTON OF BIODIVERSITY SURVEY SITES AND RIVER NETWORK WITHIN THE CONCESSION OF THE BALAMA PROJECT



DMU # 3 Mehupua River micro-watershed (Figure 6). DMU # 3 comprising micro-basing criteria, main fluvial ecosystems, and Natural Habitat Riparian Woodland was delimited for the micro-watershed of the Mehupua river and its tributaries. The Riparian Woodland is considered a transition zone between the aquatic and terrestrial environments that provides habitat for diverse plant, amphibian, reptile, bird, and mammal species.
DMU # 3 Nehupua micro-watershed: >450 km²; Riparian woodland: 1.64 km²

The extensive Mehupua micro-watershed includes different land covers and geological formations (plains and inselbergs[5]) and shows significantly modified habitats by agriculture, located mostly towards the study area, and the Concession of the Balama project.

FIGURE 6. MEHUPUA RIVER MICRO-BASIN DMU # 3



Surveys of aquatic species have been completed in eight different sampling stations including S01, S02, S03, S04, S05, S06, S07, and S08 (Figure 7). Stations S01, and S02 are located in the Chibempe Dam of the Montepuez river outside the Balama Concession. Station S03 (Mehucua/Nehupua river), S05 (Mualipue river), and S06 (Namiticu river) are located within the Concession. The remaining stations S08 (Naconha river), and S07 (Namiticu river) are located upstream as far as 10 km away from the concession, and S04 (Nanerre/New Nanere

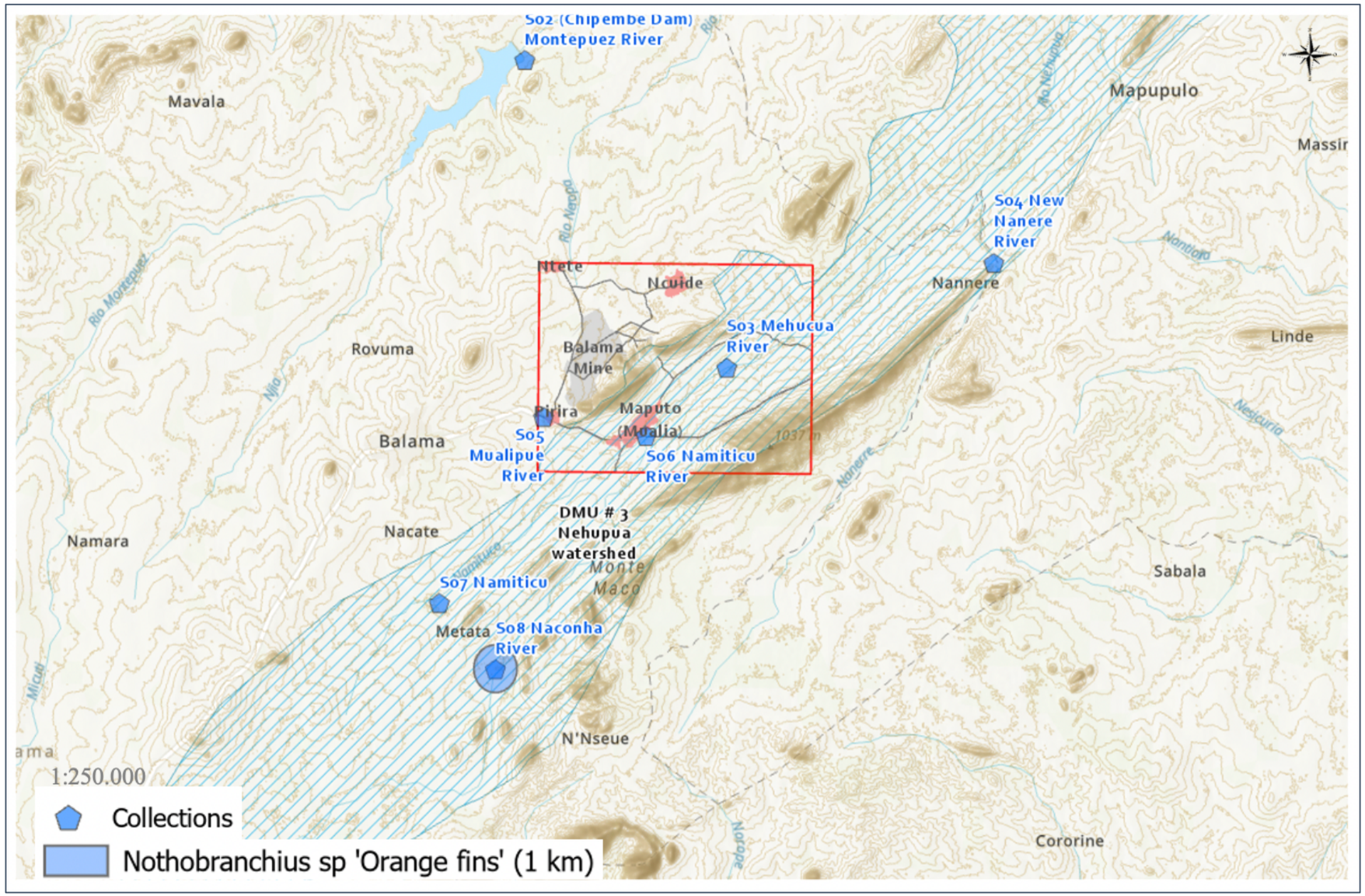
[5] Inselbergs are relatively small hills, ridges, or mini mountains that rise abruptly from relatively flat surroundings. "Inselberg" is a loan word from German and literally means "island mountain."

river) is downstream of the Concession. All rivers in the study area drain to the north-east and form part of the upper catchment drainage of the Montepuez River. These rivers are considered seasonal and flow only in the rainy months (from November to March or April). During the dry season, these rivers are disconnected. During that period, a variety of pools with permanent surface water are formed, providing refuge for fish (SO5), while some of the streams dry completely (SO8, SO7, SO6 and SO3) (EIA, 2013). Only the Chipembe Dam (SO1) remain with permanent water along the year.

Review of the EOO (the extent of the occurrences) and the area of occupancy (AOO), and recorded site occurrence of screened candidate species (threatened (CR, EN, VU), endemic, and migratory species were filtered against DMUs and significance thresholds criteria of Tier 1 and Tier 2 critical habitat, were applied as required by PS6-IFC. Official sources were consulted such as:

- GBIF. The Global Biodiversity Information Facility (GBIF) https://www.gbif.org/
- UICN Red List. The International Union for Conservation of Nature Red List of Species https://www.iucnredlist.org/

FIGURE 7. DISTRIBUTION OF AQUATIC SAMPLING STATIONS AND RIVERS OF DMU # 3 (new *Nothobranchius* species shown at S08 - Naconha river)



6.5 Critical Habitat Threshold Analysis of Screened Species

Table 6 provides the formal quantitative thresholds for species Criteria 1-3. Basically, the current Critical Habitat Threshold assessment of the Balama project is based on the following essential criteria:

- DMUs with ≥10% global population of a CR or EN species (or, generally, the equivalent in terms of known sites for that species, e.g. if the DMU is one of only 10 sites globally) = Tier 1 (Sub-criteria1a+1b)
- DMUs with a single regularly occurring individual of a CR species = Tier 2 (Sub-criterion 1c)
- DMUs with regionally important concentrations of a EN species = Tier 2 (Sub-criterion 1c)
- DMUs with ≥95% of the global population of a restricted-range, endemic or migratory/congregatory species (effectively site endemics) = Tier 1 (Sub-criteria 2a+3a)
- DMUs with ≥1% of the global population of a restricted-range, endemic or migratory/congregatory species = Tier 2 (Sub-criteria 2b+3b)

The CHA threshold analysis generated the existence of Critical Habitat for three endemic species; two plant species, Monodora stenopetala, Strophanthus hypoleucos and one new and endemic fish species Nothobranchius spp. (see Table 6 and Figure 8 below).

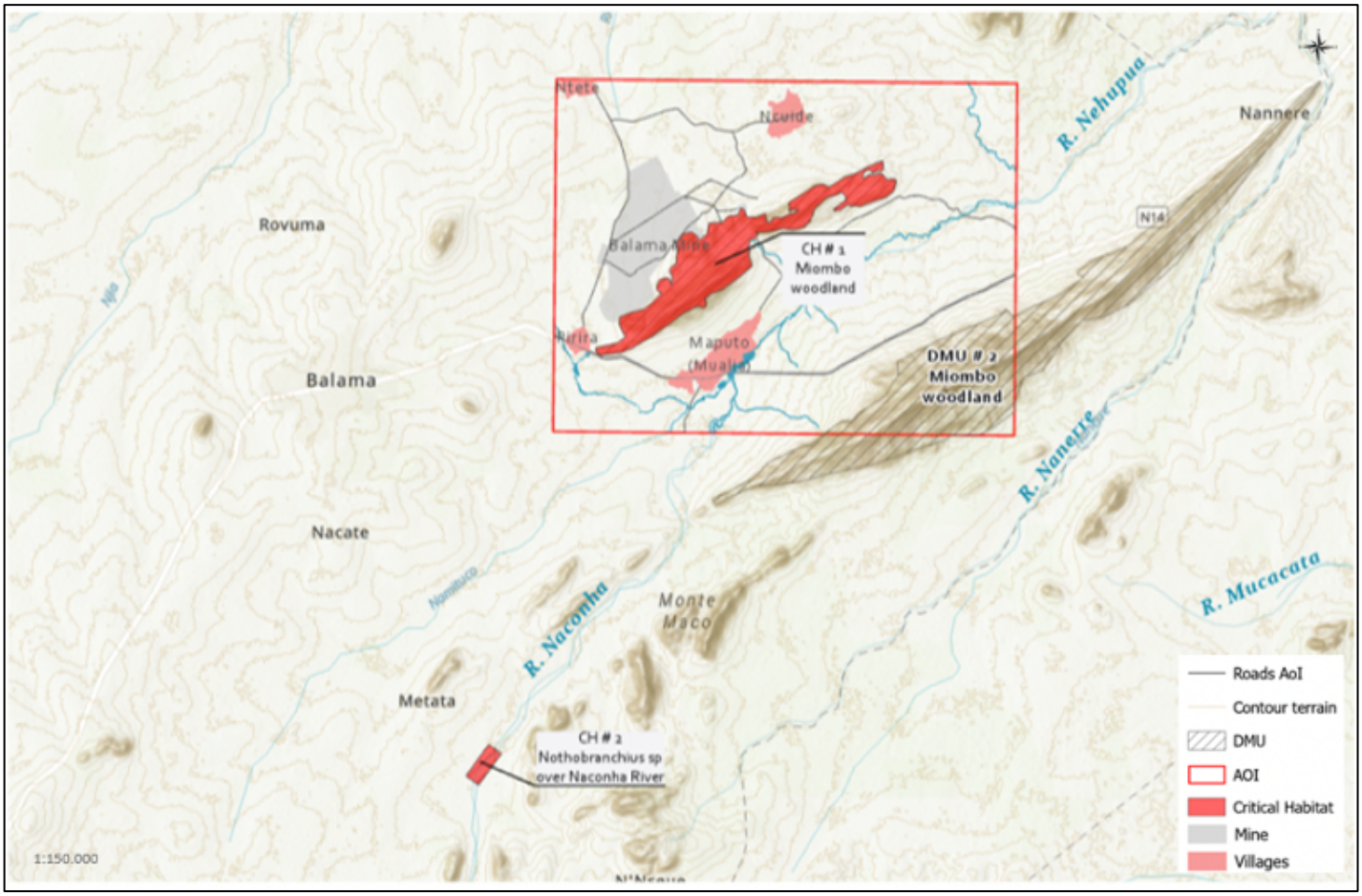
No Critical Habitat was identified within the Balama Concession following Criteria 4 and 5, which are qualitatively defined. Criterion 4 covers rare and threatened habitats which might not necessarily hold species triggering Criteria 1-3. Criterion 5 is particularly identified by physical landscape features promoting evolution (e.g., islands, mountains, ecotones), or by groups of species with distinct evolutionary history.

