

APPLICATION FOR EXTENSION AND RENOMINATION OF MACCHABEE – BEL OMBRE BIOSPHERE RESERVE



NOMINATION DOSSIER

NATIONAL PARKS & CONSERVATION SERVICE
MINISTRY OF AGRO INDUSTRY AND FOOD SECURITY
REPUBLIC OF MAURITIUS

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List of Acronymes

AEWA	African-Eurasian Migratory Waterbird Agreement
BR	Biosphere Reserve
BRGNP	Black River Gorges National Park
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species
CSBO	Compagnie Sucrière de Bel Ombre
CWR	Crop Wild Relatives
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
GoM	Government of Mauritius
IBA	Important Bird Area
IUCN	International Union for Conservation of Nature
KBA	Key Bird Area
KPI	Key Performance Indicator
MAB	Man and Biosphere
MABNFP	Man and Biosphere National Focal Point
MAIFS	Ministry of Agro Industry and Food Security
MELI	Monitoring, Evaluation, Learning and Intervention
MSIRI	Mauritius Sugar Industry Research Institute
MWF	Mauritius Wildlife Foundation
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-governmental Organisation
NPCS	National Parks and Conservation Service
NPPC	National Plant Propagation Centre
NTBNPAC	Native Terrestrial Biodiversity and National Parks Advisory Council
OPS	Outline Planning Schemes
SDG	Sustainable Development Goal
SWOT	Strength, Weakness, Opportunities and Threats
UNDP/GEF	United Nation Development Project/Global Environment Fund
UNESCO	United Nations Education, Scientific and Cultural Organisation
UNESCO Nat Com	Mauritius National Commission for UNESCO
VBO	Villas de Bel Ombre
WHS	World Heritage Site
WNICBR	World Network of Island and Coastal Biosphere Reserves

PART I: SUMMARY

1. PROPOSED NAME OF THE BIOSPHERE RESERVE

BLACK RIVER GORGES -BEL OMBRE Biosphere Reserve



Figure 1: The splendor of the Black River Gorges

Mauritius designated its one and only Biosphere Reserve namely the *Macchabée – Bel Ombre Biosphere Reserve* in 1977. The Government of Mauritius is presently applying for a redesigned Biosphere Reserve for Mauritius in order to comply with all the criteria set by the UNESCO Man and Biosphere Programme according to the “Seville Strategy for Biosphere Reserves, the Statutory Framework of the World Network” (published by UNESCO in 1996), the “Madrid Action Plan for Biosphere Reserves (2008-2013)”. It also addresses the “New Roadmap for the MAB Programme and its World Network of Biosphere Reserves” as per its *MAB Strategy (2015-2025)* and its *Lima Action Plan (2016-2025)*.

It has been named as the **BLACK RIVER GORGES -BEL OMBRE Biosphere Reserve** to enshrine the last remnants of the native forest found mainly in the regions of Black River Gorges National Park. On the other hand Bel Ombre portrays a perfect and symbiosis of harmony of all the three zones. The name Bel Ombre is found in the core area, the Buffer Zone as well as a village in the Transition zone. It also depicts transition between the terrestrial and the marine ecosystems.

2. NAME OF THE COUNTRY

REPUBLIC OF MAURITIUS

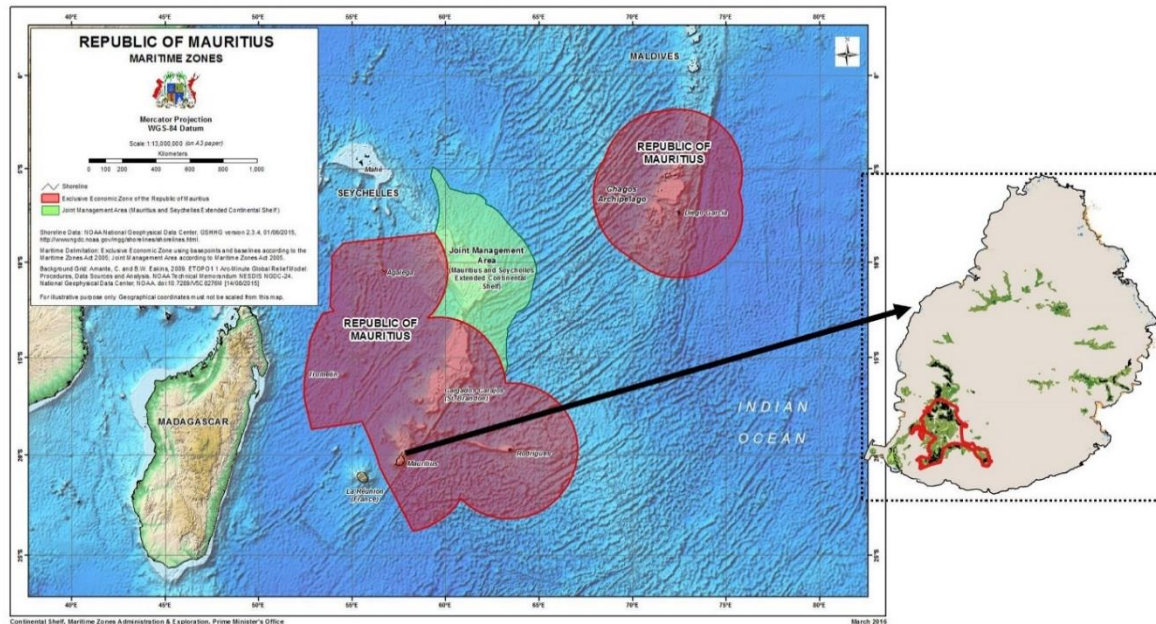


Figure 2: Map location of Mauritius (Source: Continental Shelf, Maritime Zones Administration and Exploration, Prime Minister's Office, March 2016)

The Republic of Mauritius forms part of the small island developing states. It covers a total area of 2,040 km². It comprises of mainland Mauritius, Rodrigues, Agalega, Tromelin, Cargados Carajos and Chagos Archipelago. It has an Exclusive Economic Zone (EEZ) of over 2.3 million km². Mauritius together with Rodrigues and Reunion forms part of the Mascarene Islands located in the Western Indian Ocean next to Madagascar.

3. FULFILLMENT OF THE THREE FUNCTIONS OF BIOSPHERE RESERVES

[Article 3 of the Statutory Framework presents the three functions of conservation, development and logistic support. Explain in general terms how the area fulfills these functions.]

3.1 "Conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation".

(Stress the importance of the site for conservation of biological and cultural diversity at the regional or global scales).



Figure 3: View point at the Black River Gorges National Park with long standing ebony tree

Mauritius is widely considered as the pearl of the Indian Ocean. However, the colonization of the island in the 16th and 17th centuries has had a devastating effect on the ecosystem which caused the extirpation of many plant and animal species. Indeed, the notorious and the famous Dodo (*Raphus cucullatus*) is known worldwide as the symbol of extinction. Mauritius has been designated by the International Union for Conservation of Nature (IUCN) as the 'Centre of Plant Diversity' and forms the Mascarene Islands biodiversity hotspot due to its high level of endemism. Some 39% of plants, 80% of terrestrial birds, 80% of reptiles and 40% of bat species have been reported as endemic to the island (Republic of Mauritius, 2017)

Mauritius has now only 5% of native forest habitats left (Florens V. and Baider C., 2006) since most of the forests were cleared to make way to vast areas of sugarcane plantations and settlements. This period also coincided and the exploitation of vast ebony-rich forests for timber and native animals were killed for food. It was observed that in a vegetation study carried out two decades ago, the remnant good quality native forest which is classified as a forest with a native canopy of more than 50% represent only a mere 2% of Mauritius (Page W. and d'Argent G., 1997). These remaining forests occur in fragments primarily in inaccessible areas of mountain peaks, gorges and valleys. They are mainly located in the south west part of Mauritius:

predominantly in the Macchabée – Bel Ombre region. This area was identified as an important ecologically sensitive zone as early as 1767 and was even proposed as a ‘Royal Reserve’. To give further protection, the Macchabée – Bel Ombre was designated as a Biosphere Reserve in 1977 due to its outstanding conservation value.

In 1994, the *Macchabée – Bel Ombre Biosphere Reserve* was integrated in the Black River Gorges National Park (BRGNP) which was proclaimed as a National Park under the Wildlife and National Parks Act 1993. The BRGNP covers an extent of 6,574 hectares representing about 3.5% of Mauritius. In the present application for the re-designed Black River Gorges – Bel Ombre Biosphere Reserve, all the BRGNP will form part of the Core Zone. The BRGNP is bequeathed with high level of endemism which makes the national park a unique place of high biodiversity. It also carries international significance as it has been identified by *Birdlife International* as an Important Bird Area as well as a Key Biodiversity Area owing to the high density of endemic species per square kilometer.



Figure 4: Echo parakeet (Psittacula eques) one of the rarest endemic species of Mauritius classified Endangered as per IUCN Red list

Currently, the main threat to the biodiversity remains the impact of Invasive Alien Species (IAS) of flora and fauna and is severely impacting the endemic species. Steps have been taken to control the IAS. There are several initiatives which have been undertaken by the government, private sector and Non-Governmental Organisations (local and international) for restoring the native forests.

These mainly include: -

- Adoption and implementation of a Protected Area Network Expansion Strategy funded under a UNDP/GEF project with a view to increasing the protected area to ensure an effective wildlife corridor and encompassing different landscapes and ecosystems ranging from the humid upland forest to the coastal ecosystem.
- Intensive conservation management, mainly by controlling of IAS.
- Species Recovery Programme for threatened native flora and fauna.
- Mass plantation of native plants

Projects are also carried out by the private sector and NGOs in the buffer and transition zones mainly with respect to restoration of riparian zones as a means of a ridge to reef approach. The active reintroduction of native plant species in the landscaping programme of the locality is an alternative form of conservation activity carried out within the village locality of Bel Ombre and St Martin.

3.2 "Development - foster economic and human development which is socio-culturally and ecologically sustainable".

(Indicate current activities and the potential of the proposed biosphere reserve in fulfilling the objective of fostering sustainable economic and socio-cultural development, including by securing flows of ecosystem services from the biosphere reserve).



Figure 5: Sea view of the village of St Martin – Bel Ombre

Previously the *Macchabée – Bel Ombre Biosphere Reserve* did not have any buffer and transition zone thereby could not fulfill fully and effectively its function to foster economic and human development. The proposed *Black River Gorges – Bel Ombre Biosphere Reserve* is in a way

addressing this limitation. It includes all the dedicated zones and successfully harmonises the different objectives to accomplish the functions of the BR. The public and private sector together with NGOs contribute significantly through various approaches to address the development functions within the BR.

- Conservation and private sector involvement: As per Memorandum of Understanding, developed between the Government and the private sector, the latter has been encouraged to carry out conservation activities such as restoration of native forest and setting up of sub population of endemic bird species in suitable habitats in privately owned land. Another pioneer innovation has been the facilitation of the Government through the National Parks and Conservation Service to provide expertise and assists in endemic bird reintroduction to new suitable sites on private lands to create sub population. These birds are sourced from the core zone and reintroduction in suitable private land. These sub population set up at Ebony Forest and Valley Ferney will enhance the distribution range and genetic viability of those threatened species. The private sector has in turn benefits in terms of eco-tourism activities and contributes to create green jobs.
- The core, buffer and transition zones of the proposed BR englobe a wide spectrum of socio-economic activities that foster the socio-cultural aspects of our multicultural society as well as ensuring the continued existence of the natural ecological sustainability of our biodiversity wealth.
- Jobs creation: A significant socio-economic contribution to the welfare state is the generation of *Green Employment* opportunities that are created through eco-tourism activities in the BR and equally from biodiversity conservation of our native forest (core and buffer zones). In addition, in all the zones, green jobs relate to activities such as hawkers and traders, tourism guides and related jobs, fishermen, craftsmen, manual workers and professionals (conservation, tourism, forestry sector).
- Sound environmentally-friendly practices are being carried out within the BR: recycling of wastes, rainwater harvesting, renewable energy, organic farming.
- Local communities are also involved in the economic development: Biosphere reserve activities relate to training of local communities and the generation of employment within the BR.
- International tourism standards have been adopted by several of the tourism operators such as the *Green Key initiative*, *Tread Lightly* and environmentally-friendly golf practices – where several of the selection criteria for these initiatives align with the objectives of the BR.

Eco-tourism plays a crucial role in our socio-economic development as a means of ensuring a quality livelihood, especially for the local communities residing within the BR.

3.3 "Logistic support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development".

(Please indicate current or planned activities).



Figure 6: Photos of ex situ facilities the Native Plant Propagation Centre (left) and Gerald Durrell Endemic Wildlife Sanctuary (right)

One of the sustainable development objectives of the biosphere reserve is to become a leading international center for ecological restoration, recovery of critically endangered terrestrial biodiversity as well as the promotion of quality education and scientific research in the region. This has already been transcribed within the United Nations Sustainable Development Goals which are mainstreamed with the objectives of the biosphere reserve. Mauritius treasures a wide range of biological diversity, a high level of endemism with unique characteristics – all these factors offer a great potential value for research. Many of the native species of the Island have been subject to studies, investigations by both local students and overseas researchers.

The National Parks and Conservation Service, local environmental NGOs such as Reef Conservation, Mauritian Wildlife Foundation, universities and other research organizations (local and international) have been undertaking research on species, ecosystem and habitat restoration. The population dynamics of key species also form an integral part of research and surveys which are regularly carried out in the Biosphere Reserve, particularly in the core zone. Indeed, the Black River Gorges National Park in its whole entity is in this application proposed as the biosphere reserve's re-nominated core zone. It is renowned worldwide as a 'living laboratory' for research and education.

Two main *ex-situ* facilities, namely the Native Plant Propagation Centre (NPPC) and the Gerald Durrell Endemic Wildlife Sanctuary (GDEWS), have been set up for the rescue and recovery programme for highly threatened species of fauna and flora. An arboretum and three field gene banks form a rich collection of critically endangered flowering plant species, orchids and ferns where constant monitoring is essential.