Criterion 6 to identify Critical Habitat was not triggered as the Balama Concession does not include legally or nationally/ internationally recognized Protected Areas.

TABLE 6. CRITICAL HABITAT THRESHOLD ANALYSIS OF SCREENED SPECIES

Criteria	Species name	Common name	Tier 1 (Sub-criteria 1a+1b)	Tier 2 (Sub-criterion 1c)	Comments
Critically Endangered (CR)/ Endangered(EN) C1 Species	*Terathopius ecaudatus*	Bateleur	NO	NO	EN and declining in Mozambique
	Oreochromis cf mossambicus	Mozambique tilapia	NO	NO	VU and declining
Criteria	**Species name**	**Common name**	**Tier 1 (Sub-criteria 2a+3a)**	**Tier 2 (Sub-criteria 2b+3b)**	**Comments**
Endemic Restricted range C2 Species	*Monodora stenopetala*	Oval green apple	NO	**YES**	Endemic species - VU and rare
	Strophanthus hypoleucos		NO	**YES**	Endemic -VU and declining
	Nothobranchius sp 'orange fins'	Annual killifish (new species)	**YES**		**New species from SO8 - Critcal Habitat**
Criteria	**Species name**	**Common name**	**Tier 1 (Sub-criteria 2a+3a)**	**Tier 2 (Sub-criteria 2b+3b)**	**Comments**
Migratory C3 Species	*Anguilla bicolor*	Short-fin Eel	NO	NO	Catadromous migrant
	Anguilla bengalensis	Indian Mottled Eel	NO	NO	Catadromous migrant
	Anguilla mossambica	African long-fin Eel	NO	NO	Catadromous migrant
	Acrocephalus arundinaceus	Great Reed-warbler	NO	NO	African-Eurasian migrant
	Apus affinis	Little Swift	NO	NO	African-Eurasian migrant
	Apus apus	Common Swift	NO	NO	African-Eurasian migrant
	Cecropis abyssinica	Lesser Striped Swallow	NO	NO	African-Eurasian migrant
	Cinnyricinclus leucogaster	Violet-backed Starling	NO	NO	African-Eurasian migrant
	Circaetus cinereus	Brown Snake-eagle	NO	NO	African-Eurasian migrant
	Circaetus pectoralis	Black-chested Snake- eagle	NO	NO	African-Eurasian migrant
	Cuculus clamosus	Black Cuckoo	NO	NO	African-Eurasian migrant
	Cuculus gularis	African Cuckoo	NO	NO	African-Eurasian migrant
	Cuculus solitarius	Red-chested Cuckoo	NO	NO	African-Eurasian migrant
	Eurystomus glaucurus	Broad-billed Roller	NO	NO	African-Eurasian migrant
	Falco eleonorae	Eleonora's Falcon	NO	NO	African-Eurasian migrant
	Falco peregrinus	Peregrine Falcon	NO	NO	African-Eurasian migrant
	Halcyon leucocephala	Grey-headed Kingfisher	NO	NO	African-Eurasian migrant
	Halcyon senegalensis	Woodland Kingfisher	NO	NO	African-Eurasian migrant
	Hieraaetus ayresii	Ayres's Hawk-eagle	NO	NO	African-Eurasian migrant
	Hieraaetus pennatus	Booted Eagle	NO	NO	African-Eurasian migrant
	Hieraaetus wahlbergi	Wahlberg's Eagle	NO	NO	African-Eurasian migrant
	Hirundo rustica	Barn Swallow	NO	NO	African-Eurasian migrant
	Hirundo smithii	Wire-tailed Swallow	NO	NO	African-Eurasian migrant
	Ispidina picta	African Pygmy-kingfisher	NO	NO	African-Eurasian migrant
	Merops persicus	Blue-cheeked Bee-eater	NO	NO	African-Eurasian migrant
	Muscicapa striata	Spotted Flycatcher	NO	NO	African-Eurasian migrant
	Phylloscopus trochilus	Willow Warbler	NO	NO	African-Eurasian migrant
	Platysteira peltata	Black-throated Wattle-eye	NO	NO	African-Eurasian migrant
	Riparia riparia	Collared Sand Martin	NO	NO	African-Eurasian migrant
	Streptopelia capicola	Ring-necked Dove	NO	NO	African-Eurasian migrant
	Streptopelia semitorquata	Red-eyed Dove	NO	NO	African-Eurasian migrant
	Treron calvus	African Green-pigeon	NO	NO	African-Eurasian migrant

FIGURE 8. DISTRIBUTION OF CRITICAL HABITATS WITHIN AND OUTSIDE OF THE BALAMA CONCESSION



Plants

Three endemic plan species (Mimosa *busseana, Strophanthus hypoleucos, and Monodora stelopetana*) were suggested for this desktop assessment as high priority to determine if the habitat types where they occur can be considered Critical Habitat according to PS6. In addition, as a precautionary principle, we included *Arsellia Africana* in the analysis which is considered Vulnerable according to IUCN criteria (Figure 9):

- *Arsellia africana* (Leopard orchid) shows an extensive EOO in Sub-Saharan Africa with 513 known occurrences. This Vulnerable species is in decline. **DMU#1 does not constitute a Critical Habitat for this species.**

- The DMU#1 qualifies as Critical Habitat Tier 2 (Sub-criteria 2b+3b)

Monodora stelopetana (Oval green apple*)* is present. This rare and endemic species has been recorded in 35 locations in Tanzania and Mozambique and it has an AOO of at least 32 km^2 . The suitable habitat (dense woody vegetation) of this species is declining, largely from clearance for agriculture, with much of the woodland lost in areas outside of protected areas[6]. Therefore, the species has been assessed as Vulnerable according to IUCN criteria[7]. This species is a small tree or large shrub growing up to 7 m tall. It is found in woodlands and dense thickets . The occurrence of this species in DMU#1 is unusual. The Oval green apple had not been seen for more than 30 years. More recently it has been collected again in the Inhamatanga Forest area and on Bunga Inselberg in Gorongosa National Park[8] .Suitable habitat within this species' range is in decline due to clearance for agriculture and charcoal. This species has been registered in Mt. Nassilala and Mt. Corange (DMU#1). Additional monitoring surveys within DMU# 2 are suggested for this unique species.

- The DMU#1 qualifies as Critical Habitat Tier 2 (Sub-criteria 2b+3b) to *Strophanthus hypoleucos*: this endemic species *shows* 11 occurrences in central Mozambique and in the southern portion of Malawi. The AOO is estimated at 44 km^2 . There are 8-9 locations known for this species mostly threatened by agricultural conversion. *Strophanthus hypoleucos* is listed as Vulnerable under criteria B2ab(iii). This species occurs on rocky granitic hills and steep rocky slopes with *Ascolepis* and *Vellozia* species, in addition to scattered trees and shrubs. The habitat of this species is being degraded due to extraction of rocks and material for building purposes. This species has been recorded in Mt. Corange in DMU#1. Additional monitoring surveys within DMU# 2 are suggested for this unique species.

- The DMU#3 does not qualify as Critical Habitat Tier 1 or Tier 2 to *Mimosa busseana:* this endemic species occurs from Pwani Province of southeastern Tanzania, through the Lindi area and south into northern Mozambique in Cabo Delgado province. The species has an estimated Extent of Occurrence (EOO) of 32,100 km^2 and can be considered regional endemic[9] .*Mimosa busseana* is listed as Least Concern according to IUCN Red List of Species. Populations of this species are severely fragmented. This species has only been recorded in DMU# 3 in the Mehupua river.

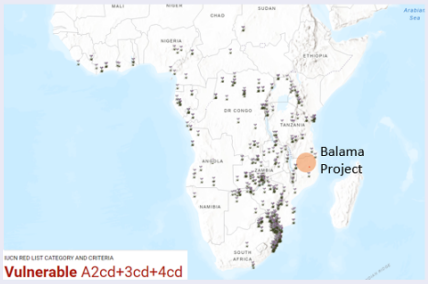
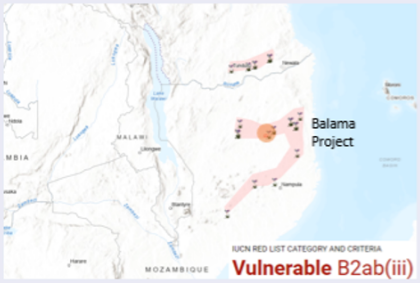
[6] It seems that this plant species is used as medicinal plant to treat tuberculosis. https://ujcontent.uj.ac.za/esploro/outputs/graduate/Medicinal-ethnobotany-of-Mozambique--a/9911841807691#file-0

[7] IUCN Standards and Petitions Committee. 2022. Guidelines for Using the IUCN Red List Categories and Criteria. Version 15.1. Prepared by the Standards and Petitions Committee. Downloadable from https://www.iucnredlist.org/documents/RedListGuidelines.pdf.

[8] https://www.mozambiqueflora.com/speciesdata/species.php?species_id=178640

[9]

FIGURE 9. EXAMPLES OF OCCURRENCES OF SCREENED PLANT SPECIES

Arsellia africana	Geography ranged	Data Source
	513 occurrences: This species is found throughout tropical and southern Africa. The extent of occurrence (EOO) for southern Africa alone was calculated at over 5 million km2 and area of occupancy (AOO) at over 2,500 km2, so for its entire range these would be even greater.	GBIF.org (10 August 2022) GBIF Occurrence Download https://doi.org/10.15468/dl.crkv2s https://www.iucnredlist.org/es/species/132683658/133046265
Monodora stelopetania	Geography ranged	Data Source
	11 ocurrences: This species is distributed in central Mozambique and in the southern part of Malawi, where it grows from 100 to 500 m asl. (Couvreur 2009). Its extent of occurrence (EOO) is estimated at 43,944 km². Within the EOO, the area of occupancy (AOO) is more restricted, being estimated at just 44 km² using the 2 x 2 km grid cell size. This low AOO may be partly explained by the species having been under-collected, especially in Mozambique (due to civil war), although it is rare in Malawi. However, the actual AOO is almost certain to be less than 5,000 km² given the small extent of extant dry forest and thicket vegetation within its range (I. Darbyshire pers. comm. 2019). There are 8-9 locations for this species, based on the known localities and threat of habitat loss primarily from agricultural conversion.	GBIF Occurrence Download https://doi.org/10.15468/dl.p3vu63 https://www.iucnredlist.org/es/species/132683658/133046265
Strophanthus hypoleucos	Geography ranged	Data Source
	35 occurrences: This species is known from Tanzania and Mozambique. It is likely under-collected in northern Mozambique, but Quentin Luke (East African Plants Red List Authority: EAPRLA) only found it on one inselberg during a recent trip, despite extensive surveying. It has an extent of occurrence (EOO) of 120,102 km2. It is known from eight localities, representing six threat-based locations, and it has an area of occupancy (AOO) of at least 32 km2.	GBIF.org (11 August 2022) GBIF Occurrence Download https://doi.org/10.15468/dl.5kteh7 https://www.iucnredlist.org/es/species/158133/762279
Mimosa busseana	Geography ranged	Data Source
	11 occurrences: Occurs from Pwani Province of southeastern Tanzania, through the Lindi area and south into northern Mozambique in Cabo Delgado province. Its extent of occurrence (EOO) is estimated at 32,100 km²	https://www.iucnredlist.org/species/62494360/62494363 https://www.gbif.org/occurrence/download?taxon_key=2969369

Fish

In terms of fish, most of the identified species are in good conservation status, according to the IUCN Red List, which ranked them in the Least concern (LC) category. However, screened species such as *Oreochromis mossambicus*, *Anguilla bicolor bicolor* and *Anguilla cf bengalensis* are ranked as Nearly threatened. At the local level, individuals with reduced sizes are being captured for most of the species as is the case of *Oreochromis mossambicus (tilapia)* , suggesting a fishing pressure on these fish populations.

The *Nothobranchius* species (recorded at the remote S08 sampling station in the Naconha river) has been confirmed as a new species according to Dr. Albert Chakoma[10] (pers. comm.) from the South African Institute of Aquatic Biology (SAIAB). They expect to publish the paper describing the new *Nothobranchius* species this year on Zootaxa. Very little is known about this new species. Using the precautionary principle and life history traits of the genus, this species of *Nothobranchius* has been categorized as restricted endemic to the Naconha river with only one known record and locality according to the Balama monitoring surveys (Figure 10).

- The DMU#3, and in particular the Naconha river area, qualifies as Critical Habitat Tier 1 (Sub-criteria 2a+3a) for the new *Nothobranchius* species[11] matching with the CHA threshold analysis. For the time being, the only known population of this species occurs in the vicinity of the S08 sampling zone. Additional monitoring survey efforts should be dedicated to this new species in the DMU # 3.

Annual life-cycle fishes of the genus *Nothobranchius* inhabit ephemeral habitats in Eastern and Southeastern Africa. Their life cycle is characterized by very rapid maturation, a posthatch lifespan of a few weeks to months and embryonic diapause[12] to survive the dry season. Adult fish die at the end of the rainy season when the puddles desiccate[13]. The embryos survive for months or years encased in the dry mud in a state of quiescence called "diapause". When the monsoon rains replenish their habitat, eggs hatch and a new generation colonizes the ponds and breeds before the ponds disappear again.

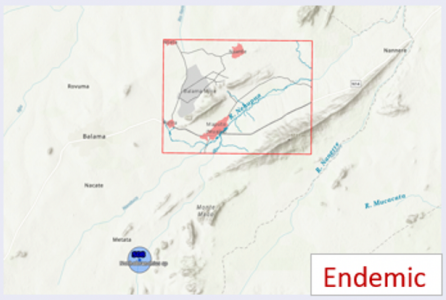
Three species of eels with very low abundance levels have been reported within the area of study and DMU #3, including *Anguilla bicolor, Anguilla bengalensis,* and *Anguilla mossambica.* The extensive EOO and conservation status of the recorded eels, means that DMU# 3 does

[10] Dr. Chakoma research interests include endemic stream fishes, systematics and conservation, ecology phylogeography, and historical biogeography in the Cape Floristic Region of South Africa, and also on the ecology of streams in Zimbabwe.
[11] A 2021 study on this gender includes a list of major threats. https://onlinelibrary.wiley.com/doi/epdf/10.1002/aqc.3741
[12] Embryonic diapause is an alternative developmental pathway that reversibly blocks developmental growth during the embryonic stage and enhances the hibernating potential of the organism
[13] Terzibasi Tozzini, E., Cellerino, A. Nothobranchius annual killifishes. *EvoDevo* **11,** 25 (2020). https://doi.org/10.1186/s13227-020-00170-x

not qualify as Critical Habitat. The low abundance of eels in the study area might be related to their migratory habitats.

According to Skelton (2001), the species of the Anguilla genus are catadromous, which devote the phase of growth in the rivers and migrate to the sea to reproduce. However, these species in freshwater ecosystems move upstream of rivers in search of suitable habitat conditions for their growth. They feed actively and, when they reach 25-30 cm in length, stop moving upstream and remain in pools or streams until they are fully mature. Migration by adults to the sea occurs in the summer, usually in association with floods or strong river flows after heavy rains.

FIGURE 10. EXAMPLES OF OCCURRENCES OF SCREENED FISH SPECIES

Nothobranchius sp 'orange fins'	Geography ranged	Data Source
	1 occurrence: this new species was found during the Balama Project team's observation and collection campaigns in the Naconha River . The extension ocurrence (EOO) has not been defined, but it is estimated that since the river is directly tributary to the Nehupua/Mehupua (main river within the study area) and it runs eastward, it may have a presence in it along its trajectory.	Balama Project Team's observation
Oreochromis mossambicus	Geography ranged	Data Source
	This species occurs in the Lower Zambezi, Lower Shire and coastal plains from Zambezi delta to Algoa Bay, South Africa. Occurs southwards to the Bushmans River in the Eastern Cape, and northwards from Kwazulu-Natal and in the Limpopo River System (Gauteng, NorthWest, Mpumalanga and Limpopo Provinces) (Skelton 2001). It is widely dispersed beyond this range to inland regions and to the southwest and west coastal rivers including the lower Orange and rivers of Namibia. It has been introduced to tropical and warm temperate localities throughout the world where it is often considered invasive.	https://www.iucnredlist.org/es/species/63338/174782954

Birds

The Bateleur eagle (*Terathopius ecaudatus)*, is the only resident raptor species categorized as EN in the study area under IUCN criteria. This raptor species inhabits open country, including grasslands, savanna and subdesert thornbush from sea level to 4,500 m but generally below 3,000 m (Ferguson-Lees and Christie 2001). It feeds on both live and dead food, mostly mammals and birds but also some reptiles, carrion, insects and occasionally birds' eggs and crabs It forages over a huge range (55-200 km^2) (Ferguson-Lees and Christie 2001). The nest is built in the canopy of a large tree, and breeding is throughout the year in East Africa and December-August in southern Africa (Ferguson-Lees and Christie 2001). Due

to its extensive EOO in sub-Saharan Africa, DMU#1 **does not qualify as Critical Habitat when filtered against Tier 1 and Tier 2 thresholds**. However, there have been significant population declines across much of this species' range owing to habitat loss and incidental poisoning of carcasses and pollution. It is recommended to implement education and awareness campaigns within the study area to reduce the use of poisoned baits and loss of potential breeding areas.

Regarding the 30 migratory bird species found in the study area, the EOO of the official sources shows extensive African-Eurasian distributions comprising breeding, stop-over-sites, and non-breeding grounds. **Thus, none of the CHA Tier 1 and Tier 2 threshold sub-criteria apply as Critical Habitat** provided that DMUs do not harbor ≥1% of the global population of migratory or congregatory species and clearly do not contain ≥95% of the global population of migrants. All recorded migrants during the Balama surveys show LC conservation status according to the Red List of Species of the International Union for Conservation of Nature[14].

Many of the Migratory land-bird species recorded in the DMUs have declining trends since they depend on a variety of terrestrial habitats throughout the flyway, which are threatened. Factors that limit population trends may occur in breeding, stop-over or non-breeding sites and landscapes. Habitat loss and degradation poses the most important threat to migratory land-bird species. Additional monitoring surveys focusing on measuring abundance and congregatory habitats of migrants in the study area should be implemented.

Mammals

The DMU#1 **does not qualify as Critical Habitat for this species.** The African pangolin is currently considered a Vulnerable (VU) species. This is a predominantly solitary, terrestrial species that inhabits mainly savannas and woodlands in low-lying regions with moderate to dense scrub where average annual rainfall is between 250 mm and 1,400 mm. It occurs widely on well-managed livestock farms where it is afforded protection from human persecution, but is absent from croplands and human settlements (Figure 11).

Temminck's Pangolins are largely water independent but will drink from free-standing water when it is available (Stuart 1980, D. Pietersen, unpubl. data). The most important habitat requirements are believed to be a sufficient population of the various ant and termite prey species and the availability of dens or above-ground debris in which to shelter. It is suggested to estimate current population densities and rates of population decline in the study area. Mitigation measures such as awareness campaigns, minimizing road kills, and measures to reduce the number of pangolins that are electrocuted on electrified fences are suggested.

[14] https://www.iucnredlist.org/

FIGURE 11. EXAMPLES OF OCCURRENCES OF SCREENED MAMMAL SPECIES

Smutsia temminckii	Geography ranged	Data Source
	The most widespread African pangolin species, recorded from southeastern Chad, through South Sudan, much of East Africa and southern Africa as far south as the Northern Cape, North-West and northeast KwaZulu-Natal Provinces of South Africa (Swart 2013, Pietersen et al. 2016), with the western limits of its range being reached in Namibia and southern Angola. The northern limits of the distribution are not well defined, although the species has been recorded from extreme northeastern Central African Republic, southeastern Chad and South Sudan (Swart 2013, APWG unpubl. data). They are also confirmed from the Omo River basin region of southwest Ethiopia and so probably do occur, marginally, in the western border regions of Ethiopia (Swart 2013). Their presence in Somalia is doubtful (Swart 2013). Records from West Africa undoubtedly refer to the Giant Pangolin (Smutsia gigantea; see Grubb et al. 1998). The species may have been extirpated in eSwatini (Pietersen et al. 2016)	https://www.iucnredlist.org/es/species/12765/123585768

7. RISK AND IMPACT ASSESSMENT

DMUs # 1, 2, and 3 mostly harbor Miombo woodlands. Miombo woodlands extend across much of central and southern Africa, from Angola in the west to Tanzania in the east, down to the northern edge of South Africa. The name originates from Bantu words for *Brachystegia* tree species, which dominate this woodland type in addition to *Julbernardia* and *Isoberlinia*. Due to dry season competition for water, Miombo woodland trees are quite widely spaced. This allows sunlight to reach the ground and grasses to thrive, creating excellent grazing for many African mammals and birds. Miombo's biodiversity also sustains the livelihoods of millions of people, providing ecosystem services such as water catchment, climate regulation, soil conservation, and pollination[15].