Long term research projects on conservation of threatened flora and fauna are undertaken to monitor the status of the species and their habitats. The University of Mauritius offers opportunities for young Mauritians to embark on ecosystem conservation studies and research. The Reef Conservation, a local marine-dedicated NGO, promotes research from ridge to reef with particular attention to marine and coastal ecosystems. Nine endemic bird species have been thoroughly studied by local and foreign researchers during the past few decades and the research outcomes have undoubtedly and significantly contributed to conservation of biological species across the globe.

Environmental education is an important component of the primary and secondary curriculum with focus on biodiversity. Schools are encouraged to cultivate gardens with endemic species within their yards. Educational outings in the core zone are a recurrent activity together with Youth Programmes where youngsters are initiated in some conservation activities.

Several initiatives mainly involving the local communities have been effectively undertaken namely coral reef plantation, beach and lagoon clean up, recycling and upcycling of wastes amongst the main ones.

The intended goal of the BR is to promote research, education and environmental awareness so as to contribute to safeguarding the rich biodiversity of Mauritius and to ensure sustainable development for the benefit of the Mauritian population.

4. CRITERIA FOR DESIGNATION AS A BIOSPHERE RESERVE:

[Article 4 of the Statutory Framework presents 7 general criteria for an area to be qualified for designation as a biosphere reserve which are given in order below.]

4.1 "Encompass a mosaic of ecological systems representative of major biogeographic region(s), including a gradation of human interventions".

(The term "major biogeographic region" is not strictly defined but it would be useful to refer to the Udvardy classification system (http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html)).

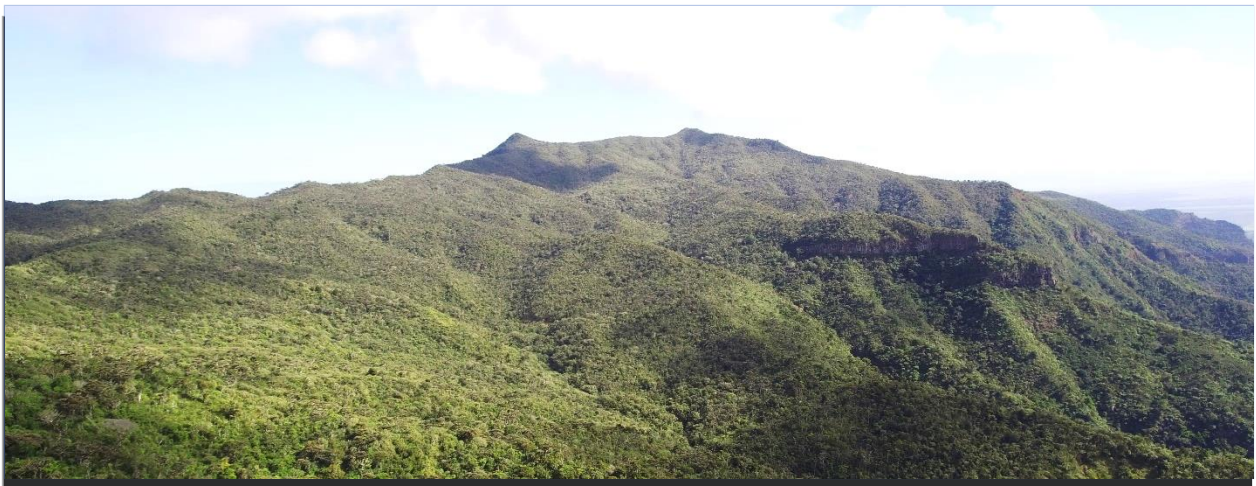


Figure 7: Photo of Black River Peak (828m)- Highest Peak of Mauritius

Mauritius biogeographic classification is under the Afrotropical realm and within the Mascarene Islands. The proposed biosphere reserve has a mosaic of climatic peculiarities despite being a small island. It ranges from the highest peak of Mauritius of 828m having characteristics of a humid upland forest down to the dry coastal forest located at sea level passing through a transitional forest ecosystem. The humid upland forests have distinct rich native hardwoods including several species of the famous ebony. They then go down to the lowland rich dry forests and the coastal vegetation where introduced filao are recurrent. Patches of the native mangrove species can still be found.



Figure 8: Mangrove ecosystem at St Martin – Bel Ombre

The area is marked by a varied landscape starting from the sea level with outstanding sandy beaches to culminate at an altitude of 828 meters with unique rich native forest. There are areas under sugarcane plantation, pasture land, human settlements and economic activities including the tourism sector. The site also has a network of rivers, streams, marshes, lakes and reservoirs. It provides important ecosystem services and is a major source of water catchment which supplies the region for domestic, agricultural and other economic uses.

4.2 "Be of significance for biological diversity conservation".

(This should refer not only to the numbers of endemic or rare species, but may also refer to species on the IUCN Red List or CITES appendices, at the local, regional or global levels, and also to species of global importance, rare habitat types or habitats with unique land use practices (for example traditional grazing or artisanal fishing) favouring the conservation of biological diversity).

The Black River Gorges National Park is the home of the majority of the rarest native species of flora and fauna of Mauritius. This has made the National Park a unique refuge for the native biodiversity. Mauritians feel a sense of pride for this natural heritage and the area is a hugely popular site for its uniqueness and nature appreciation. It has international significance as it has been identified as an International Bird Area and a Key Biodiversity Area by *Birdlife International*. All the nine existing native and endemic birds of Mauritius occur in the biosphere reserve's core zone. There have been several success stories of internationally acclaimed pioneer methods in conservation of some of the rarest birds in the world including the flagship species for Mauritius namely the Pink Pigeon (*Nesoenas mayeri*) which was down listed recently in the IUCN Red list category of threatened species from Critically Endangered (1994) to Vulnerable (2018), the

Mauritius Kestrel (*Falco punctatus*) from Endangered (1994) to Vulnerable (2000) and the Echo Parakeet (*Psittacula eques*) from Critically Endangered (1994) to Endangered (2016). Several of the native flowering species have been classified as threatened to extinction as per IUCN Red list and some even exist with less than fifty individuals in the wild.



Figure 9: Some of the unique native flowering plant species. (Top left: *Nesocodon mauritanus*; Top right: *Carissa spinarum*; Bottom left: *Trochetia triflora* (photos – JC Sevathian; Bottom right: *Trochetia uniflora* – photo V. Gopal)

Mangrove species *Rhizophora mucronata* also occur in some part of the coastal areas. The Mauritian fruit bat, *Pteropus niger*, the only native mammal species for Mauritius, has large roosting sites in the Black River Gorges National Park as well as in some patches within the buffer zones.

4.3 "Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale".

(Describe in general terms the potential of the area to serve as a site of excellence for promoting the sustainable development of its region (or "eco-region")).

The redesigned Biosphere Reserve has provided an opportunity to foster relationship with the various stakeholders to promote approaches for a sustainable development. The core principle of the planned biosphere reserve remains the conservation of the natural ecosystem. It will also

promote development activities which are environmentally friendly and sustainable. Several projects have been implemented by the various actors of the three zones. But these were done in isolation as there were very few communications forums between the stakeholders. The biosphere reserve project has given such a platform and has been a driving force to promote a synergy between all the stakeholders through increased communication to promote and achieve the goals set for the biosphere reserve.

Several activities have already been happening within the specific zones of the Biosphere Reserve.

Core Zone

In the Black River Gorges National Park there are already some initiatives which encourage good environmental practices such as rainwater harvesting and use of solar panels in the visitors centres and field stations, sorting out of waste and encouraging hiking through earmarked trails only.

Buffer Zone

The private sector has embarked on the control of the deer heads in the pasture land as well as reducing significantly the use of chemical fertilisers. Many of the lessees and landowners are carrying out ecotourism activities and carry out very basic semi-permanent structures such as watchman posts within the zones.

Transition Zone

The St Martin – Bel Ombre Village and the residents practice sorting of waste in the public areas and have also started cultivating native species of plants in the landscape of the village. Cleaning campaigns such as beach and lagoon clean-up initiatives are undertaken by the residents in collaboration with the private hotels and enterprises. There has also been a project of coral replantation carried out by the local community with the support of the Ministry of Ocean Economy, Marine Resources, Fisheries and Shipping. The figure below provides some examples of ecological activities carried out by the local community within the Transition Zone in collaboration with the private sector.

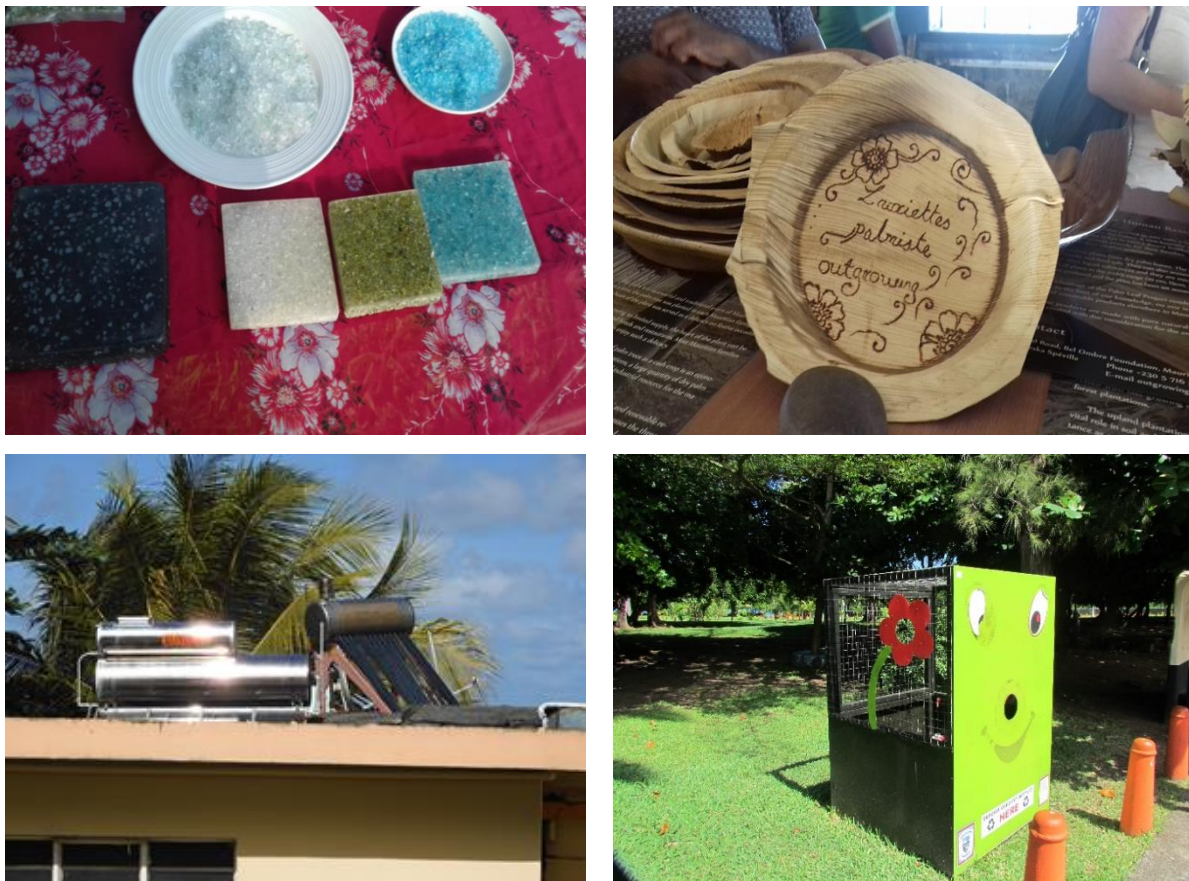


Figure 10: Ecological activities within the transition zone: recycling of glass bottle (top left); use of palm leaves for making plates (Top right); Use of solar water heater (bottom left) and sorting of plastic waste (bottom left)

Together with the private sector, local community projects were developed such as the Plankton project which aims at collecting and recycling glass bottles generated as waste from hotels and residents. The Feypalmis, an NGO regrouping local community, plays a pivotal role in reducing the use of plastics table wears which involves the use of dried palm leaves to produce plates.

The private sector is already involved in a vast variety of sustainable practices and environmentally-friendly economic activities which include waste recycling, use of renewable energy, effluent recycling, minimising use of fossil fuels, demarcating non-motorized zones in the lagoon, replacing fossil fuel-generated motors by solar powered ones, banning the use of plastics in some hotels, organic farming and promotion of ecotourism activities such as bicycle rides in the village are amongst the main ones.

4.4 "Have an appropriate size to serve the three functions of biosphere reserves"

(This refers more particularly to (a) the surface area required to meet the long term conservation objectives of the core area(s) and the buffer zone(s) and (b) the availability of areas suitable for working with local communities in testing and demonstrating sustainable uses of natural resources).

The proposed Biosphere Reserve would represent 4.6 % of the total area of landmass of Mauritius. The core zone has been conferred the highest degree of protection due to the richness and uniqueness of native biodiversity representing the larger portion of the Biosphere Reserve. The vision of the Government is to extend further the biosphere reserve in the future with a view of creating a corridor for wildlife, for the expansion of the Protected Area Network and also aims at integrating the Le Morne Brabant World Heritage site.