The Balama graphite mine is encircled by four villages which are considered to be the Project-Affected Communities (PACs). These include Nquide, Ntete, Maputo (formally called Mualia) and Pirira. The project has had significant impact on these villages and the people‟s livelihoods (economic displacement), since more than 200 farmland (or machambas) and some temporary structures on these machambas have been acquired. The Balama project currently provides employment to 1,489 workers (TWIGG and Contractors employees). According to the 2014 Balama Project's social assessment, the total population of these four villages was estimated at 11,048 residents. The current influx of workers coming from other areas is unknow (check with Syrah). Most households of the villages are involved in subsistence farming, foraging and hunting. Nearly half of the households make charcoal from firewood, which is normally sold at local shops or next to the roads. Animals hunted include small antelopes, rabbits and wild pigs.

[15] https://blog.wcs.org/photo/2022/03/20/the-importance-of-miombo-woodland-tanzania-africa-womens-history-month-education/

Indirect and cumulative impacts on biodiversity, natural habitats, and ecosystem services from the Balama project seem to be significant, although a formal assessment of these impacts is not part of the scope of the current CHA desktop assignment.

Land-use change seems to be having a large impact on the natural vegetation of the DMUs (mostly Miombo woodlands) and conservation areas of the project. The cultivation areas "machambas" have increased during the last five years since the 2016 field surveys. The major direct impact within the Balama Concession seems to be habitat degradation or fragmentation due to natural vegetation removal to create new cultivation areas by the local villagers.

The proportion (area-wise) of each vegetation and habitat type of the Balama project that could have been or is currently being impacted by the project is difficult to ascertain. The amount of Natural Habitat might have changed in the last nine years (2013-2022), as a result of direct and indirect impacts of the Balama project. Most of the project infrastructure and open pit areas at present occur in highly modified habitats showing a slight overlap with DMU#2 where Mt. Nassilala and Mt. Corange are located.

7.1 Mitigation plans and implementation of the mitigation hierarchy in relation to No Net Loss (NNL) or Net Gain (NG) for Natural and Critical Habitats.

The Balama project requires developing a robust risk/mitigation approach to biodiversity using the PS6 based conceptual framework and guidelines. There is no evidence of how much natural or critical habitat has been or is going to be impacted or lost due to the proposed and planned Balama Mine undertakings.

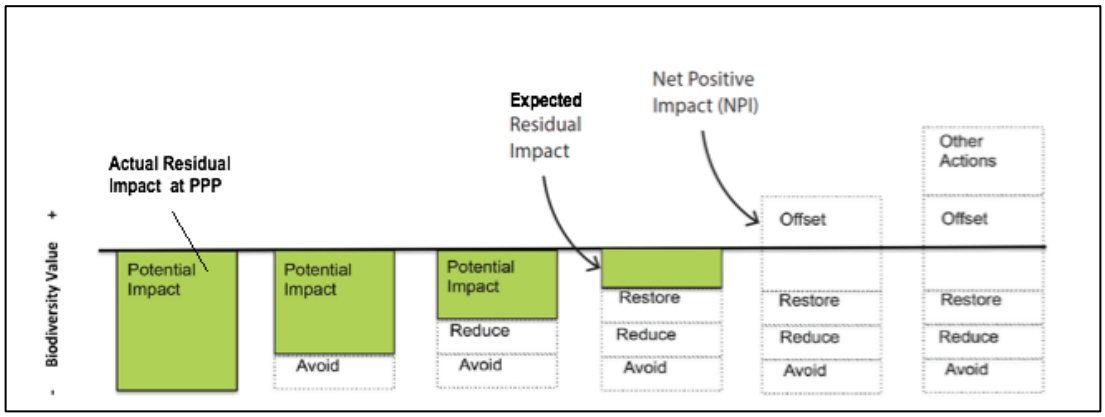
The Balama project is located in an area of high biodiversity and seemingly high endemism but also in an area with competing land uses and a need to support the existing villagers and local development. The Project's region has historically been developed with farming and livestock, without concern for biodiversity conservation as evidenced by the high degree of fragmentation and habitat loss in the Area of Influence of the project. For financing, the Balama Project must meet the requirements for no net loss of natural habitat to meet the IFC PS6. As a result, it is suggested that the overall objectives of the Balama Project Biodiversity Action Plan should focus on the following.

• _Avoid and minimize impacts on biodiversity from project recently proposed project development and operation activities.
• _Progressively restore natural habitat where possible to recover a level of species richness and biomass to be considered to have recovered significant ecosystem services.
• _Protect and conserve biodiversity with a particular focus in DMU#1 and DMU# 3 within the Concession area.
• _Maintain benefits derived from ecosystem services to support local people's needs while incorporating robust biodiversity conservation goals and expectations of groups of interest.

• _Strengthen sustainable management and agriculture practices of farm plantations integrating the needs of conservation with project development priorities.

Figure 12 illustrates how the mitigation hierarchy is followed to reduce the adverse impacts on biodiversity through avoidance, minimization and restoration. Offset and additional actions are then implemented to eliminate any residual impacts resulting in at least a no net loss and a net gain, which is required for any residual impacts on critical habitat. At the moment, there is no evidence to propose an Offset as result of project activities. Most likely as evidenced by this CHA desktop analysis, direct and indirect impacts related to the project are impacting Miombo woodlands natural habitats. As a result, avoidance, minimization, and significant ecological restoration activities are required to reach no net loss of natural habitat and ecosystem services.

FIGURE 12. BIODIVERSITY MITIGATION HIERARCHY



7.2 Specific Recommendations

- Continue monitoring efforts during the dry and wet seasons in DMU#1 and DMU#3 with special focus on Critical Habitats and species identified in this desktop assessment, namely: *Strophanthus hypoleucos, Monodora stelopetana*, the new *Nothobranchius* species. Fortunately, Mt. Nassilala and Mt. Corange in DMU# 1 have already been designated as conservation areas. However, DMU#1 lacks a formal Biodiversity Management Plan. The Company should provide a description of the limits and management of these areas as part of the suggested Biodiversity Management and Monitoring Plan (BMMP).

- Given the importance that the DMUs seem have to have for migratory bird species (30 migrant species have been recorded) and to migratory eels (three species have been registered in DMU#3) , an improved monitoring and management plan focused

on migrants is suggested to better understand the magnitude of this phenomena within the project AOI and protect key habitats for these species.

- DMU# 1 within the Concession area has not been surveyed yet. It is expected that most of the species present in DMU#2 will be shared with DMU#1 including endemic species with Critical Habitats. Given the importance of both areas, it is suggested to include DMU#1 in selected monitoring surveys targeting CHA species.

- It is recommended that an education and awareness campaigns (aiming workers and villagers) be implemented within the study area to increase awareness about avoiding natural habitat loss, restoring habitat and ecosystem services, and most importantly protecting the biodiversity found in DMU#1, DMU#2 and DMU#3 areas. The effectiveness of these campaigns should be monitored with realistic and viable indicators. Implementing education awareness activities in the camp site and eatery facilities of the mine on a daily basis. The use of short videos and materials typically yields very good results.

- It is strongly recommended to sponsor sustainable agricultural projects aiming at establishing best agricultural practices with the villagers. Farmers usually lack the necessary information on weather, soil nutrients, pests, diseases, water use, fertilizers etc. If feasible, the suggested projects should promote agroecosystem practices such us organic agriculture that builds soil fertility and structure by restoring carbon and nutrients to the soil through sustainable land and water management techniques such as composting, cover crops, mulching and crop rotation.

- Work with and empower local communities to advocate, develop and implement participatory approaches and incentives aimed at integrated, sustainable management of natural resources in the project area. This should encourage sustainable small-scale agriculture and Miombo woodland management, including habitat restoration where appropriate. The nursery of the project is operated by a local association, local villagers could be trained to implement ecological restoration activities.

- Elaborate a robust Biodiversity Action Plan (BAP) targeting Mt. Nassilala and Mt. Corange in DMU#1. Part of the plan should include zoning activities to identify areas that require ecological restoration and management activities. Villagers should be incorporated in the elaboration and implementation of the BAP.

The BAP should be called the Biodiversity Management and Monitoring Plan (BMMP). A key issue to be considered involves the development of a comprehensive and standardized BMMP for the Balama Project. The plan should be conceived as a continuing process which would allow Balama's managers to identify biodiversity (e.g., species, natural and critical habitats, and ecosystem services) changes and trends over time so that they can assess whether interventions are achieving biodiversity goals and adapt management accordingly.

The inclusion of Adaptive management principles and adopting the Mitigation Hierarchy is crucial for the BMMP of the Balama Project[16].

The Balama BMMP should include specific actions (following the Mitigation Hierarchy) for each of the three species identified with Critical Habitat., therefore the plan should:

- Answer a clearly stated set of questions (i.e. have clear objectives) and assumptions for project interventions (e.g., restoration measures, mitigation of threats to biodiversity).
- State clearly what indicators will be chosen (realistic, measurable, and consistent with objectives).
- Specify how often monitoring and evaluation will be done, and by whom.
- Outline any necessary training or financial inputs that are required.
- State the intended audience for the evaluations (i.e. DFC, scientific community, NGOs, key actors).
- Specify how information will feed back into Balamas's management decisions.
- State clearly the decision points at which action must be taken to address negative trends.

Regarding the species that have qualified as having Critical Habitat, the BMMP in practical terms at least should:

1. Delimit the boundaries and size of the conservation areas
2. Identify (using GPS) the specific locations where individuals of these species occur
3. Identify current threats to these habitats (e.g., increased farming, bush fires)
4. Determine the current extend and quality of the habitat for these species (a satellite image should be used to identify current vegetation cover and degree of habitat fragmentation)
5. Design a monitoring protocol for the CHA species including estimation of the current population size and/or number of individuals/ha in the conservation areas
6. Identify areas that require interventions (e.g., mitigation and restoration activities) in the conservation areas
7. Determine monitoring indicators of ecosystem integrity in these areas (e.g., degree of fragmentation, increased connectivity, increased vegetation cover, increased in values of traditional biodiversity indexes, identify bioindicator species etc.)
8. Design patrolling and communication protocols for the entire area
9. Develop annual budget including equipment, and staff needed to implement the BMMP

[16] PS6 Guidance GN20: Performance Standard 6 uses the term adaptive management to mean a practical approach to managing uncertainty in biodiversity mitigation and management planning.