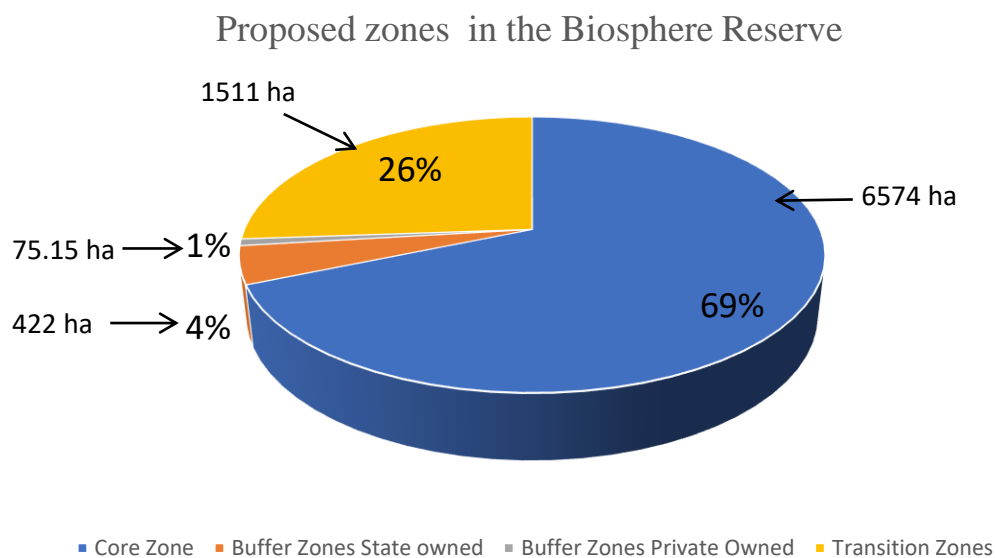


Figure 11: Distribution of the zones of proposed Biosphere Reserve

In the next phase, additional buffer zones, villages and other private sectors are planned to be included in the future extension following a wide consultation process. There has already been some expression of interest amongst several stakeholders to be included in the next phase. The core zone represents the majority of the protected areas in Mauritius.

4.5 Through appropriate zonation:

"(a) a legally constituted core area or areas devoted to long term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives".

(Describe the core area(s) briefly, indicating their legal status, their size, the main conservation objectives).

The Black River Gorges National Park (BRGNP) has been identified as the biosphere reserve's core zone. It was proclaimed on the 15th of June 1994 under Section 11 of the Wildlife and National Parks Act of 1993 and became the first National Park in Mauritius and falls under the International Union for Conservation of Nature (IUCN) Protected Area Category II, which includes National Parks. It represents 3.5% of Mauritius' surface area, and is thus the largest Protected

Area for the island. It encompasses the whole of the former *Macchabée – Bel Ombre Biosphere Reserve* which represented about 57% of the proposed core zone.

As per the Black River Gorges National Park Management Plan 2017 – 2021 (see Chapter 19 (4)), the BRGNP was established as per IUCN Categories for National Park “to protect the ecological integrity of the ecosystems for the present and future generations and to provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible”.

It harbours most of the endemic native flora and fauna species in Mauritius. It is the only area where all the 11 remaining native bird species of Mauritius can still be found together with more than 50% of the native flowering plants. The core zone is being intensively managed for endangered birds while the ecosystem restoration in Conservation Managed Areas are essential for preserving endangered plant species and as habitat for native animals. Significant efforts and financial resources have been allocated in conserving the BRGNP area as it plays a major role as watershed for the island.

The Government of Mauritius has developed a policy and legal framework to further protect the country’s biodiversity including that occurring in the Black River Gorges National Park. The Wildlife and National Parks Act 1993 was reviewed and repealed for a more extensive and robust Native Terrestrial Biodiversity and National Parks Act (2015) which was enacted to provide better protection of the terrestrial biodiversity.

"(b) a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place".

(Describe briefly the buffer zones(s), their legal status, their size, and the activities which are ongoing and planned there).

The land around the boundaries of the Park comprises both state land and privately-owned land. Some 50 – 60 % of land neighbouring the Core Zone are privately owned regrouping more than 12 landowners while the remaining are under State owned forests. Up till now no development has occurred in nearly all of these areas. Extensive consultations with the private sector were carried out mostly in the region of Bel Ombre in order to encourage the private sector to be part of the buffer zone. Due to the tight deadline for the preparation of the dossier which started only in May 2018, and given that the process of designation of buffer zone is lengthy, it was decided to designate buffer zones in a phase wise manner. At the initial stage, most of the State-owned forest which have been leased under the Shooting and Fishing Leases Act 1996 were

earmarked and designated as buffer zones under provision of Section 15 of the Native Terrestrial Biodiversity and National Parks Act 2015. After long consultative process, it has been the first time that a private owner namely the Compagnie Sucrière de Bel Ombre, has agreed to have part of its land (as described in Section 7.2) adjoining the core zone to be designated as buffer zone. The company also expressed its agreement to be part of the Biosphere Reserve project. This first motive would hopefully serve as a precursor to encourage other private sector to join this initiative in the future. The ultimate aim would be to designate buffer zones all around the whole Core Zone.

It is also worth mentioning that some of the areas located next to the Core Zone already have protected status being designated as Mountain Reserves under the Forest and Reserves Act 1983 despite being under privately owned ownership. No development is permissible with the Mountain Reserves. These areas would be earmarked for the next phase of the expansion of the proposed Biosphere Reserve.

According to the Native Terrestrial Biodiversity and National Parks Act 2015, a Management Plan is required and gazetted for each buffer zone so as to manage them in a sustainable way compatible with the objectives of the Core Zone through consultation with all relevant stakeholders. The main objectives of the plan would be to minimise any potential edge effects and other threats to the ecological processes. The Biosphere Reserve would be included on 1:25,000 maps as part of the Outline Planning Schemes (OPS) that are the primary instruments for regulating development.

The consequence for the designation of the buffer zones has led to a positive interaction between the private sector and the public bodies. It has helped to establish a stronger communication and collaboration between the neighbors of the Park (private land owners, neighboring villages, Local Government and other stakeholders) and the Park's management. The main objective of the buffer zone is to retain the sense of connectivity with the Core Zone as well as benefitting the scenic and ecological values of the buffer areas. The Buffer Zones would ensure that the Park is protected from edge effects and other negative external impacts that may pose a threat to the intrinsic values of the Park.

Low impact activities would be permissible within the Buffer Zones such as Low-density and low-impact sustainable development on the edges of BRGNP; undertaking sound agricultural practices respectful of the environment.

"(c) an outer transition area where sustainable resource management practices are promoted and developed".

(The Seville Strategy gave increased emphasis to the transition area since this is the area where the key issues on environment and development of a given region are to be addressed. Describe briefly the transition area(s), the types of questions to be addressed there in the near and the longer terms. The Madrid Action Plan states that the outer boundary should be defined through stakeholder consultation).

It would be the first time that a transition area would be included in the redesigned biosphere reserve. The Biosphere Reserve would be among the first initiatives to gather local community, private and public sector for a common cause for conservation of the natural resources and sustainable development. The St Martin – Bel Ombre Village would become the first locality to form part of the Biosphere Reserve. It has been included as the transition area as it still possesses the natural beauty of the landscape merging the spectacular sceneries of the National Park, the vast sugar cane fields and the coastal mangroves, beaches and lagoon. The region Bel Ombre is the common linkage and act as a union with the three zones. Bel Ombre is a rich area of native forest found in the core zone. The region also expands to the buffer and transition zones where sustainable development and agricultural activities are encouraged. The designation of the transition area has been the fruit of numerous consultations between the public, private sector and the local residents. It would serve as a role model of sustainable development. It would create a precursor to encourage other areas to be part of the biosphere reserve in the future.

(d) Please provide some additional information about the interaction between the three areas.

The design and construction of Biosphere Nature Trail is in the pipeline and is on the discussion table between all the stakeholders. The trail would link all the three zones in areas permissible for such activities for ecotourism. It will start from the beaches across the village and hotels of St Martin – Bel Ombre to move through the Baie de Jacotet Heritage Reserve (a private entity) towards the Black River Gorges National Park. The trail in the National Park has already been designed and preliminary work initiated. It is expected to be inaugurated upon acceptance of the dossier and would be a blue print for the synergies between the three zones while achieving the three functions for the benefit of the local community as well. Information boards would be placed to raise awareness on BR together with pamphlets and flyers.

The Ridge to Reef conservation approach will also be centered towards interacting with the three areas for the benefit of the ecosystem. These activities upstream will benefit and enhance the ecosystem services.

4.6 "Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve".

4.6.1 Describe arrangements in place or foreseen.

(Describe involvement of public and/or private stakeholders in support of the activities of the biosphere reserve in core, buffer and transition areas (such as agreements, protocols, letters of intent, protected area(s) plans)).

The Ministry of Agro-Industry and Food Security is the overarching and focal Ministry to be responsible for UNESCO MAB Programme and the biosphere reserve in Mauritius. At present, under its umbrella, the National Parks and Conservation Service (NPCS) manages the core zone in line with the Black River Gorges National Park Management Plan (2017 – 2021).

Previously, though, in the *Macchabée – Bel Ombre Biosphere Reserve* being found within the Black River Gorges National Park and was managed by the NPCS. According to the provisions of the NTBNP Act, the NPCS would be responsible to monitor activities within the designated buffer zones as well as preparing Management Plan for each of the buffer zones. The Forestry Service, another department of the Ministry, regulates activities within the State Land Leased Areas. Both the Management Plan for the Buffer and Core Zones would be integrated within a holistic Management Plan for the whole biosphere reserve.

The settlement boundary of St Martin and Bel Ombre is under the jurisdiction of the Savanne District Council of the Ministry of Local Government and outer islets, governed by the Town and Country Planning Act. The inclusion of the Biosphere Reserve with the Planning Scheme would be under responsibility of the Savanne District Council.

For the management of the proposed biosphere reserve, the Ministry of Agro Industry and Food Security has proposed to entrust all matters pertaining to the implementation of the Biosphere Reserve project to the Native Terrestrial Biodiversity and National Parks (NTBNP) Advisory Council. The Advisory Council is a body set up under provision of the Section 15 of the Native Terrestrial Biodiversity and National Parks Act 2015. The Terms of Reference of the NTBNP Advisory Council are defined by law and regroup different Ministries as well as representatives from the private sector and NGOs.

The NTBNP Advisory Council would act as the MAB National Committee and would set up a Management Committee dedicated for the Biosphere Reserve consisting of experts in various fields of interest which would advise the Council on the day to day matters.

4.6.2 Have any cultural and social impact assessments been conducted, or similar tools and guidelines been used?

(e.g. Convention on Biological Diversity (CBD)'s Akwé: Kon guidelines; Free, Prior, and Informed Consent guidelines, Biocultural Community Protocols, etc.). *(UNESCO's Programme on Man and the Biosphere (MAB) encourages biosphere reserves to consider and respect indigenous and customary rights through programmes or tools, in accordance with the United Nations Declaration on the Rights of Indigenous Peoples (http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf when relevant and appropriate)).*

Up till now there have not been comprehensive studies on cultural and social impact assessments carried out in the context of the biosphere reserve as specified above. However, in the Transition Zone, one of the private sector bodies, namely the Villas Valriche Integrated Resort Scheme of Rogers Foundation, undertook a Social Impact Analysis and Social Need Assessment of the Bel Ombre region (Annex IV). The main objectives were to assess the actions to mitigate adverse impacts of developments and sustainably invest in the community development of the impacted regions.

More research has to be undertaken to study the socio-economic impact as well as the cultural value of the biosphere reserve since many historical anecdotes were encountered during the consultation process which would be substantiated to enhance further the value of the BR.

4.7 Mechanisms for implementation:

Does the proposed biosphere reserve have:

"(a) mechanisms to manage human use and activities in the buffer zone or zones"?

If yes, describe. If not, describe what is planned.

The governance structure for the management of human use and activities in the buffer zones is not in place yet. The proposed Management Plan for the proposed biosphere reserve will address the issue and one of the objectives is to ensure an effective governance structure policy and framework developed for the management and implementation of the Plan.

The buffer zones, being declared under the Section 15 of the Native Terrestrial Biodiversity and National Parks Act, would also require the preparation of a management plan under the consultation of the lessee or the land owner. At present with regard to the buffer zone designated on State Land is regulated by the Forestry Service as per a lease agreement where conditions are strictly monitored.

"(b) a management policy or plan for the area as a biosphere reserve"?

If yes, describe. If not, state how such a plan or policy will be developed, and the timeframe. (If the proposed area coincides with one or more existing protected natural area(s), describe how the management plan of the proposed biosphere reserve will be complementary to the management plan of the protected area(s)).

The Management Plan for the Core Zone (2017 – 2021) already exists and is being implemented by the National Parks and Conservation Service and which also manages the Macchabée – Bel Ombre Biosphere Reserve. The private sector stakeholders also aim at promoting sustainable practices within the Transition Zone and have embarked in the preparation of a Sustainability Plan for the development in the transition zone with a view of enhancing the natural the beauty and facets of the region.

The Government of Mauritius is committed to preparing a consolidated and holistic Management Plan for the proposed biosphere reserve once the dossier is accepted. The Management Plan for the buffer zone is mandated to be produced as per law.

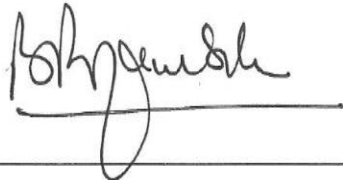
"(c) a designated authority or mechanism to implement this policy or plan"?

The NTBPN Advisory Council will oversee the management of the proposed biosphere reserve in holistic manner. The Advisory Council will set up a Management Committee comprising of experts and scientists who will advise the NTBPN Advisory Council on any technical issues pertaining to the biosphere reserve.

The National Parks and Conservation Service is the designated authority for the management of the core zone. The NPCCS will also be required to prepare the Management Plan for the Buffer Zone. The development of a Management Plan for the proposed biosphere reserve, the institutional set up would be proposed through a consultation exercise.

5. ENDORSEMENTS:

(If a large number of Authorities are involved, please enclose the additional endorsement letters as a separate Annex).