8.Annex 1: Consulted Documents

No.	Document Title	Source	Date	No. of pages
1	Surface water database	Balama Project	2022	
2	Aquatic Ecology Survey In The Chipembe Dam And The Surrounding Areas Being Influenced By The Balama Graphite Project Report	Centre for Research and Environmental Conservation, Campus Universitário,	October 2021	52
3	Environmental Management Plan (Updated)	Genesis, Lda.	November2019	106
4	Aquatic Ecology Survey Of The Riverine Resources In The Vicinity Of the Balama Graphite Mine Project, Cabo Delgado. Report	IMPACTO- Projectos e Estudos Ambientais	July 2019	46
5	Flora and Fauna Monitoring at Conservation Areas at Balama, Cabo Delgado. Report	Department of Biological Sciences Faculty of Science, University Eduardo Mondlane	March 2019	83
6	Composition and Conservation status of freshwater fish in the Chipembe Dam and the surrounding areas being influenced by the Balama Graphite Project	Lúrio University - Faculty of Natural Sciences Environmental and Conservation Research Centre, Campus Universitário	September 2018	52
7	Flora and Fauna Monitoring at Conservation Areas at Balama, Cabo Delgado. Report	Department of Biological Sciences	March 2018	63

No.	Document Title	Source	Date	No. of pages
		Faculty of Science, University Eduardo Mondlane		
8	Twigg Exploration & Minerals Limited Aquatic Macroinvertebrate Assessment, Mozambique Survey	Clean Stream Biological Services, (PTY) LTD	March 2018	15
9	Draft Report -Composition and Conservation status of freshwater fish of Chipembe Dam and influence areas of Balama Project	Lúrio University Faculty of Natural Sciences Environmental and Conservation Research Centre	May 2017	35
10	Flora and Fauna Monitoring at Conservation Areas at Balama, Cabo Delgado. Report	Department of Biological Sciences Faculty of Science, University Eduardo Mondlane	April 2017	65
11	Twigg Exploration & Minerals Limited -Aquatic Macroinvertebrate Assessment, Mozambique - Survey	Clean Stream Biological Services, (PTY) LTD	March 2017	21
12	Composition and conservation status of freshwater fish of Chipembe Dam and influence areas of Balama Project. Final Report	Instituto Nacional de Investigação pesqueira Fisheries Reseatch Institute	August 2016	29
13	Composition and conservation status of fresh water fish of Chipembe Dam and influence areas of Balama Project Draft report	Instituto Nacional de Investigação Pesqueira Fisheries Research Institute	May 2016.	26

No.	Document Title	Source	Date	No. of pages
14	Twigg Exploration & Minerals Limited -Aquatic Macroinvertebrate Assessment, Mozambique Survey	Clean Stream Biological Services, (PTY) LTD	March 2016	17
15	PART II: Environmental, Social and Health Impact Assessment, Final Report	Coastal& Environmental Services	February 2015	323
16	Vegetation and Floristic Specialist Study	Coastal and Environmental Services Mozambique, Limitada	October 2014	76
17	PART I: Executive summary, draft for review	Coastal and Environmental Services Mozambique, Limitada	September 2014	18
18	PART III: Environmental and social Management plan and monitoring Programme , Draft for review	Coastal and Environmental Services Mozambique, Limitada	September 2014	132
19	Final resettlement action plan - part 6 of the environmental and social health impact Assessment process	EOH Coastal & Environmental Services Lda.	September 2014	202
20	Traffic and transport assessment	Coastal and Environmental Services Mozambique, Limitada	September 2014	61

No.	Document Title	Source	Date	No. of pages
21	Social impact assessment	Coastal and Environmental Services Mozambique, Limitada	August 2014	127
22	Environmental noise impact Assessment for the proposed Balama graphite mine	Digby Wells Environmental.	January 2014	39
23	Aquatic ecology baseline survey and impact assessment	Anton Bok Aquatic Consultants cc and Coastal & Environmental Services	January 2014	105
24	Land, Natural Resource Use and Agriculture Assessment	Coastal and Environmental Services	December 2013	56
25	Terrestrial Faunal Impact Assessment	Coastal and Environmental Services	December 2013	86
26	Waste and wastewater assessment final report	Coastal and Environmental Services	November 2013	65
27	Health impact assessment for The Balama graphite mine	Coastal Environmental Services	May 2013	184

9.Annex 2: Updated Biodiversity Baseline

Plant Species Surveyed from 2014-2021

No.	Family	Species - Scientific name	Nassilala	Corange	Mehuca River	IUCN Status	CITES	Mozambique Red List	Endemic
1	Acanthaceae	*Blepharis affins*	x			DD	NO		
2	Achariaceae	*Xylotheca kraussiana*				LC	NO	-	-
3	Achariaceae	*Xylotheca tettensis*	x	x	x	LC	NO		
4	Amaryllidaceae	*Crinum abyssinicum*		x	x	DD	NO		
5	Anacardiaceae	*Lannea discolor*	x			LC	NO		
6	Anacardiaceae	*Lannea schweinfurthii*	x	x	x	NT	NO		
7	Anacardiaceae	*Mangifera indica*				DD	NO	-	-
8	Anacardiaceae	*Sclerocarya birrea*		x	x	DD	NO		
9	Annonaceae	*Annona senegalensis*	x	x	x	LC	NO		
10	Annonaceae	*Artabotrys brachypetalus*		x		LC	NO		
11	Annonaceae	*Monodora grandidieri*		x		LC	NO		
12	Annonaceae	*Monodora junodii*	x	x		LC	NO		
13	Annonaceae	*Monodora stenopetala*	x	x		VU	NO	EN	X
14	Annonaceae	*Uvaria virens*		x		LC	NO		
15	Apocynaceae	*Calotropis gigantea*				DD	NO	-	-
16	Apocynaceae	*Cryptolepis obtusa*			x	DD	NO		
17	Apocynaceae	*Diplorhynchus condylocarpon*	x	x		LC	NO		
18	Apocynaceae	*Holarrhena pubescens*	x	x		LC	NO		
19	Apocynaceae	*Landolphia kirkii*	x			DD	NO		
20	Apocynaceae	*Strophanthus hypoleucos **		x		VU	NO		X
21	Apocynaceae	*Tabernaemontana elegans*		x	x	LC	NO		
22	Araceae	*Stylochaeton cf. natalensis*	x	x	x	DD	NO		
23	Araceae	*Stylochiton maximus*	x			DD	NO		
24	Araceae	*Tacca leontopetaloides*	x			LC	NO		
25	Araliaceae	*Araliaceae arvore*		x		DD	NO		
26	Araliaceae	*Cussonia arborea*	x	x		LC	NO		
27	Araliaceae	*Steganotaenia araliacea*	x			LC	NO		
28	Asparagaceae	*Asparagus cf. africanus*	x			DD	NO		

29	Asparagaceae	*Asparagus falcatus*	x			DD	NO		
30	Asteraceae	*Tridax procumbens*			x	DD	NO		
31	Asteraceae	*Vernonia colorata*		x		LC	NO		
32	Bignoniaceae	*Begonia cf sonderiana*				DD	NO	-	-
33	Bignoniaceae	*Kigelia africana*				LC	NO	-	-
34	Bignoniaceae	*Markhamia obtusifolia*		x	x	LC	NO		
35	Bignoniaceae	*Markhamia zanzibarica*	x			LC	NO		
36	Bombacaceae	*Bombax sp*		x		DD	NO		
37	Burseraceae	*Commelina benghalensis*	x			LC	NO		
38	Burseraceae	*Commiphora africana*	x	x		LC	NO		
39	Burseraceae	*Commiphora cf mollis*				LC	NO	-	-
40	Burseraceae	*Commiphora mossambicens*	x	x		DD	NO		
41	Burseraceae	*Commiphora neglecta*	x			LC	NO		
42	Burseraceae	*Commiphora serrata*	x	x		LC	NO		
43	Capparaceae	*Boscia angustifolia*	x	x		DD	NO		
44	Capparaceae	*Boscia mossambicensis*	x			DD	NO		
45	Capparaceae	*Capparis menolifera*		x		DD	NO		
46	Capparaceae	*Cladostemon kirkii*	x	x		LC	NO		
47	Celastraceae	*Cassine aethiopica*			x	LC	NO		
48	Celastraceae	*cf. Cassine aethiopica*		x		LC	NO		
49	Celastraceae	*Hippocratea parvifolia*		x		DD	NO		
50	Celastraceae	*Maytenus undata*				LC	NO	-	-
51	Celastraceae	*Salacia leptoclada*		x		DD	NO		
52	Combretaceae	*Combreton molle*	x			LC	NO		
53	Combretaceae	*Combretum adenogonium*		x		LC	NO		
54	Combretaceae	*Combretum apiculatum*	x	x		LC	NO		
55	Combretaceae	*Combretum butyrosum*	x	x	x	LC	NO		

No.	Family	Species - Scientific name	Nassilala	Corange	Mehuca River	IUCN Status	CITES	Mozambique Red List	Endemic
56	Combretaceae	*Combretum collinum*				LC	NO	-	-
57	Combretaceae	*Combretum erythrophylum*				DD	NO	-	-
58	Combretaceae	*Combretum molle*		x		LC	NO		
59	Combretaceae	*Combretum mossambicense*		x		LC	NO		
60	Combretaceae	*Combretum zeyheri*	x			LC	NO		
61	Combretaceae	*Hymenocardia ulmoides*	x	x		LC	NO		
62	Combretaceae	*Pteleopsis myrtifolia*	x	x		DD	NO		
63	Combretaceae	*Terminalia brachystemma*				DD	NO	-	-
64	Connaraceae	*Hugonia orientalis*	x	x		LC	NO		
65	Connaraceae	*Rourea orientalis*	x	x		LC	NO		
66	Cucurbitaceae	*Cucumis anguria*		x		DD	NO		
67	Dioscoreaceae	*Dioscorea hirtiflora*	x			LC	NO		
68	Dioscoreaceae	*Dioscorea sansibarensis*	x			DD	NO		
69	Dioscoreaceae	*Dioscorea schimperiana*	x	x		LC	NO		
70	Ebenaceae	*Diospyros usambarensis*			x	LC	NO		
71	Ehretiaceae	*Ehretia amoena*	x			LC	NO		
72	Euphorbiaceae	*Acalypha ciliata*	x	x		DD	NO		
73	Euphorbiaceae	*Acalypha senensis*		x		DD	NO		
74	Euphorbiaceae	*Acalypha sp.*	x			DD	NO		
75	Euphorbiaceae	*Alchornea laxiflora*	x		x	LC	NO		
76	Euphorbiaceae	*Croton cf. sylvaticus* *	x			LC	NO		
77	Euphorbiaceae	*Pseudolachnostylis maprouneifolia*	x			LC	NO		
78	Euphorbiaceae	*Ricinus communis*			x	DD	NO		
79	Fabaceae	*Abrus cf. precatorius*		x		DD	NO		
80	Fabaceae	*Abrus schimperi*			x	LC	NO		
81	Fabaceae	*Senegalia galpinii*				LC	NO	-	-
82	Fabaceae	*Senegalia polyacantha*				DD	NO	-	-
83	Fabaceae	*Acacia senegalensis*				DD	NO	-	-
84	Fabaceae	*Afzelia quanzensis*	x	x		LC	NO		
85	Fabaceae	*Albizia adianthifolia*	x	x		LC	NO		