Mr Bojrazsingh Boyramboli, Senior Chief Executive, Ministry of Agro-Industry and Food Security

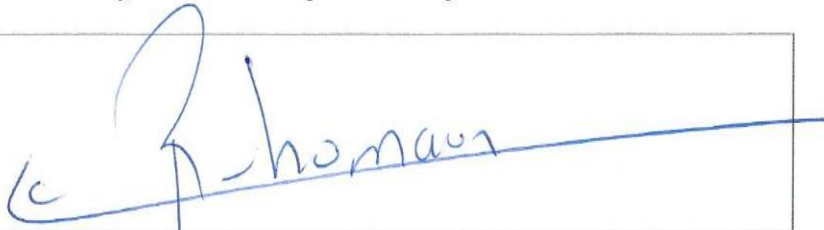
Date: 30.09.2019

9th Floor, Renganaden Seeneevassen Building, Maillard Street, Port Louis

Email: bboyramboli@govmu.org

Tel: 00 230 212 0854

Signed by the authority/authorities in charge of the management of the Core Zone



Mr Kevin RUHOMAUN, Director, National Parks and Conservation Service


Date: 26/9/19

National Parks and Conservation Service, Reduit, Mauritius

Email: npcs@govmu.org; kruhomaunster@gmail.com

Tel: 00 230 464 2993

5.3 Signed by the authorities in charge of the management of the buffer zone(s):



Mr Vishnu Tezoo, Conservator of Forests, Forestry Service

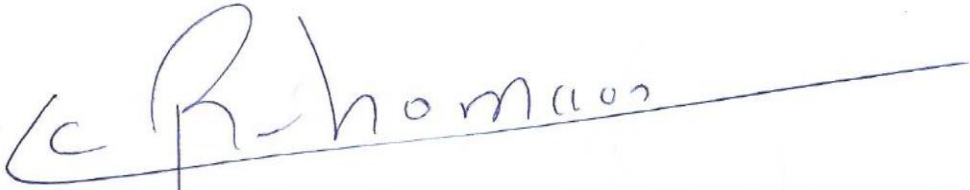
Date: 25-09-19

Forestry Service

Botanical Garden Street, Curepipe

Email: moa-forestry@govmu.org

Tel: 00 230 670 7254



Mr Kevin RUHOMAUN, Director, National Parks and Conservation Service

Date: 26/9/19

National Parks and Conservation Service, Reduit, Mauritius

Email: npcs@govmu.org; kruhomaunster@gmail.com

Tel: 00 230 464 2993

Signed by the authority/authorities, elected local government recognized authority or spokesperson representative of the communities located in the transition area(s).



Name: Mrs S. Coonjan Jugroop, Chief Executive, The District Council of Savanne

Street or P.O. Box: Lady Barkly Street

City with postal code: 60806, Souillac


Country: Republic of Mauritius

Telephone: 00 230 603 7930

Fax No.: 00 230 625 5750

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Mr Kamalsaw GAJADUR, Chairperson, District Council of Savanne

Name: The District Council of Savanne

Street or P.O. Box: Lady Barkly Street

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Country: Republic of Mauritius


Telephone: 00 230 603 7930

Fax No.: 00 230 625 5750

E-mail: dcsavanne@mail.la.govmu.org

Web site: dcsavanne.mu

Signed on behalf of the MAB National Committee or focal point:

A rectangular box containing a handwritten signature in blue ink. The signature appears to be 'V. S. Gopal'.

Mr Vinehswar S. GOPAL, UNESCO MAB National Focal Point

Date: 26/9/19

National Parks and Conservation Service, Reduit, Mauritius

Email: svsgopal@gmail.com; vgopal@govmu.org

Tel: 00 230 464 4471 (O); 00 230 5251 1981 (M)

PART II: DESCRIPTION

6. LOCATION (COORDINATES AND MAP(S)):

6.1 Provide the biosphere reserve's standard geographical coordinates (all projected under WGS 84):

Table 1: Standard geographical grid

Cardinal points	UTM Coordinates – WGS 84 (40S)		Latitude	Longitude
Northernmost point	545686.5691	7748462.8521	20° 21' 41.09753"S	57° 26' 15.92441"E
Easternmost point	554989.6406	7736382.5542	20° 28' 13.17302"S	57° 31' 38.1553"E
Southernmost point	541876.2906	7734836.0412	20° 29' 4.6895"S	57° 24' 5.64378"E
Westernmost point	539914.8726	7741235.2654	20° 25' 36.67774"S	57° 22' 57.41775"E
Most central point	546646.5264	7742682.2746	20° 24' 49.0538"S	57° 26' 49.57873"E

6.2 Provide a map(s) on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve (Map(s) shall be provided in both paper and electronic copies). Shapefiles (also in WGS 84 projection system) used to produce the map must be attached to the electronic copy of the form.

If possible, also provide a link to access this map on the internet (e.g. Google map, website...).

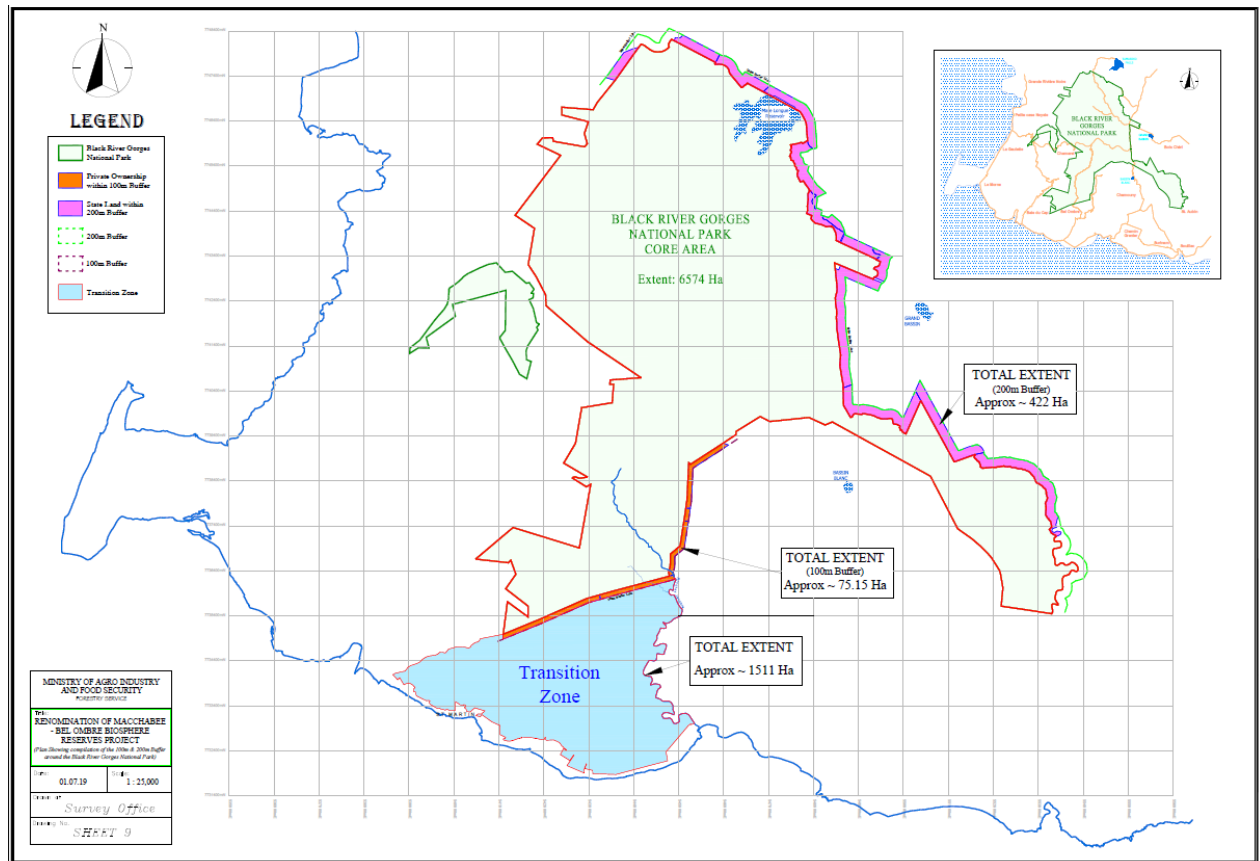


Figure 12: Map showing the location of the three zones

The different maps as well as the delimitation of the three zones are provided in the chapter 19 (1). The maps include the boundary description of the various zones including the buffer zone designated in the private land owned.

7. AREA (see map):Total: **8,582.21(ha)**

Table 2: Table showing details of the core, buffer and transition zones

		Land Tenure	Total (ha)
7.1	Area of Core Zone		
	<i>Black River Gorges National Park</i>	State owned	6,574.00
7.2	Area of Buffer Zones		
	<i>Bel Ombre Buffer Zone (100m)</i>	Private land	75.15
	<i>State Land No. 1 (200 m)</i>	State Land	16.11
	<i>State Land No. 2 (200 m)</i>	State Land	19.85
	<i>State Land No. 3 (200 m)</i>	State Land	28.87
	<i>State Land No. 4 (200 m)</i>	State Land	34.02
	<i>State Land No. 5 (200 m)</i>	State Land	42.42
	<i>State Land No. 6 (200 m)</i>	State Land	19.28
	<i>State Land No. 7 (200 m)</i>	State Land	16.42
	<i>State Land No. 8 (200 m)</i>	State Land	15.24
	<i>State Land No. 9 (200 m)</i>	State Land	70.26
	<i>State Land No. 10 (200 m)</i>	State Land	52.99
	<i>State Land No. 11 (200 m)</i>	State Land	47.72
	<i>State Land No. 12 (200 m)</i>	State Land	58.88
7.3	Area of Transition Zone		
	<i>Bel Ombre / St Martin Transition Zone</i>	Savanne District Council and Private land	1511
TOTAL			8,582.21

7.4 Brief rationale of this zonation in terms of the respective functions of the biosphere reserve. If a different type of zonation also exists indicate how it can coexist with the requirements of the biosphere reserve zonation.

(e.g., if national criteria exist for the definition of the area or zones, please provide brief information about these).

Core zone

The Black River Gorges National Park has been selected as the biosphere reserve's core zone as it is at present the only large area with a contiguous native forest cover which still remains in Mauritius. It supports some of the rarest species of flora and fauna, some of them found only in the core zone. Due to its richness and uniqueness, it has been conferred the highest level of protection in Mauritius and fulfills mainly the conservation function. It was proclaimed as National Park by the President of the Republic of Mauritius in 1994 under the Wildlife and National Parks Act 1993. This Act has now been repealed to a more comprehensive Native Terrestrial Biodiversity and National Parks Act 2015. The core area of the proposed biosphere reserve includes all the areas of the previously designated *Macchabée – Bel Ombre Biosphere Reserve* and thus represents an increase by 74% in the extent from 3,777 ha to 6,574 ha being the total surface area of the National Park. It has high conservation value recognized both locally and internationally due to its abundance of endemic species. The area also comprises an important forest ecosystem including sources of rivers and streams, reservoirs, wetlands, catchment areas as well as natural features with outstanding landscape and protected genetic resources of native flora and fauna.

Buffer zone

The core zone is under threat of the Invasive Alien Species of flora and fauna. In consequence, the Black River Gorges National Park Management Plan already recommended the designation of buffer zones around the National Park so as to minimize the impact of the IAS. The buffer zones are designated in provision of Section 15 of the Native Terrestrial and National Parks Act and require a Management Plan to be prepared in consultation with the respective landowners. In the initial phase compilation of information was carried out to identify the different landowners. Given the priority for the submission of the biosphere reserve re-nomination dossier within the prescribed deadline of September 2019, the designation of buffer zones has already started and will be continued in the future. For the time being, all state land owned forests were earmarked as buffer zones with a width of 200m adjoining the core areas. The next step was to identify the buffer zone linking with the core zone and the identified transition

zones. After several consultative meetings, a buffer zone was designated for the first time by a private sector adjoining the core area which will be used as model to encourage other private landowners to join the proposed biosphere reserve in the future. The private land was also selected in order to form a contiguous landmass together with the transition zone where consultations with the private sector and local community have already been initiated. This would be the first time in Mauritius where the National Park has dedicated buffer zones. It will also be the first time that the private sector would partner with the protected area. Development in the buffer zone will be regulated.

While the extent of the buffer zones appears relatively small at this point in time, it is planned to take a phased approach with the aim of increasing the area of the buffer zones in the future. The ultimate goal will be to have buffer zones surrounding all core areas of the National Park and to increase the sizes of the buffer zones. As mentioned already in Section 4.4 above, consultations processes to achieve this aim have already started between the public and the private sectors.

Transition zone

The transition zone is located outside the core and buffer zones without overlapping. The main criteria for selection have been the relatively still untouched beaches and lagoon, willingness of the private sector to be part of the biosphere reserve while also embracing the philosophy of sustainable development as well as good environmental and socio-economic practices for the benefit of the people of the locality and that of Mauritian.

Research and education are already of high priority within the core zone and has also been embraced by the private sector found within the transition zone.

8. BIOGEOGRAPHICAL REGION

[Indicate the generally accepted name of the biogeographical region in which the proposed biosphere reserve is located.]

(The term "major biogeographic region" is not strictly defined but you may wish to refer to the Udvardy classification system (http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html)).

According to the Udvardy classification system Mauritius is found in the Africotropical realm within the biogeographic province of the Mascarene Islands

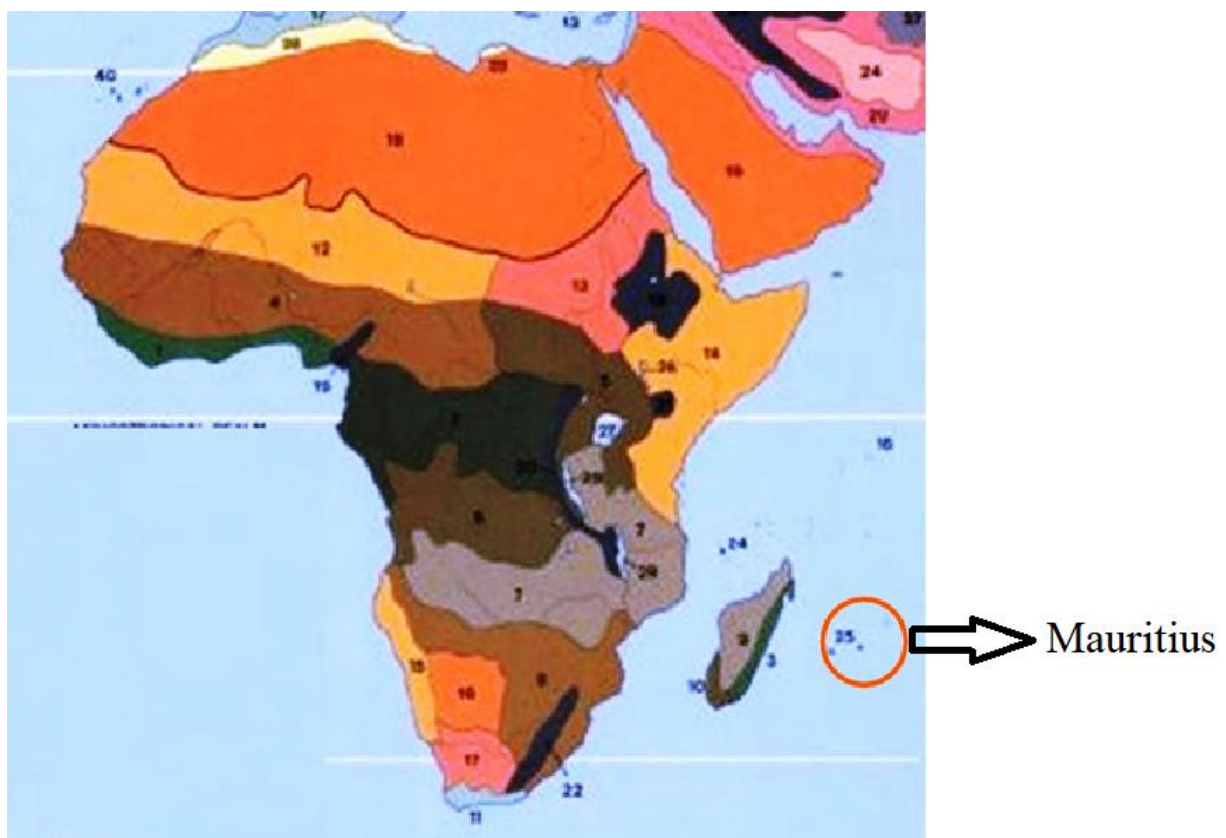


Figure 13: Biogeographic region of the proposed Biosphere Reserve

9. LAND USE:

9.1 Historical

(If known, give a brief summary of past/historical land use(s), resource uses and landscape dynamics of each zone of the proposed biosphere reserve).

The Mascarene Islands have a very rich degree in endemism but their ecosystems are severely threatened (Olson et al. 2001). This qualifies the Mascarenes as one of the global Hotspots of the World, as part of the 'Madagascar and Indian Ocean Islands Hotspots' (Mittermeier 1998). Three islands in the Indian Ocean form the Mascarene Islands namely Mauritius, Rodrigues and Reunion Island. Mauritius is the oldest volcanic island of the Mascarenes and displays the highest endemism for most orders. The islands are home to many endemic plants and animals. Most of the Mascarene flora and fauna is thought to be derived originally from Madagascar and Africa. The islands have never been connected to the mainland, so the flora and fauna of the Mascarenes arrived from over the sea. Prehistoric islands of the Mascarene Plateau, now disappeared under the sea, may have served as 'stepping stones' which allowed species to island-hop from the Seychelles or Madagascar (Quammen 1997). The Mascarene Islands form a distinct eco-region, known as the Mascarene forests. The islands were formerly covered in tropical moist broadleaf forest and harboured a diverse range of forest types. Near the seacoast were coastal wetlands and swamp forests, transitioning to rain forest to windward and lowland dry forest to leeward, palm savannas, montane deciduous forests, and montane heathlands on the highest peaks of Réunion.

Much of the native Mascarenes' flora and fauna has become endangered or extinct since the human settlement of the islands in the 17th century. Settlers cleared most of the forests for agriculture and grazing, and introduced many exotic species, including pigs, rats, cats, monkeys, and mongooses. Fourteen bird species became extinct; in addition to the Dodo, some of the other extinct species are the Rodrigues Solitaire, a flightless pigeon related to the Dodo, and the Réunion Flightless Ibis.



Figure 14: Billboard of extinct species produced in local creole language under the “Expanding coverage and strengthening management effectiveness of Protected Area Network (PAN) in Mauritius funded under the Government of Mauritius/UNDP/GEF project

Mauritius and Rodrigues form part of the Mascarene Archipelago, along with Réunion Island (France). All three are of volcanic origin and share many similarities in terms of their biodiversity. Mauritius was formed 8 million years ago and is encircled by fringing coral reefs that enclose coastal lagoons of varying widths. It has no proper continental shelf with seabed dropping off to a depth of 3,000 meters within a few kilometers of the shore. Rodrigues is thought to be the oldest of the 3 islands at 8-10 million years (Giorgi & Borchiellini 1998) and is encircled by a large fringing reef (NBSAP 2006).

These were first explored by Arab sailors followed by the Portuguese at the onset of the 16th century (Cheke A. and Hume J., 2008). As per records it is claimed that the Dutch landed in Mauritius around 1598, although they did not settle the island until 1638 (Toussaint, 1972).

During the first century of colonisation of the Mascarenes there was a massive exploitation of timber which caused several animal and plant species to be decimated. The dodo is well known worldwide and is notably represented as the symbol of extinction, a flightless bird which went

extinct within two centuries after its discovery. The introduction of several non-native species of plants and animals proved to be serious threats to the native biodiversity. The famous ebony which occurred at high density in the coastal and rather inaccessible areas was heavily exploited together with the edible native palm to the point that now they are confined in relatively inaccessible parts of the forests.

In the 18th century, further land was cleared for timber as well as making way for sugar cane plantations under the French and British rule. At present, sugar cane is still one of the major contributors to the Mauritian GDP although the industry went through serious challenges with the abolition of the guaranteed export quota from which Mauritius benefitted for many years.

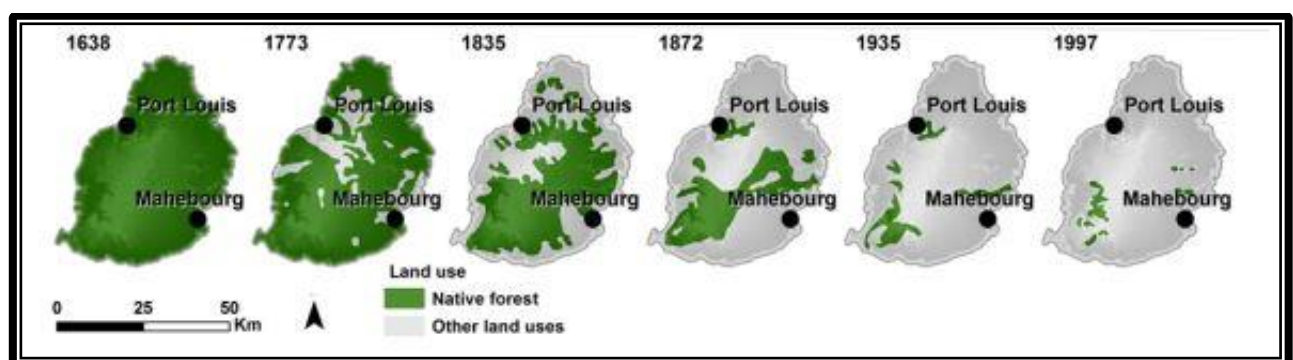


Figure 15: Map showing the trend of native forest cover in Mauritius (Source: *Assessing temporal couplings in social–ecological island systems: historical deforestation and soil loss on Mauritius (Indian Ocean)* S.J. Norder 1,2, A.C. Seijmonsbergen 2, Soonil D.D.V. Rughooputh 3, E.E. van Loon 2, V. Tatayah 4, A.T. Kamminga 2 and K.F. Rijdsdijk 2)

The unique biota of Mauritius was thus confined to areas which were less suitable for the development of sugar cane as well as for settlements and infrastructure. It is therefore not surprising that most of the remnants of the native forests are found on mountain tops, gorges and valleys mainly.

Core Zone

It is essential to acknowledge that the appreciation of the high biodiversity value of the native forests of Macchabée and Bel Ombre area was already identified at least as early as 1767 when they were proposed as a "Royal Reserve" by the French administration. The Macchabée – Bel Ombre area, comprising 3,611 ha was made a Nature Reserve in 1950 and this was continued under the Forests and Reserves Act 1983.

By the 1930s, as part of a World Bank funded project, the native forests some of which located within the core zone were cleared out and replaced with introduced pines and eucalyptus which continued until the early 1970s under the Mauritius Integrated Rural Development Project. This

caused destruction of the forests and the destruction of this habitat was an important cause of the population decline of endangered birds such as the pink pigeon (*Nesoenas mayerii*), the echo parakeet (*Psittacula eques*) and the Mauritius fody (*Foudia rubra*) as well as the extinction of several endemic plant species. The World Bank then acknowledged the importance of protecting the habitat and embarked in the proclamation of the Black River Gorges National Park which was established in 1994 and became protected by law. These included the Macchabée – Bel Ombre Nature Reserve. In 1977, the Government of Mauritius at that time recognised the importance to conserve the remaining native biodiversity and designated the region as Macchabée – Bel Ombre Biosphere Reserve to confer it with international recognition and protection. The nominated National Park area was officially proclaimed as Black River Gorges National Park under the Wildlife and National Parks Act on 15th June 1994 and thereby included the whole of the Biosphere Reserve.

In the 1930s, the late Dr R. E. Vaughan established the first "reference plots" in the Macchabée forests where the effects of selectively removing and controlling invasive exotic plants such as Chinese guava and privet could be studied. This conservation strategy has been maintained and enhanced where the plots are still being maintained and more areas were created and managed for the restoration of the native habitat.



Figure 16: Restoration process of native forest through the removal of the highly invasive strawberry guava (*Psidium cattleianum*)

The Black River Gorges National Park has extraordinary value both nationally and internationally. It includes the habitats of most Mauritius' threatened endemic birds and a considerable number of the endemic plants. The Park has been one of the world's most successful and cost-effective

conservation programmes focusing on the Mauritius kestrel, pink pigeon and echo parakeet. Because of these reasons, the International Council for Bird Preservation ranked the Park first among 75 forest areas in the African Bio-geographical region in value for conservation.

According to literature, parts of the area, particularly within the Black River Gorges, were occupied at times during the 18th and 19th centuries by escaped slaves, indentured labourers to form a village and in the 20th century by deer hunters. Given the high conservation value, the use of these areas for deer hunting ceased in December 1992.

Buffer Zone

Part of the areas falling within the buffer zone was forests lands before colonisation, the area was cleared for sugar cane plantation primarily. But due to the topography and difficult terrain, the cost of production for sugar cane plantation as well as the accessibility problem forced the sugar mills to diversify and deer ranching was thought to be the most economical outlook at that time. Other areas, most particularly the state-owned forest lands, were leased for hunting and fishing under the Forests and Reserves Act 1993. However, the majority of the forest areas are severely degraded with only a few patches of native flora and some native fauna still left.

Transition Zone

At the start of the British colonization, the southern part of the island was still underdeveloped. The latter had been isolated as it did not have any access road. The landscape in the south is dominated by several deep river valleys which give rise to isolated terrestrial islets. The deep river valleys and the strong sea swells contributed to the difficulty of access to the region. It is only after the construction of roads and bridges that the settlement and development of the southern part of the island commenced.

The region of Bel Ombre is situated between the Black River mountainous region and the sea. The village of Bel Ombre depended on the Bel Ombre estate. The forested land was the main wealth of the region. With the felling of the trees, the land was then placed under the cultivation of sugar cane. Besides the harvesting of sugar cane, the region harvested coffee and cloves. For the settlement L'Abattis des Cipayes an area was dedicated to the plantation of food crops namely rice, maize, lentils, potatoes, beetroots, peanuts, ginger, cassava, sweet potato amongst others. The area also hosted plantations of bananas, coconut, jack fruit, mangoes and grapes.

The majority of the transition zone was cleared in the beginning of colonisation to make way to

sugar cane plantation. The Bel Ombre village was home of the Bel Ombre Sugar Estate.

9.2 Who are the main users of the biosphere reserve? (for each zone, and main resources used). If applicable, describe the level of involvement of indigenous people taking into account the “United Nations Declaration on the Rights of Indigenous Peoples” .(http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en .pdf).

Core Zone

Mauritius has been colonised and there is no history of indigenous people. The core zone occurs mostly in inaccessible and inadequate areas for human settlements. Due to the rich biodiversity found within the core zone, the Black River Gorges National Park is well known worldwide and provides numerous avenues for research and education. It is regularly used by conservation scientists both local and international. There are four field research station located within the core area where scientists and researchers are allowed to stay in the Park to undertake important research and monitoring on the conservation of the ecosystem and its biodiversity.



Figure 17: Hawkers operating at Gorges Viewpoint in the Core Zone

There are two major visiting sites where hawkers coming mainly from the neighbouring towns and villages sell various goods to the tourists. The core zone is also highly visited by national and foreign tourists and where tourists’ operators, taxi drivers and guides benefit from the park. The indirect users are the residents and tourists enjoying the landscape in the national park.



Figure 18: Landscape, ecotourism activity and guava picking

During the guava season, many locals collect guava for fun and recreation while some earn their living by trading the fruits in towns and villages.

The Water Resources Unit also makes use of the Mare Longue Reservoir found in the core area to provision Mare aux Vacoas Reservoir.