86	Fabaceae	*Albizia amara*				LC	NO	-	-
87	Fabaceae	*Albizia forbesii*	x			LC	NO		
88	Fabaceae	*Albizia versicolor*	x			LC	NO		
89	Fabaceae	*Amblygonocarpus andongensis*	x			LC	NO		
90	Fabaceae	*Bauhinia galpinni*				DD	NO	-	-
91	Fabaceae	*Bauhinia petersiana*	x	x	x	LC	NO		
92	Fabaceae	*Bolusanthus speciosus*	x	x		LC	NO		
93	Fabaceae	*Brachystegia allenii*				LC	NO	-	-
94	Fabaceae	*Brachystegia boehmii*				LC	NO	-	-
95	Fabaceae	*Brachystegia bussei*				LC	NO	-	-
96	Fabaceae	*Brachystegia glaucescens*	x			LC	NO		
97	Fabaceae	*Brachystegia spiciformis*	x	x		LC	NO		
98	Fabaceae	*Brachystegia utilis*		x		LC	NO		
99	Fabaceae	*Burkea africana*	x			LC	NO		
100	Fabaceae	*Cassia abbreviata*	x			LC	NO		
101	Fabaceae	*Cassia afrofistula*	x	x	x	LC	NO		
102	Fabaceae	*Cordyla africana*	x			LC	NO		
103	Fabaceae	*Dalbergia arbutifolia*	x	x	x	LC	II		
104	Fabaceae	*Dalbergia melanoxylon*	x	x		NT	II		
105	Fabaceae	*Dalbergia sp*		x		DD	NO		
106	Fabaceae	*Dichrostachys cinerea*				LC	NO	-	-
107	Fabaceae	*Millettia bussei*			x	LC	NO		
108	Fabaceae	*Millettia stuhlmannii*	x	x	x	DD	NO		
109	Fabaceae	*Mimosa busseana*			x	LC	NO		X
110	Fabaceae	*Mucuna coriaceae*	x			DD	NO		

No.	Family	Species - Scientific name	Nassilala	Corange	Mehuca River	IUCN Status	CITES	Mozambique Red List	Endemic
111	Fabaceae	*Pericopsis angolensis*	x			LC	NO		
112	Fabaceae	*Philenoptera violacea*	x		x	LC	NO		
113	Fabaceae	*Piliostigma thonningii*				DD	NO	-	-
114	Fabaceae	*Pterocarpus angolensis*	x	x		LC	NO		
115	Fabaceae	*Pterocarpus lucens*			x	LC	NO		
116	Fabaceae	*Senna occidentalis*		x		LC	NO		
117	Fabaceae	*Senna petersiana*	x			LC	NO		
118	Fabaceae	*Aganope stuhlmannii*	x			LC	NO	-	-
119	Flacourtiaceae	*Flacourtia indica*	x			LC	NO		
120	Lamiaceae	*Vitex payos*				LC	NO	-	-
121	Loganiaceae	*Strychnos madagascariensis*				LC	NO	-	-
122	Loganiaceae	*Strychnos spinosa*				DD	NO	-	-
123	Malvaceae	*Abutilon angulatum*	x	x		DD	NO		
124	Malvaceae	*Adansonia digitata*				DD	NO	-	-
125	Malvaceae	*Azanza garckeana*	x		x	DD	NO		
126	Malvaceae	*Grewia flavescens*	x			LC	NO		
127	Malvaceae	*Grewia forbsii*				DD	NO	-	-
128	Malvaceae	*Sterculia appendiculata*				DD	NO		-
129	Meliaceae	*Trichilia emetica*		x	x	LC	NO		
130	Moraceae	*Ficus sycomorus*		x	x	LC	NO		
131	Moringaceae	*Moringa oleifera*				LC	NO	-	-
132	Nyctaginaceae	*Boerhavia erecta*			x	DD	NO		
133	Ochnaceae	*Ochna leptoclada*	x			DD	NO		
134	Ochnaceae	*Ochna natalitia*			x	LC	NO		
135	Orchidaceae	*Ansellia africana*		x		VU	II		
136	Orobanchaceae	*Striga asiatica*				DD	NO	-	-
137	Phyllanthaceae	*Antidesma venosum*			x	LC	NO		
138	Phyllanthaceae	*Margaritaria discoidea*		x	x	LC	NO		
139	Phyllanthaceae	*Phyllanthus reticulatus*	x	x	x	LC	NO		

140	Poaceae	*Digitaria eriantha*	x	x		DD	NO		
141	Poaceae	*Hyperthelia dissoluta*			x	DD	NO		
142	Poaceae	*Oxytenanthera abyssinica*	x	x	x	DD	NO		
143	Poaceae	*Panicum maximum*	x	x	x	DD	NO		
144	Poaceae	*Pennisetum purpureum*		x	x	LC	NO		
145	Poaceae	*Setaria incrassata*	x			DD	NO		
146	Poaceae	*Urochloa mosambicensis*			x	DD	NO		
147	Polygalaceae	*Securidaca longipedunculata*	x	x		DD	NO		
148	Pteridaceae	*Adiantum philippense* *		x		DD	NO		
149	Rubiaceae	*Canthium sp.*	x			DD	NO		
150	Rubiaceae	*Carphalea pubescens* *	x			DD	NO		
151	Rubiaceae	*Crossopteryx febrifuga*	x			LC	NO		
152	Rubiaceae	*Gardenia gummifera*		x		LC	NO		
153	Rubiaceae	*Gardenia resiniflua*				DD	NO	-	-
154	Rubiaceae	*Hymenodictyon floribundum*		x		LC	NO		
155	Rubiaceae	*Keetia venosa*				LC	NO	-	-
156	Rubiaceae	*Pavetta uniflora* *	x			DD	NO		
157	Rubiaceae	*Vangueria infausta*		x		LC	NO		
158	Sapindaceae	*Zanha africana*			x	DD	NO		
159	Sterculiaceae	*Sterculia africana*	x			NT	NO		
160	Sterculiaceae	*Sterculia appendiculata*	x			DD	NO		
161	Thymelaeaceae	*Synaptolepis alternifolia*		x		DD	NO		
162	Vitaceae	*Cissus integrifolia*	x	x	x	DD	NO		
163	Vitaceae	*Cyphostemma buchananii*	x		x	DD	NO		
164	Vitaceae	*Vitex doniana*			x	LC	NO		
165	Zygophyllaceae	*Balanites maughamii*				LC	NO	-	-

Fish Species

No.	Species name	Common Name	Chibempe Dam	Chibempe Dam spillway	Mehucua River upstream	Mehucua River downstream	Mualipue River	Namiticu River	Namiticu River confluence	Naconha River	IUCN	CITES	Mozambique Red List	Endemic	Migratory
			S01	S02	S03	S04	S05	S06	S07	S08					
1	*Anguilla bengalensis*	Indian Mottled Eel			x						NT	NO	NO		X
2	*Anguilla bicolor*	Short-fin Eel									NT	NO	NO		X
3	*Anguilla mossambica*	African long-fin Eel		X							NT	NO	NO		X
4	*Astatotilapia caliptera*	Eastern River Bream		x							LC	NO	NO		
5	*Clarias gariepinus*	Sharptooth catfish					x	x	x		LC	NO	NO		
6	*Enteromius cf afrohamiltoni*	Plump barb/Hamilton's Barb	x	x	x	x	x	x	x	x	LC	NO	NO		
7	*Enteromius cf litamba*	Tamba	x	x	x	x	x	x	x	x	DD	NO	NO		
8	*Enteromius cf viviparus*	Bowstrip barb	x		x	x		x	x	x	LC	NO	NO		
9	*Enteromius lineomaculatus*	Line-spotted Barb			x		x				LC	NO	NO		
10	*Enteromius paludinosus*	Straightfin barb	x		x	x	x			x	LC	NO	NO		
11	*Enteromius radiatus*	Beira barb/Redeye barb	x	x	x	x	x	x	x	x	LC	NO	NO		
12	*Enteromius trimaculatus*	Three-spot barb	x				x	x		x	LC	NO	NO		
13	*Nothobranchius cf makondorum*	Annual killifish (Kapome)					x	x	x	x	LC	NO	NO		
14	*Nothobranchius sp 'orange fins'**	Annual killifish (new species)								x	DD	NO	NO	X	
15	*Oreochromis cf mossambicus*	Mozambique tilapia	x		x	x	x	x	x		VU	NO	NO		
16	*Oreochromis niloticus*	Nilo Tilapia	x		x		x	x	x	x	LC	NO	NO		
17	*Tilapia sparmanii*	Banded Tilapia		X			X				LC	NO	NO		
18	*Zaireichthys cf monomotapa*	Eastern Sand Catlet			x		x			x	LC	NO	NO		

Amphibian Species

No.	Species name	Common name	Nassilala	Corange	Mehucua River	IUCN Red List Status	Mozambique Red List	Endemic
1	*Afrixalus delicatus*	Snoring leaf-folding frog			X	LC	NO	NO
2	*Afrixalus fornasinii*	Giant leaf-folding frog			X	LC	NO	NO
3	*Amietophryne gutturalis*	Guttural toad			X	LC	NO	NO
4	*Amietophryne maculatus*	Flat-backed toad	X			LC	NO	NO
5	*Arthroleptis stenodactylus*	Common Squeaker		X	X	LC	NO	NO
6	*Arthroleptis xenodactyloides*	Dwarf Squeaker	X	X		LC	NO	NO
7	*Breviceps mossambicus*	Mozambique rain frog			X	LC	NO	NO
8	*Chiromantis xerampelina*	Grey Foam Nest frog		X	X	LC	NO	NO
9	*Hyperolius marmoratus*	Painted Reed frog			X	LC	NO	NO
10	*Hyperolius tuberlinguis*	Tinker Reed frog			X	LC	NO	NO
11	*Kassina maculata*	Red-legged Kassina			X	LC	NO	NO
12	*Kassina senegalensis*	Senegal Kassina	X			LC	NO	NO
13	*Leptopelis parabocagii*	Cryptic tree frog		X		LC	NO	NO
14	*Phrynobatrachus acridoides*	Eastern Puddle frog			X	LC	NO	NO
15	*Phrynobatrachus cf. perpalmatus*	Puddle Frog	X		X	LC	NO	NO
16	*Phrynobatrachus mababiensis*	Mababe Puddle frog			X	LC	NO	NO
17	*Phrynobatrachus natalensis*	Natal Puddle frog			X	LC	NO	NO
18	*Ptychadena anchietae*	Anchieta's Ridged frog			X	LC	NO	NO
19	*Ptychadena mossambica*	Mozambique Ridged frog			X	LC	NO	NO
20	*Ptychadena oxyrhynchus*	Sharp-nosed Ridged frog			X	LC	NO	NO
21	*Schismaderma carens*	Red toad	X			LC	NO	NO
22	*Xenopus muelleri*	Tropical platanna			X	LC	NO	NO