Buffer Zone

In the privately-owned buffer zone for the proposed BR, there are only the watchmen who are employed to monitor activities day and night in the buffer zone. The users in the buffer zone both in private and state lands are the landowners or leasers and visitors for hunting, ecotourism and planting of vegetables.

Transition Zone

The users in the transition zones are the inhabitants and employees working in this area. There are some 14 hotels found within the transition zones and the area is popular site for ecotourism due to its natural beauty.

9.3 What are the rules (including customary or traditional) of land use in and access to each zone of the biosphere reserve?

The whole Black River Gorges National Park represents the core zone within the proposed biosphere reserve. Since, it has been proclaimed under the Wildlife and National Parks Act 1993,

its main activities are regulated by law. The National Parks and Conservation Service is the main body for enforcing the various provisions of the Act and its Regulations.

The proclamation of buffer zones has never happened before and in the present exercise for application of a redesigned Biosphere Reserve, this has been made possible to fulfil the criteria for a modern biosphere reserve. The buffer zones are designated according to the provision of the Native Terrestrial Biodiversity and National Parks Act 2015. A management plan is planned to be prepared in consultation with the landowners. The property remains with the landowners in case of private ownership. Agreements have to be signed between the Government of Mauritius and private landowners on the various permissible activities within the buffer zones.

The regulation of land use within the transition zones falls under the purview of the Local Authorities mainly the District of Savanne. The Building and Land Use Permit granted by the Local Authorities (District Council) is regulated by the Outline planning scheme of the District Council and the Town and Planning Act.

9.4 Describe women’s and men’s different levels of access to and control over resources.

(Do men and women use the same resources differently (e.g., for subsistence, market, religious/ritual purposes), or use different resources?).

There is no difference between women and men regarding access and control of resources.

We have a fairly advanced gender equity (according to UNDP, the gender development index of Mauritius is 0.968 in 2018). The Equal Opportunity Act 2008 (amended 2011) makes provisions to promote equal opportunity between persons, prohibit discrimination on the ground of status and by victimization, and to establish a Commission and Equal opportunities.

10. HUMAN POPULATION OF PROPOSED BIOSPHERE RESERVE:

[Approximate number of people living within the proposed biosphere reserve]

Table 3: Human population of the proposed Biosphere Reserve

		Permanently	Seasonally
10.1	Core Zone		
	<i>Black River Gorges National Park</i>	30	580,000 ^a
10.2	Buffer Zones		
	<i>Bel Ombre (Private)</i>	5	Nil
	<i>State land</i>	20	Nil
10.3	Transition Zone		
	<i>Bel Ombre / St Martin village</i>	2437 ^b	75,000 ^c
TOTAL		2492	655,000

a: Annual report 2014 NPCCS – mainly visiting tourists

b: Source from Digest demo 2017

c: Tourist for 2017/2018 for region Bel Ombre (Source: Rogers Group)

As the Black River Gorges National Park and the immediate surrounding region are quite inaccessible and remote places, there has been no human settlement within. The few people living is mainly involved in the security of the area or research scientist who stay in field stations. The south part of Mauritius is generally less dense than that of the central and northern part of the island.

10.4 Brief description of local communities living within or near the proposed biosphere reserve.

(Indicate ethnic origin and composition, minorities etc., main economic activities (e.g. pastoralism, tourism) and the location of their main areas of concentration, with reference to the map (section 6.2)).

Bel Ombre/ St Martin is a village in Mauritius located in Savanne District, in the south west of the island. There are various reports of the name though Bel Ombre literally means “beautiful shade or shadow.” Some elders in the village claim that it also comes from the name of a fish called ombrine (red drum – *Sciaenops ocellatus*) which is highly appreciated and the region was popular for the catch. As you will drive through Bel Ombre/ St Martin, the shade of majestic trees like the African Banyan will certainly give you the essence of its name. The village holds its legacy from the history of Mauritius and the former sugar factory of Bel Ombre where most of

the local community were employed and earned their living. For some years now, the village has been the object of important tourist developments within the framework of the Integrated Resort Scheme after the dwindling of the sugar sector. The village is administered by the Bel Ombre/ St Martin Village Council under the aegis of the Savanne District Council. According to the census made by Statistics Mauritius in 2011, the population was 2,417 and in 2017 the population was 2,437 showing negligible change in the demography (Part of the extract from Villas Valriche Social Impact Assessment and Social Needs Analysis – Annex 2). The density of population is relatively lesser in the southern part of Mauritius.

There are several others village settlements of people living on the eastern and western side of the proposed biosphere reserve namely Baie du Cap, Le Morne, Chamarel, Rivières des Galets, Case Noyale. The closest towns Vacoas and Curepipe are some 14 – 16 kms of the main entrance of the Black River Gorges National Park. It is expected to continue undertaking the consultation process for the inclusion of more communities and settlements within the Biosphere Reserve in the near future. The St Martin – Bel Ombre village would be used as a model to encourage the other villages to be part of the biosphere reserve in the future. The plan is to begin consultations in 2020 to include the other localities in the next phase of the project.

The major economic activities of the local community in the proposed BR are primarily tourism-oriented jobs, fishing, farming and sugar estate employees.

10.5 Name(s) of the major settlement(s) within and near the proposed biosphere reserve with reference to the map (section 6.2):

Bel ombre/ St Martin, Rivières des Gallets, Baie Du cap, Le Morne, Case Noyale, Chamarel

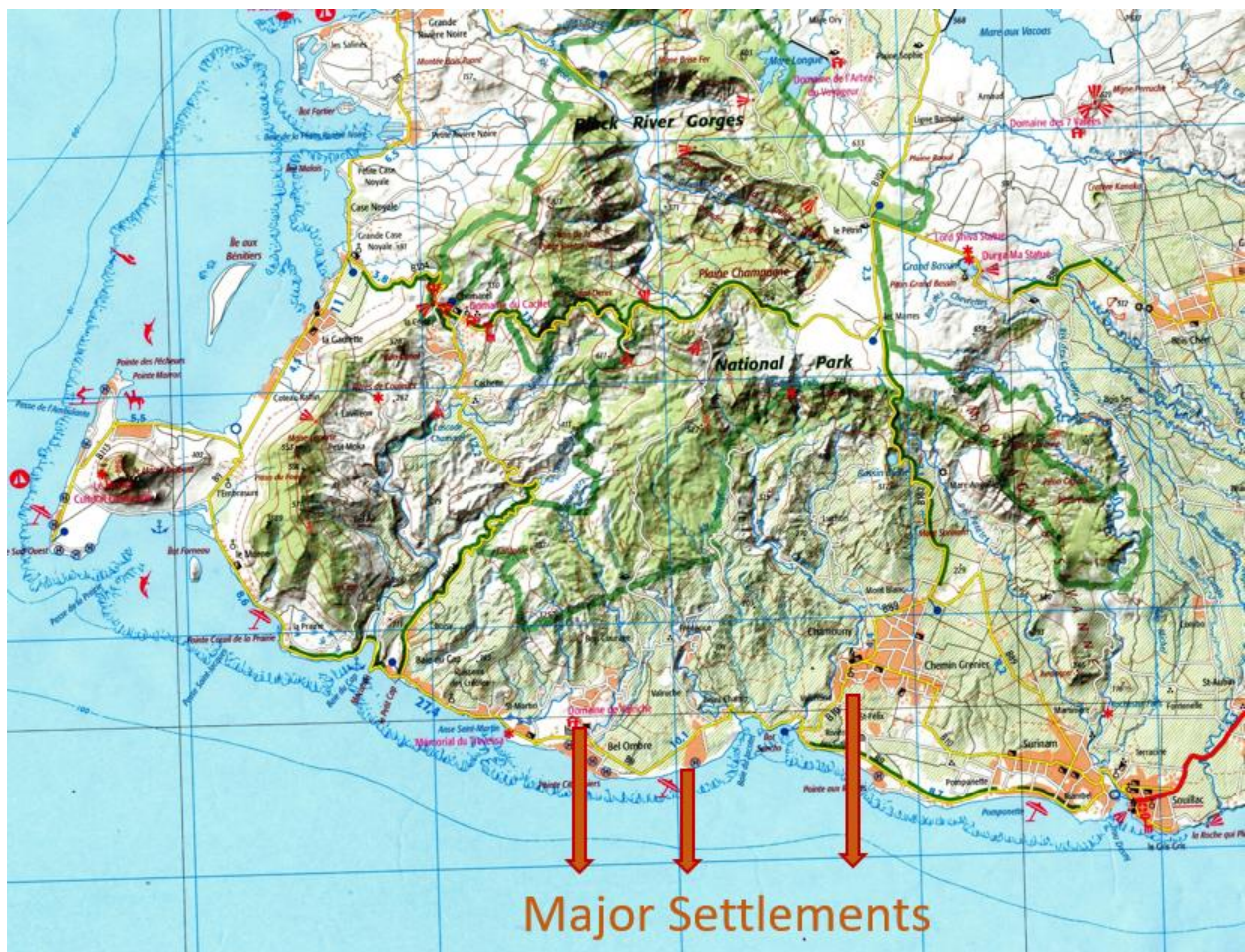


Figure 19: Major Settlements

10.6 Cultural significance

(Briefly describe the proposed biosphere reserve's importance in terms of past and current cultural values (religious, historical, political, social, ethnological) and others, if possible with distinction between material and intangible heritage (c.f. UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage 1972 and UNESCO Convention for the Safeguard of the Intangible Cultural Heritage 2003 (http://portal.unesco.org/en/ev.php-URL_ID=13055&URL_DO=DO_TOPIC&URL_SECTION=201.html and http://portal.unesco.org/en/ev.php-URL_ID=17716&URL_DO=DO_TOPIC&URL_SECTION=201.html)).

Mauritius is often described as a ‘mini world’ where some of the most important cultures live peacefully and harmoniously forming a unique Mauritian blend of cultural diversity. In the proposed BR, there is only limited literature as well as studies carried out to show the presence of any cultural relics or heritage. However, in close proximity of the BR, there are some important shrines and other sites well known for religious activities such Grand Bassin found within 1 km of the core area. Furthermore, the proposed BR is also not far from the UNESCO World Heritage Site “Le Morne Cultural Landscape” found in the west coast of Mauritius. In the future, there is a plan to interlink the proposed BR and the WHS so as to create a corridor of UNESCO sites.

Buffer zone

Deer hunting is defined in the National Inventory for Intangible Cultural Heritage for the Republic of Mauritius. The majority of private property in the buffer zone of the BR is dedicated to traditional deer hunting. In ancient times, deer hunting was more of a leisure activity and is also the case nowadays.

Transition zone

Similar to deer hunting, fishing by traditional ways is carried out in the village of Bel Ombre using boats known as ‘pirog’ or sailing boats known as ‘pirog lavoual’. The knowledge and skills of traditional fishing has been transmitted through generations. In many cases the occupation was perpetuated amongst family members. The different fishing techniques such as net fishing, angling and trap fishing are still carried out.

10.7 Specify the number of spoken and written languages (including ethnic, minority and endangered languages) in the biosphere reserve.

(Refer, for instance, to the UNESCO Atlas of Endangered languages (<http://www.unesco.org/culture/languages-atlas/index.php>)).

Mauritians are generally proficient in several languages and also used dialects derived from ancestral continental origins to communicate among themselves. English is the official language of Mauritius although the Mauritian Creole is spoken by the majority of the population. The Creole language is a blend from French, English, Portuguese and Dutch. The language spoken within the proposed biosphere reserve is the same as used throughout the country.

11. BIOPHYSICAL CHARACTERISTICS

11.1 General description of site characteristics and topography of area:

(Briefly describe the major topographic features (wetlands, marshes, mountain ranges, dunes etc.) which most typically characterize the landscape of the area).

Mauritius has been formed from volcanic origin some 10 million years ago. It is made of volcanic rocks ranging from different sequences of lava flows and rocks age may range from 10 to 0.1 million years (Saddul P., 1995). The coastal sediments around the coastal areas are considered as the latest volcanic rock deposits. The geological history has resulted in spectacular landscapes ranging from mountain tops, rivers, gorges, valleys, cliffs and reaching the sea and reef.

Some breath-taking topographic features mainly in the Black River Gorges National Park have been faceted in such a way that it provides some unique and scenically breath-taking viewpoints and outlooks. The landscape culminates to the highest peak of Mauritius, the Piton de la Petite Riviere Noire which is at 828 m above sea level. Some spectacular waterfalls and valleys niche rich and luxuriant native forests. The sources of several rivers and streams originate from the core zone which flow into lakes, marshes and springs. The change in altitude from the highest peak of Mauritius down to sea level provides a change in vegetation and habitats and gives such a vivid and diverse biodiversity with ever changing sceneries.

The buffer zones form areas from mixed forests with very few patches of native forests. Most of the land around the core area is degraded forests with a high percentage of introduced species. These areas are mainly utilised for ranching areas for deer, with some patches occupied by agricultural land mostly composed of palm plantations. However, the buffer zones also offer some attractive landscapes and these are more and more exploited for ecotourism.

Along the transition area, the land starts to form the lowland plane. The Bel Ombre area has still some patches coastal pristine ecosystems with wetlands and intertidal hydrophytes such as mangroves, *Typha doingness* mostly, although some of these areas are heavily degraded by invasive alien species. The coastal line is usually dominated by sugarcane, filao plantations with barely any coastal hardwood forests left. The transition area reaches the sandy beaches which are valuable assets for Mauritius known worldwide for its white sandy beaches. It is not as popular as the northern part of the island though.

11.2 Altitudinal range:

11.2.1 Highest elevation above sea level: 828 metres (summit of Black River peak)

11.2.2 Lowest elevation above sea level: 0 metres

11.2.3 For coastal/marine areas, maximum depth below mean sea level: not applicable metres

11.3 Climate:

(Briefly describe the climate of the area, you may wish to use the regional climate classification by Köppen as suggested by WMO (http://www.wmo.int/pages/themes/climate/understanding_climate.php)).

According to the Mauritius Meteorological Services (2018), Mauritius enjoys a Tropical Maritime climate. By Köppen Climate Classification, Mauritius is found in the climatic region classified as “Tropical Humid Climate” (A), and in the sub-region “Tropical Wet” (AF)

Core Zone

Located south of the Tropic of Capricorn, Mauritius enjoys a mild tropical maritime climate throughout the year. The island is mainly subject to south-easterly trade winds, without any continental influences. The island experiences strong and persistent winds during the winter months (June to September), compared to the summer months, when these are lighter and more intermittent (Mauritius Meteorological Services, 2014). Black River Gorges National Park contains different meso- and microclimates due to its topography.

The eastern side of the BRGNP is damp with rainy upland forest, while the western side is characterised by drier lowland forest. Most of the rainfall is received in the summer with approximately two thirds of the annual total occurring between November and April (approximately 4,000 mm) on the plateau at Black River Gorges National Park (Mauritius Meteorological Services, 2014). The upland forest towards the east of the Park receives the highest annual rainfall compared to the lowland forest, west of the Park. As such, the amount of annual rainfall within these pockets of the forest determines the types of vegetation in the different regions (Mauritius Meteorological Services, 2014)

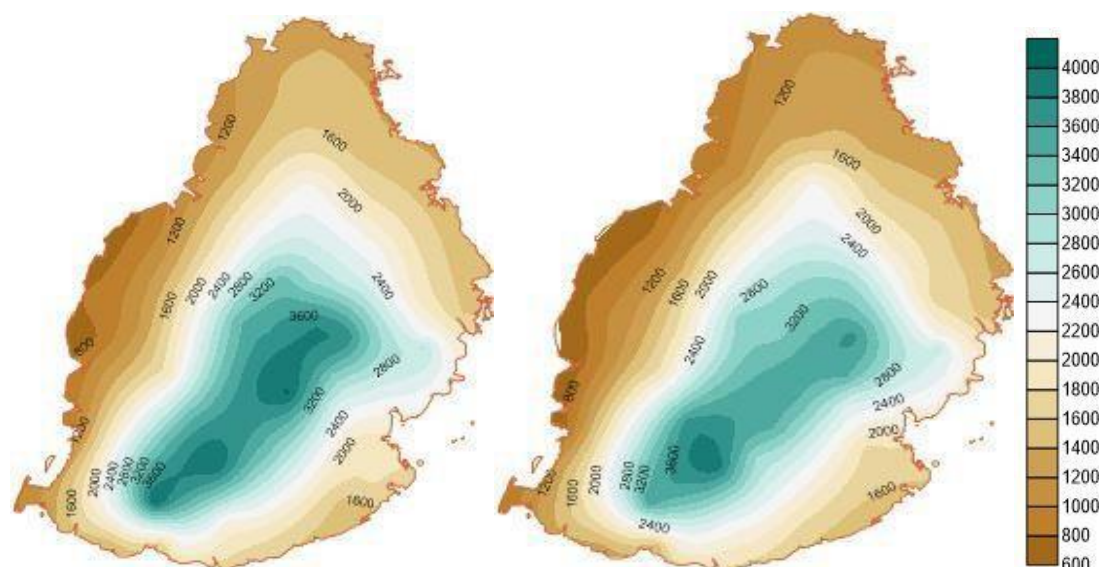


Figure 20: Long-term annual rainfall distribution in mm over Mauritius for the periods (a) 1951-1980, and (b) 1981- 2010 (Source Mauritius Meteorological Services)

11.3.1 Average temperature of the warmest month: 24.4 °C * (February)

11.3.2 Average temperature of the coldest month: 18.6 °C * (August)

11.3.3 Mean annual precipitation: 3257 mm, recorded at an elevation of 580 metres (Mare aux Vacoas)

Mean annual precipitation: 3742 mm, recorded at an elevation of 605 metres (Grand Bassin)

Mean annual precipitation: 1510 mm, recorded at an elevation of 70 metres (Baie du Cap)

***Source Mauritius Meteorological Services**

11.3.4 Is there a meteorological station in or near the proposed biosphere reserve? If so, what is its name and location and how long has it been operating?

Four stations namely: Mare aux Vacoas, Grand Bassin, Baie du Cap and St Felix are found within or close to the proposed Biosphere Reserve.

Table 4: Meteorological station near the biosphere reserve

	Gps coodinates		Elevation	Year operational
Mare aux Vacoas	20°23.0 ¹ S	57°29.0 ¹ E	569	2000
Grand Bassin	20°24.0 ¹ S	57°29.5 ¹ E	670	2000
Baie du Cap	Not available	Not available	70	Not available
St Felix	20°30.1 ¹ S	57°27.7 ¹ E	24	2015

***Source Mauritius Meteorological Services**

11.4 Geology, geomorphology, soils:

(Briefly describe important formations and conditions, including bedrock geology, sedimentary deposits, and important soil types)

The whole of Mauritius Island is of volcanic origin. There were two main volcanic events which occurred at different time periods which represent two events of eruption – the Old and the Young Volcanic series. The Old and the Young Volcanic Series are the two-time periods that gave rise to the rocks of Mauritius as they are known today. The early lavas of the Young Volcanic Series are restricted to the south-west. These early lavas form the mouth of the Black River Gorge and extend towards the north of the Park to form the plain, west of Mare Longue reservoir.

The oldest rocks representing the mountain peaks of Mauritius as well as iconic landscape of the island are believed to be of 5.5 to 8 million years old. (Government of Mauritius, 1998)

The proposed core zone has also been described as one of the important geological attractions in Mauritius due to its breath-taking geodiversity. The area together being a site rich in endemism has also been recommended for geo-conservation. This would provide avenues to diversify tourism and would benefit significantly to geo-tourism. (Newsome D. and Johnson C.P., 2012)

The geology of the rest of Black River Gorges National Park is characterised by basalt formed during the Younger Volcanic Series, which is weathered on the surface to stony soil (Black River Gorges National Park Mauritius Management Plan, 1998)

The most recent lavas, between 70,000 and 179,000 years old, only occur in the area in the vicinity of Bassin Blanc, a true crater lake of about 100 m in diameter.

There are no minerals of economic importance within the Core Zone. Its soil can be described as a complex of mountain soils ranging from moderately deep brown silty clay loam to very shallow latosols (Government of Mauritius, 1998). Land of this type is rated as “having limitations which appear so severe as to preclude any possibility of sustained use for (anything except) conservation forestry, wildlife and recreation (FAO/MSIRI (1973)).

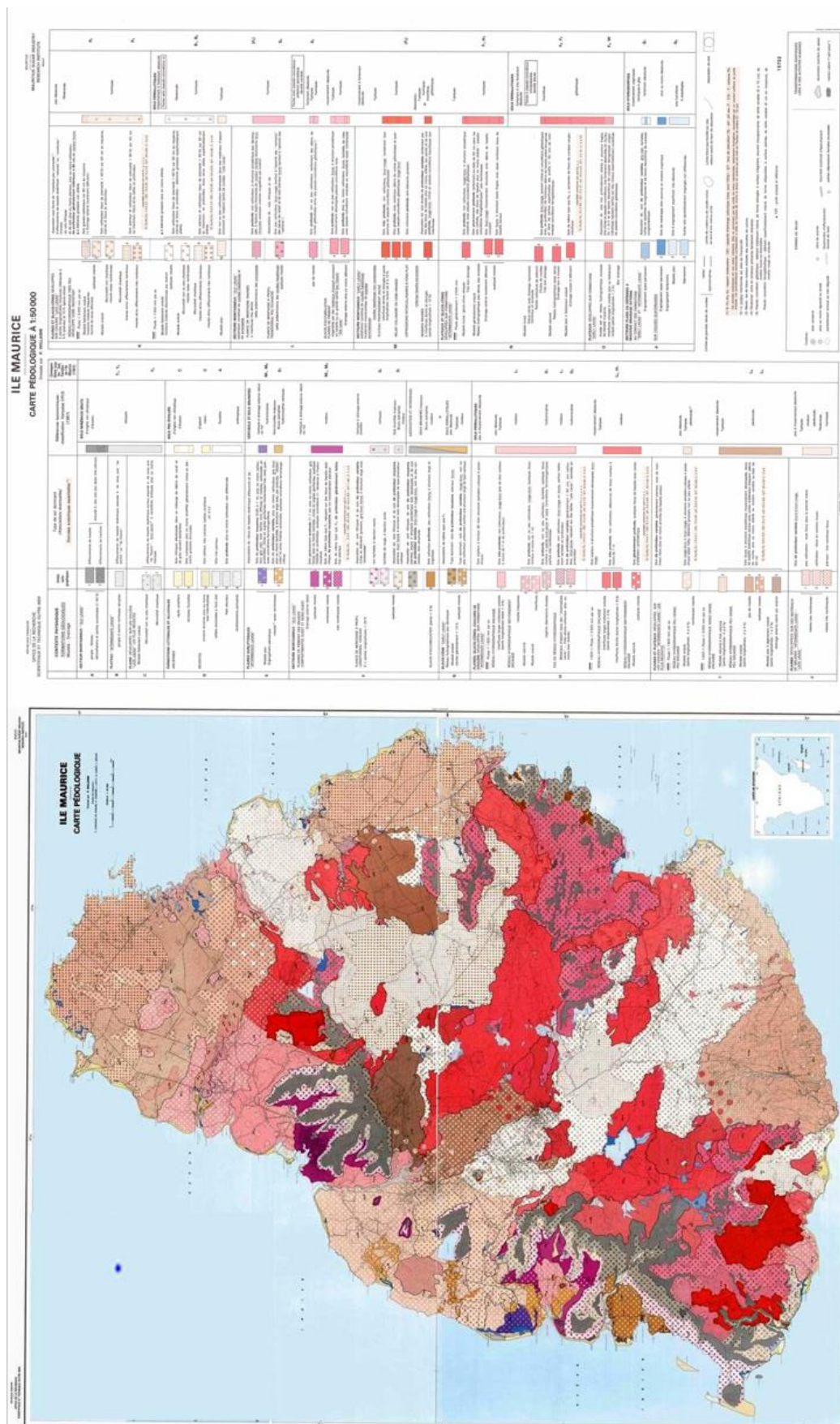


Figure 21: Map and table showing soil map of Mauritius (Source MSIRI 1984)

Further studies need to be pursued for the buffer and transition zones to determine the geology of the areas.

11.5 Bioclimatic zone:

(Indicate the bioclimatic region in which the proposed biosphere reserve is located, refer to the table below and tick the appropriate box for each area of the biosphere reserve).

According to the Mauritius Meteorological Services (2018), Mauritius enjoys a Tropical maritime climate. By Köppen Climate Classification, Mauritius is found in the climatic region classified as “Tropical Humid Climate” (A), and in the sub-region “Tropical Wet” (AF)

Table 5: Aridity index resulting from the use of P/ETP

Areas	Average annual rainfall/mm	Aridity index		Core area(s)	Buffer zone(s)	Transition area(s)
		Penman	(UNEP index)			
Hyper-arid	P<100	<0.05	<0.05			
Arid	100-400	0.05-0.28	0.05-0.20			
Semi-arid	400-600	0.28-0.43	0.21-0.50			
Dry Sub-humid	600-800	0.43-0.60	0.51-0.65			
Moist Sub-humid	800-1200	0.60-0.90	>0.65			
Per-humid	P>1200	>0.90		X	X	X

Mean annual precipitation (P)/mean annual potential evapotranspiration (ETP)

11.6 Biological characteristics:

List main habitat types (e.g. tropical evergreen forest, savanna woodland, alpine tundra, coral reef, kelp beds) and land cover types (e.g. residential areas, agricultural land, pastoral land, cultivated areas, rangeland).

For each type, indicate:

- REGIONAL if the habitat or land cover type is widely distributed within the biogeographical region within which the proposed biosphere reserve is located, to assess the habitat's or land cover type's representativeness;
- LOCAL if the habitat or land cover type is of limited distribution within the proposed biosphere reserve, to assess the habitat's or land cover type's uniqueness.

For each habitat or land cover type, list characteristic species and describe important natural processes (e.g. tides, sedimentation, glacial retreat, natural fire) or human impacts (e.g. grazing, selective cutting, agricultural practices) affecting the system. As appropriate, refer to the vegetation or land cover map provided as supporting documentation.

Mauritius forms part of the Island of the Mascarene Archipelago together with Rodrigues and Reunion Island. These evolved from volcanic activity that began over eight million years

ago. Most of the plants and animals originated from other continental landmasses and colonisation occurred most probably from Madagascar, Africa, India, Asia and Australia to evolve and develop into a dense forest ecosystem with unique species, landscapes and habitats in isolation from their sister islands. Most of the islands of the Mascarene area were home for some unique and extraordinary biological living species such as the giant tortoises, giant lizards and the famous unforgettable flightless dodo; giant beetles, giant parrots; black ebony trees and other wood trees with wood harder than the ivory; bottle palms with trunks swollen like bottles amongst others. Pristine Mauritius was entirely covered in forest varying in structure and composition fashioned by different rainfall regimes, altitudes and soil types which resulted in the development of distinct forest types. These gave rise to some outstanding, spectacular and unique flowering plants, ferns and orchids specific to the different types of forests ranging from the mossy forest, cloud forest rich in epiphytes with an annual rainfall of 4,000-5,000 mm and an altitude of 600 – 800m to lowland coastal marshes, mangroves and intertidal forests.

However, the arrival of human beings and almost four hundred years of deforestation, over-exploitation of natural forest products, introduction of invasive alien species and land use changes for agricultural needs have had catastrophic impacts on our native biodiversity.