Reptile Species

No.	Species	Common Name	Nassilala	Corange	Mehucua River	Red List Status	Mozambique Red List	CITES	Endemic
1	*Acanthocercus atricollis*	Tree agama				LC	NO		NO
2	*Agama aculeata*	Ground agama		x	x	LC	NO		NO
3	*Agama mossambica*	Mozambique Agama				LC	NO		NO
4	*Atractaspis bibronii*	Bibron's Burrowing Asp				LC	NO		NO
5	*Bitis arietans arietans*	Puff Adder	x		x	LC	NO		NO
6	*Boaedon capensis*	Cape House Snake				LC	NO		NO
7	*Chamaeleo dilepis*	Flap-necked chameleon			x	LC	NO	II	NO
8	*Chondrodactylus turneri*	Turner's Thick-toed gecko				LC	NO		NO
9	*Crocodylus niloticus*	Nile Crocodile			x	LC	NO	II	NO
10	*Crotaphopeltis hotamboeia*	Red-lipped Snake				LC	NO		NO
11	*Dendroaspis angusticeps*	Green Mamba				LC	NO		NO
12	*Dendroaspis polylepis*	Black Mamba		x		LC	NO		NO
13	*Elapsoidea boulengeri*	Boulenger‟s Garter Snake				LC	NO		NO
14	*Gerrhosaurus flavigularis*	Yellow-throated plated lizard		x		LC	NO		NO
15	*Gerrhosaurus nigrolineatus*	Black-lined plated lizard				LC	NO		NO
16	*Hemidactylus mabouia*	Tropical house gecko			x	LC	NO		NO
17	*Hemidactylus platycephalus*	Flat-headed house gecko				LC	NO		NO
18	*Kinixys spekii*	Spek's Hingeback Tortoise			x	LC	NO	II	NO
19	*Kinixys zombensis*	Southern Hingeback Tortoise				LC	NO	II	NO
20	*Lycophidion capense capense*	Cape Wolf Snake	x			LC	NO		NO
21	*Lygodactylus capensis*	Cape dwarf day gecko				LC	NO		NO

22	*Naja mossambica*	Mozambique Spitting Cobra				LC	NO		NO
23	*Panaspis* cf *wahlbergii*	Snake-eyed skink	x			LC	NO		NO
24	*Pelusois sinuatus*	Serrated Hinged Terrapin			x	LC	NO		NO
25	*Philothamnus hoplogaster*	Common Green Snake	x			LC	NO		NO
26	*Philothamnus semivariegatus*	Spotted Buch Snake				LC	NO		NO
27	*Psammophis mossambicus*	Mozambique Sand Snake			x	LC	NO		NO
28	*Psammophis orientalis*	Eastern Striped-bellied Snake				LC	NO		NO
29	*Python natalensis*	Southern African Python				LC	NO	II	NO
30	*Stigmochelys pardalis*	Leopard Tortoise				LC	NO	II	NO
31	*Trachylepis boulengeri*	Boulenger's Skink				LC	NO		NO
32	*Trachylepis margaritifer*	Rainbow Skink	x	x		LC	NO		NO
33	*Trachylepis striata*	Striped Skink	x	x		LC	NO		NO
34	*Trachylepis varia*	Varied Skink	x	x	x	LC	NO		NO
35	*Varanus niloticus*	Water monitor			x	LC	NO	II	NO

No.	Species name	Common name	Nassilala	Corange	Mehucua River	IUCN Category	CITES	Endemic	Migratory
1	*Acrocephalus arundinaceus*	Great Reed-warbler			X	LC		NO	X
2	*Andropadus importunus*	Sombre Greenbul	X	X	X	LC		NO	
3	*Apalis flavida*	Yellow-breasted Apalis	X	X	X	LC		NO	
4	*Apaloderma narina*	Narina Trogon	X			LC		NO	
5	*Apus affinis*	Little Swift	X			LC		NO	X
6	*Apus apus*	Common Swift		X		LC		NO	X
7	*Aquila wahlbergi*	Wahlberg's Eagle		X	X	LC	II	NO	
8	*Batis molitor*	Chinspot Batis	X	X	X	LC		NO	
9	*Batis soror*	East Coast Batis	X	X		LC		NO	
10	*Bubo africanus*	Spotted Eagle-owl			X	LC	II	NO	
11	*Buteo auguralis*	Red-necked Buzzard	X			LC	II	NO	
12	*Buteo buteo*	Common Buzzard	X	X	X	LC	II	NO	
13	*Butorides striata*	Green-backed Heron			X	LC		NO	
14	*Bycanistes bucinator*	Trumpeter Hornbill	X		X	LC		NO	
15	*Camaroptera brachyura*	Bleating Camaroptera	X	X		LC		NO	
16	*Cecropis abyssinica*	Lesser Striped Swallow	X		X	LC		NO	X
17	*Centropus burchellii*		X	X	X	LC		NO	
18	*Ceryle rudis*	Pied Kingfisher			X	LC		NO	
19	*Chalcomitra senegalensis*	Scarlet-chested Sunbird	X	X	X	LC		NO	
20	*Chlorocichla flaviventris*	Yellow-bellied Greenbul	X	X	X	LC		NO	
21	*Chlorophoneus sulfureopectus*	Orange-breasted Bush-shrike	X	X	X	LC		NO	
22	*Chrysococcyx cupreus*	African Emerald Cuckoo		X	X	LC		NO	

23	*chrysococcyx klaas*	Klaas's Cuckoo	X	X	X	LC		NO	
24	*Ciconia abdimii*	Abdim's Stork	X			LC		NO	
25	*Cinnyricinclus leucogaster*	Violet-backed Starling	X	X	X	LC		NO	X
26	*Cinnyris bifasciatus*	Purple-banded Sunbird	X	X		LC		NO	
27	*Cinnyris talatala*	White-breasted Sunbird	X	X	X	LC		NO	
28	*Circaetus cinerascens*	Banded Snake-eagle				LC	II	NO	
29	*Circaetus cinereus*	Brown Snake-eagle	X			LC	II	NO	X
30	*Circaetus pectoralis*	Black-chested Snake- eagle				LC	II	NO	X
31	*Cisticola chiniana*	Rattling Cisticola			X	LC		NO	
32	*Cisticola galactotes*	Rufous-winged Cisticola	X	X	X	LC		NO	
33	*Clamator jacobinus*	Jacobin Cuckoo		X	X	LC		NO	
34	*Coracias caudatus*	Lilac-breasted Roller	X	X		LC		NO	
35	*Corvus albus*	Pied Crow	X	X	X	LC		NO	
36	*Corythornis cristatus*	Malachite Kingfisher			X	LC		NO	
37	*Cossypha heuglini*	White-browed Robin-chat	X	X	X	LC		NO	

No.	Species name	Common name	Nassilala	Corange	Mehucua River	IUCN Category	CITES	Endemic	Migratory
38	*Cossypha natalensis*	Red-capped Robin-chat	X	X	X	LC		NO	
39	*Cuculus clamosus*	Blach Cuckoo		X	X	LC		NO	X
40	*Cuculus gularis*	African Cuckoo	X			LC		NO	X
41	*Cuculus solitarius*	Red-chested Cuckoo	X	X	X	LC		NO	X
42	*Cypsiurus parvus*	African Palm-swift	X		X	LC		NO	
43	*Dendropicos fuscescens*	Cardinal Woodpecker	X	X		LC		NO	
44	*Dendropicos namaquus*	Bearded Woodpecker	X			LC		NO	
45	*Dicrurus adsimilis*	Fork-tailed Drongo	X	X	X	LC		NO	
46	*Dryoscopus cubla*	Black-backed Puffback	X	X	X	LC		NO	
47	*Elanus caeruleus*	Black-shouldered Kite				LC	II	NO	
48	*Emberiza flaviventris*	Golden-breasted Bunting	X			LC		NO	
49	*Erythrocercus livingstonei*	Livingstone's Flycatcher	X	X		LC		NO	
50	*Estrilda astrild*	Common Waxbill			X	LC		NO	
51	*Euplectes capensis*	Yellow Bishop		X	X	LC		NO	
52	*Euplectes orix*	Southern Red Bishop			X	LC		NO	
53	*Eurystomus glaucurus*	Broad-billed Roller	X	X	X	LC		NO	X
54	*Falco biarmicus*	Lanner Falcon				LC	II	NO	
55	*Falco dickinsoni*	Dickinson's Kestrel		X		LC	II	NO	
56	*Falco eleonorae*	Eleonora's Falcon		X		LC	II	NO	X
57	*Falco peregrinus*	Peregrine Falcon	X	X		LC	I	NO	X
58	*Gallinula angulata*	Lesser Moorhen			X	LC		NO	
59	*Halcyon albiventris*	Brown-hooded Kingfisher			X	LC		NO	
60	*Halcyon leucocephala*	Grey-headed Kingfisher	X	X	X	LC		NO	X

61	*Halcyon senegalensis*	Woodland Kingfisher			X	LC		NO	X
62	*Haliaeetus vocifer*	African Fish-eagle			X	LC	II	NO	
63	*Hedydipna collaris*	Collared Sunbird	X	X	X	LC		NO	
64	*Hieraaetus ayresii*	Ayres's Hawk-eagle				LC	II	NO	X
65	*Hieraaetus pennatus*	Booted Eagle				LC	II	NO	X
66	*Hieraaetus wahlbergi*	Wahlberg's Eagle	X			LC	II	NO	X
67	*Hirundo abyssinica*	Lesser Striped Swallow	X	X	X	LC		NO	
68	*Hirundo rustica*	Barn Swallow	X	X	X	LC		NO	X
69	*Hirundo smithii*	Wire-tailed Swallow		X	X	LC		NO	X
70	*Hypargos niveoguttatus*	Red-throated Twinspot	X			LC		NO	
71	*Indicator minor*	Lesser Honeyguide	X		X	LC		NO	
72	*Ispidina picta*	African Pygmy-kingfisher			X	LC		NO	X
73	*Kaupifalco monogrammicus*	Lizard Buzzard	X	X	X	LC	II	NO	
74	*Lagonosticta rhodopareia*	Jameson's Firefinch	X	X	X	LC		NO	

No.	Species name	Common name	Nassilala	Corange	Mehucua River	IUCN Category	CITES	Endemic	Migratory
75	*Lagonosticta rubricata*	African Firefinch	X			LC		NO	
76	*Lagonosticta senegala*	Red-billed Firefinch		X	X	LC		NO	
77	*Laniarius aethiopicus*	Tropical Boubou	X	X	X	LC		NO	
78	*Lonchura nigriceps*	Black-and-white Mannikin	X	X	X	LC		NO	
79	*Lophoceros alboterminatus*	Crowned Hornbill	X	X		LC		NO	
80	*Lophoceros pallidirostris*	Pale-billed Hornbill		X		LC		NO	
81	*Lybius torquatus*	Black-collared Barbet	X	X	X	LC		NO	
82	*Macheiramphus alcinus*	Bat Hawk	X			LC	II	NO	
83	*Macronyx croceus*	Yellow-throated Longclaw			X	LC		NO	
84	*Mandingoa nitidula*	Green Twinspot	X			LC		NO	
85	*Melaniparus niger*	Southern Black Tit		X		LC		NO	
86	*Melierax metabates*	Dark Chanting-goshawk				LC	II	NO	
87	*Merops persicus*	Blue-cheeked Bee-eater	X	X		LC		NO	X
88	*Merops pusillus*	Little Bee-eater	X	X	X	LC		NO	
89	*Milvus migrans*	Black Kite	X			LC	II	NO	
90	*Mirafra rufocinnamomea*	Flappet Lark			X	LC		NO	
91	*Motacilla aguimp*	African Pied Wagtail			X	LC		NO	
92	*Muscicapa striata*	Spotted Flycatcher			X	LC		NO	X
93	*Nicator gularis*	Eastern Nicator	X	X	X	LC		NO	
94	*Notopholia corusca*	Black-bellied Starling	X			LC		NO	
95	*Numida meleagris*	Helmeted Guineafowl		X		LC		NO	
96	*Oenanthe familiaris*	Familiar Chat	X	X		LC		NO	

97	*Onychognathus morio*	Red-winged Starling	X			LC		NO	
98	*Oriolus larvatus*	Eastern Black-headed Oriole	X	X		LC		NO	
99	*Otus senegalensis*	African Scops-owl				LC	II	NO	
100	*Passer diffusus*	Southern Grey-headed Sparrow	X			LC		NO	
101	*Phoeniculus purpureus*	Green Woodhoopoe	X	X		LC		NO	
102	*Phyllastrephus flavostriatus*	Yellow-streaked Greenbul	X	X	X	LC		NO	
103	*Phyllastrephus terrestris*	Terrestrial Brownbul	X	X	X	LC		NO	
104	*Phylloscopus trochilus*	Willow Warbler			X	LC		NO	X
105	*Platysteira peltata*	Black-throated Wattle-eye			X	LC		NO	X
106	*Ploceus bicolor*	Dark-backed Weaver	X	X	X	LC		NO	
107	*Ploceus ocularis*	Spectacled Weaver	X	X	X	LC		NO	
108	*Ploceus subaureus*	African Golden Weaver			X	LC		NO	
109	*Ploceus velatus*	Southern Masked Weaver	X	X	X	LC		NO	
110	*Pogoniulus bilineatus*	Yellow-rumped Tinkerbird	X	X	X	LC		NO	
111	*Polyboroides typus*	African Harrier-hawk	X	X	X	LC	II	NO	

No.	Species name	Common name	Nassilala	Corange	Mehucua River	IUCN Category	CITES	Endemic	Migratory
112	*Prinia subflava*	Tawny-flanked Prinia	X	X	X	LC		NO	
113	*Prionops plumatus*	White-crested Helmetshrike	X			LC		NO	
114	*Prionops retzii*	Retz's Helmetshrike	X			LC		NO	
115	*Psalidoprocne orietalis*	Eastern sawwing			X	LC		NO	
116	*Pternistis afer*	Red-necked Francolin	X		X	LC		NO	
117	*Pycnonotus tricolor*	Dark-capped bulbul	X	X	X	LC		NO	
118	*Pytilia afra*	Orange-winged Pytilia	X	X	X	LC		NO	
119	*Rhinopomastus cyanomelas*	Common Scimitarbill		X		LC		NO	
120	*Riparia riparia*	Collared Sand Martin			X	LC		NO	X
121	*Scopus umbretta*	Hamerkop			X	LC		NO	
122	*Serinus mozambicus*	Yellow-fronted Canary	X	X	X	LC		NO	
123	*Spermestes cucullata*	Bronze Mannikin	X	X	X	LC		NO	
124	*Spermestes fringilloides*	Magpie Mannikin		X	X	LC		NO	
125	*Stactolaema leucotis*	White-eared Barbet	X			LC		NO	
126	*Streptopelia capicola*	Ring-necked Dove	X	X	X	LC		NO	X
127	*Streptopelia decipiens*	Mourning Collared-dove	X			LC		NO	
128	*Streptopelia semitorquata*	Red-eyed Dove		X		LC		NO	X
129	*Tauraco livingstonii*	Livingstone's Turaco	X	X	X	LC	II	NO	
130	*Tauraco porphyreolophus*	Purple-crested Turaco				LC	II	NO	
131	*Tchagra autralis*	Brown-crowned Tchagra	X	X	X	LC		NO	
132	*Tchagra senegalus*	Black-crowned Tchagra	X	X	X	LC		NO	
133	*Telophorus sulfureopectus*	Orange-breasted Bush-shrike		X	X	LC		NO	
134	*Terathopius ecaudatus*	Bateleur				EN	II	NO	

135	*Terpsiphone viridis*	African Paradise-flycatcher	X			LC		NO	
136	*Tockus alboterminatus*	Crowned Hornbill	X	X		LC		NO	
137	*Trachyphonus vaillantii*	Crested Barbet		X	X	LC		NO	
138	*Treron calvus*	African Green-pigeon	X	X	X	LC		NO	X
139	*Tringa glareola*	Wood Sandpiper			X	LC		NO	
140	*Turdus libonyana*	Kurrichane Thrush			X	LC		NO	
141	*Turtur chalcospilos*	Emerald-spotted Wood-dove	X	X	X	LC		NO	
142	*Uraeginthus angolensis*	Blue-breasted Cordon-bleu	X	X	X	LC		NO	
143	*Vidua macroura*	Pin-tailed Whydah			X	LC		NO	
144	*Vidua paradisaea*	Long-tailed Paradise-whydah			X	LC		NO	
145	*Zosterops senegalensis*	African Yellow White-eye	X	X		LC		NO	

Mammal Species

No.	Scientific Name	Common Name	Likelihood	Method	Records	IUCN Red List status	Mozambique Red List status	CITES	Endemic
1	*Aethomys chrysophilus*	Red Rock Rat	Confirmed	Trap	2018	LC	NO	NO	NO
2	*Atelerix albiventris*	Four-toed Hedgehog	Moderate			LC	NO	NO	NO
3	*Atilax paludinosus*	Marsh Mongoose	Confirmed		EIA, 2018	LC	NO	NO	NO
4	*Canis adustus*	Side-striped Jackal	Moderate			LC	NO	NO	NO
5	*Cephalophus natalensis*	Natal Red Diuker	Confirmed	Spoor	2018	LC	NO	NO	NO
6	*Chlorocebus pygerythrus*	Vervet monkey	Confirmed		EIA, 2018	LC	NO	NO	NO
7	*Civettictis civetta*	African Civet	Moderate	Spoor		LC	NO	NO	NO
8	*Crocuta crocuta*	Spotted Hyaena	Moderate			LC	NO	NO	NO
9	*Galago moholi*	South African Galago	Moderate			LC	NO	NO	NO
10	*Galerella sanguinea*	Slender Mongoose	Confirmed			LC	NO	NO	NO
11	*Genetta genetta*	Small-spotted Genet	Confirmed	Spoor		LC	NO	NO	NO
12	*Genetta maculata*	Large-spotted Genet	Moderate			LC	NO	NO	NO
13	*Gerbilliscus leucogaster*	Bushveld Gerbil	Confirmed	Trap	2018	LC	NO	NO	NO
14	*Graphiurus murinus*	Woodland Dormouse	Moderate			LC	NO	NO	NO
15	*Helogale parvula*	Common Dwarf Mongoose	Moderate			LC	NO	NO	NO
16	*Herpestes ichneumon*	Large Grey Mongoose	Moderate			LC	NO	NO	NO
17	*Herpestes sanguineus*	Slender Mongoose	Confirmed		EIA, 2018	LC	NO	NO	NO
18	*Hystrix africaeaustralis*	Cape Porcupine	Confirmed		EIA	LC	NO	NO	NO
19	*Ichneumia albicauda*	White-tailed Mongoose	Moderate			LC	NO	NO	NO
20	*Leptailurus serval*	Serval	Moderate			LC	NO	NO	NO
21	*Lepus saxatilis*	Scrub Hare	Confirmed		EIA	LC	NO	NO	NO
22	*Lepus saxatilis*	Scrub Hare	Moderate			LC	NO	NO	NO
23	*Mungos mungo*	Banded Mongoose	Confirmed	Sighted	2018	LC	NO	NO	NO
24	*Nesotragus moschatus*	Suni	Moderate			LC	NO	NO	NO
25	*Orycteropus afer*	Aardvark	Confirmed	Spoor	EIA	LC	NO	NO	NO
26	*Papio cynocephalus*	Yellow Baboon	Confirmed		EIA, 2016	LC	NO	NO	NO
27	*Paraxerus cepapi*	Smith's Bush Squirrel	Confirmed		EIA	LC	NO	NO	NO

28	*Petrodromus tetradactylus*	Four-toed Elephant-shrew	Moderate		EIA	LC	NO	NO	NO
29	*Procavia capensis*	Rock Dassie	Moderate			LC	NO	NO	NO
30	*Saccostomus campestris*	Pouched Mouse	Confirmed	Trap	2018	LC	NO	NO	NO
31	*Smutsia temminckii*	Ground Pangolin	Confirmed		EIA	VU	NO	NO	NO
32	*Steatomys pratensis*	Fat Mouse	Confirmed	Trap	2018	LC	NO	NO	NO
33	*Tatera leucogaster*	Bushveld Gerbil	Confirmed			LC	NO	NO	NO
34	*Thryonomysswinderianus*	Greater Cane Rat	Moderate			LC	NO	NO	NO