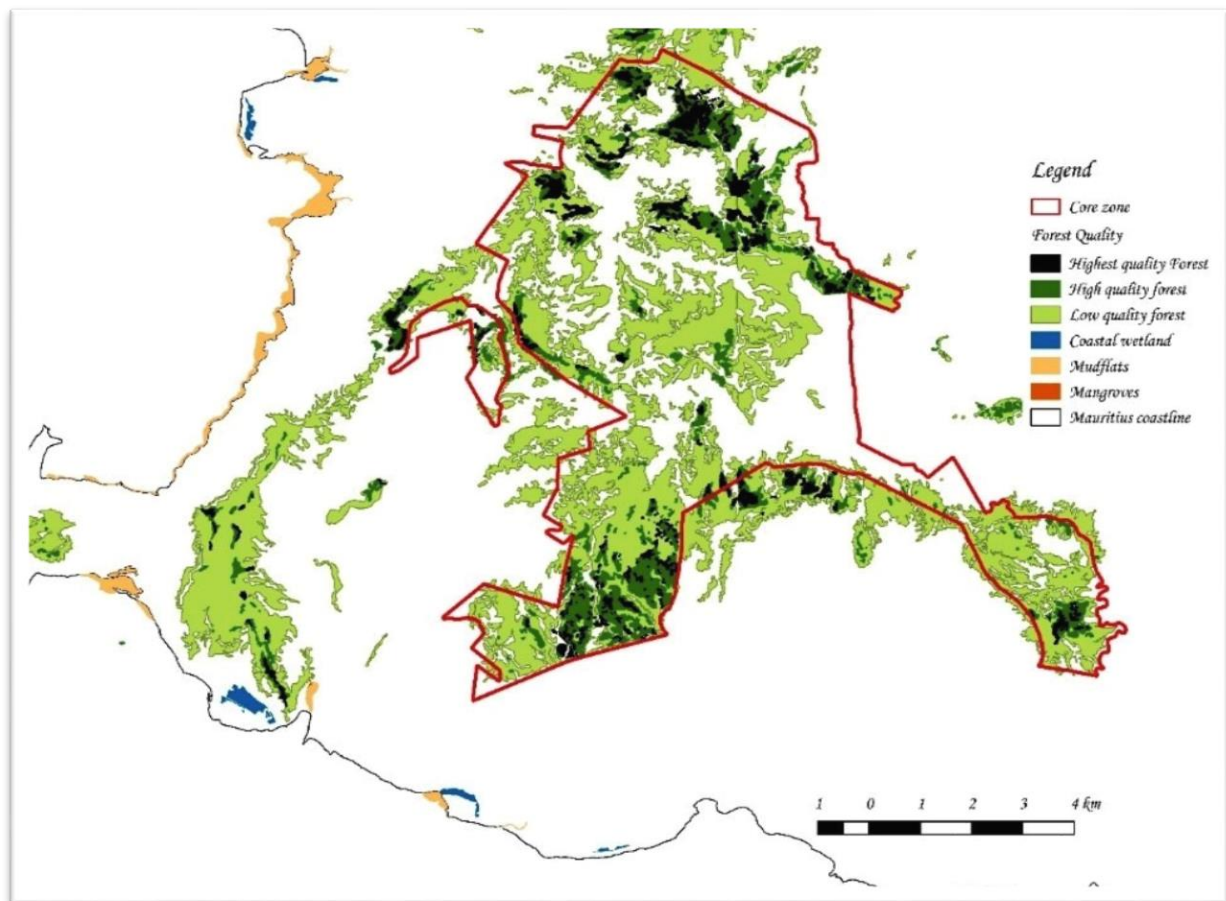


Figure 22: Map showing Environmental Sensitive Areas and different types of habitat (NPCS 2013)

Today we are left with approximately less than 2% of good quality native forest which still give home to the precious threatened endemic species of Mauritius. Mauritius is amongst the countries and island states which has the most threatened flora in the world. It is worth noting that 45% of the 670 flowering plant species in Mauritius are endemic and 20% are shared with other islands in the Mascarene Archipelago (*Atkinson and Sevathian; 2005- A guide to the plants in Mauritius*). The majority of the threatened flora occurs within the core zone of the proposed biosphere reserve.

Core Zone

The core zone of the biosphere reserve is a biological hotspot sustaining wide diversity of biological species of high endemism level. It covers an area of 3.5% of the total surface of Mauritius and contains most of the remaining native species of flora and fauna of the island. The core zone includes samples of a wide range of Mauritian plant communities from the drier coastal-type vegetation occurring within the lower parts of the gorges through the ebony forests and the humid high-altitude forests to the moss forest of Mount Cocotte which is subject to the

highest rainfall of any place on the island. In addition, there exist several distinct vegetation communities within the upland forest.

Heath type forest

Pétrin and Plaine Champagne are located in the upland area where the soil is porous and characteristic of distinct lava flows. The vegetation is made of dwarf heath-type vegetation which is most prevalent. The area is predominant with the *Phyllica nitida* (bruyère) and *Erica brachyphylla* (bruyère) species and the thickets generally do not exceed 2 m in height. This heath-type vegetation has evolved leaves to adapt to the dry wind to which it is exposed. This vegetation type is restricted to this place only and is threatened due to its single location.

Upland marsh forests

Areas surrounded by water courses are often colonised by thickets, which are constituted by endemic *Pandanus* spp. The unique *Stillingia lineata* (fangame) and *Olea lancea* (Bois cerf), *Croton* spp. shrub community, which thrives in marshlands often includes species from other vegetation communities. Several species are now restricted to the remnant marshlands in the Black River Gorges National Park. Some of the *Pandanus* spp. are down to few individuals and unique to the marshy areas.

Upland evergreen forest

In the upland humid forests, some of the dominant species include iconic species for Mauritius such as the *Labourdonnaisia glauca*, *Mimusops maxima*, *Sideroxylon* species including the world known dodo tree *Sideroxylon grandiflorum*, *Diospyros* spp. which belongs to the ebony plant family amongst others. The forests also include a good diversity of ferns and orchids. Some of the ferns, mosses and orchids are epiphytic species which can be found growing mainly on the trunk of native tree species. The very distinctive *Labourdonnaisia glauca* (bois de Natte) is often covered in epiphytes. The woody species typically include some attractive flowering plants, *Trochetia blackburniana* (Boucle d'oreille) a species of the same genus of the national of Mauritius *Trochetia boutoniana*, *Ochna mauritiana* and a collection of many others which can be appreciated during the summer coinciding with the flowering season. There is also a wild variety of native coffee species *Coffea mauritiana* (café marron) which is a wild coffee relative whose potential has not been fully studied.

Cloud forest

This ecosystem type occurs mainly at Mount Cocotte which is rich in species adapted to high-altitude rainforest commonly known as “Cloud Forest”, where trees are usually stunted with high populations of distinct ferns, mosses and lichens. The cloud forest is characterised by high density of *Nuxia verticillate* (Bois maigre), *Erythrospermum monticolum var monticolum* (Bois manioc), *Aphloia theiformis* (Fandamane) and *Tambourissa sieberi* (Bois tambour) among others. Climatic conditions such as high rainfall and humidity are the ideal facilitators to create a habitat in which many of the species are endemic to the region of Cocotte.

Transition evergreen Rainforest

The Bel Ombre region in the core zone provides interesting relics of the transition between the lowland and upland evergreen rainforest. The vegetation is mostly dominant of hardwood trees characterised by species such as *Diospyros tessellaria* (Bois d’ebene noir), *Protium obtusifolium* (Colophane bâtard), *Labourdonnaisia glauca* (bois de natte), *Labourdonnaisia revoluta* (bois natte petite feuilles), *Mimusops petiolaris* (Makak), *Sideroxylon cinereum* (manglier vert) amongst others. The canopy is closed at quite some height which may reach a height of 14 – 16 m allowing a lower stratum of small shrubs such as *Ochna mauritiana* (bois bouquet banané) and *Maytenus pyria* (bois a poudre) to thrive and develop into unique diversity which are characteristic of the stratum.

Wetland vegetation

The areas in the core zone surrounded by water courses are often colonised by thickets, which are constituted by endemic *Pandanus* spp. The unique *Stillingia lineata* (fangame) and *Olea lancea* (Bois cerf) spp., *Croton* spp. shrub community, which thrives in marshlands often includes species from other vegetation communities. Several species are now restricted to the remnant marshlands in the Black River Gorges National Park. Woody species typically include *Gaertnera psychotrioides* (bois banane), *Diospyros revaughanii* (bois d’ebene), *Trochetia blackburniana* (Boucle d’oreille) and *Coffea mauritiana* (café marron). The marshy area of the Black River Gorges National Park can be described as the richest freshwater ecosystem of Mauritius both in terms of the biodiversity it supports as well as the ecosystem services it provides.

Invasive plant species

The most common invasive plant species is *Psidium cattleianum* (goyave de Chine), commonly known as Chinese guava. The Chinese guava forms dense thickets throughout the BRGNP and

excludes native vegetation. This prevents native species from regenerating and is considered the worst invasive plant species in the upland forest of Mauritius. *Psidium cattleianum* (goyave de Chine) produces fruit with seeds which, when ingested by birds and other vertebrates (e.g. deer and pigs), are dispersed in droppings. This dispersal of seeds facilitates the regeneration and spread of this invasive alien species. Chinese guava can also re-sprout from stumps. Invasive alien plant control methods include application of herbicides to the cut tree stumps to prevent re-sprouting (BRGNP 2017).

Buffer Zone

The buffer zones form areas from mixed forests with very few patches of native forests. Most of the land around the core area is degraded forests with a high percentage of introduced species. These areas are mainly utilised for deer ranching and ecotourism. Some of the land has been converted into grazing areas. Some of the buffer zones fall within catchment areas for reservoirs as well as including rivers and streams. They are mostly under pine plantations. The river reserves are protected and no development is permissible without authorisation from the relevant authorities. Anthropogenic activities impact due to its legal protection.

Transition Zone

This area harbours coastal vegetation with patches of mangroves together with some wetlands which have been characterised under the Environmentally Sensitive Area Study of 2008. These wetlands have characteristic 'Voun' *Typha domingensis* but are also invaded by invasive alien species. The coastal sandy beach areas are dominated by filao plantation. The coastal line is usually dominated by sugarcane, filao plantations with barely any coastal hardwood forests left.

12. ECOSYSTEM SERVICES

12.1 If possible, identify the ecosystem services provided by each ecosystem of the biosphere reserve and the beneficiaries of these services.

(Please refer to the Millennium Ecosystem Assessment Framework and The Economics of Ecosystems and Biodiversity (TEEB) Framework (<http://millenniumassessment.org/en/Framework.html> and <http://www.teebweb.org/publications/teeb-study-reports/foundations/>)).

Types of Ecosystem Services and Beneficiaries

Mauritius has been classified under Island and Marine Categories as per the Alliance of Small Island States and according to the Millennium Ecosystem Assessment Framework.

There has not been a dedicated study for ecosystem valuation for the whole of the proposed biosphere reserve. Some studies were conducted sporadically mainly in the core zone and in the transition area. A recent study was carried out to value the ecosystem services provided by the two water reservoirs namely Mare Longue and Mare Aux Vacoas (one of the largest reservoirs for Mauritius) catchment. Both reservoir catchments are located partly or fully within the proposed biosphere reserve. The main objective of the study was to explore how environmental valuation may be able to inform land use decision-making in the catchments of the Mare Longue (ML) and Mare aux Vacoas (MAV) reservoirs, and investigate how such an approach could be linked to the national environmental accounts. This study was mainly carried out in the context of the preparation of the National Biodiversity Strategy and Action Plan 2017- 2025 for the Republic of Mauritius.

It is planned to undertake a holistic approach on the ecosystem valuation for the whole biosphere reserve which would be one of the useful tools to guide in future decision-making processes. The following table provides a first attempt to gather and enumerate some of the ecosystem services provided by the proposed BR inclusive of all three zones.

Table 6: Ecosystem services, resources and beneficiaries

Functions	Resources of ecosystem services	Details of services	Beneficiaries
Provisioning	Food	Strawberry guava, wild cloves, wild strawberry, game (deer, wild pigs)	Local fruit sellers, Mauritian in general, tourists, and residents
	Freshwater water supply *	Main supply of good quality water from river sources, streams and feeders, reservoirs	Residents and visitors
	Fishing	Coastal areas	Local residents, visitors
	Genetic resources	Research and medicinal use	Residents and visitors
	Agricultural resources	Beekeeping, crop wild relatives, sugar cane fields, organic farming, pastures	Residents and visitors
	Raw materials	Non-native invasive wood sticks for stalking used in certain crops	Farmers
Regulating	Water quality control	Forests, wetlands, natural grasslands, farmlands, streams	Residents, Visitors
	Climate change mitigation	(Forests, wetlands, farmlands, sugar cane fields, coastal ecosystem)	Residents and visitors
	Erosion control	Forests, farmlands, natural grass, streams, intertidal zone, wetlands	Residents and visitors
	Disaster control	Forests, intertidal zone, farmlands, streams, coastal mangroves	Residents and visitors
	Water catchment areas	Forests	Residents and visitors
	Air quality	Forests, wetlands and coastal ecosystem	Residents and visitors
	Healthy lagoon ecosystem	Upstream forests, wetlands, coastal ecosystem, lagoon ecosystem	Residents and visitors
Cultural services	Recreation, ecotourism and aesthetic value	Forest, landscapes, waterfalls, lakes, reservoirs, wetlands, intertidal zone, rivers and coastal ecosystem	Residents and visitors
	Landscape Value	Forests, waterfalls, coastal areas including beach and lagoon, rivers, wetlands, mountains, valleys, streams	Residents and visitors
	Education, research	Forests, habitats, species, wetlands, coastal zones, tourism sector, residential zones	Residents and visitors
	Religious and cultural heritage	Shrines, monuments, forests, residential areas	Residents and visitors
Supporting services	Biodiversity and habitat	Forests, intertidal zone, coastal zone, wetlands, farmland, rivers, lakes, reservoir, streams	Residents and visitors
	Native birds	Released in private land for conservation, education and ecotourism	Residents and visitors

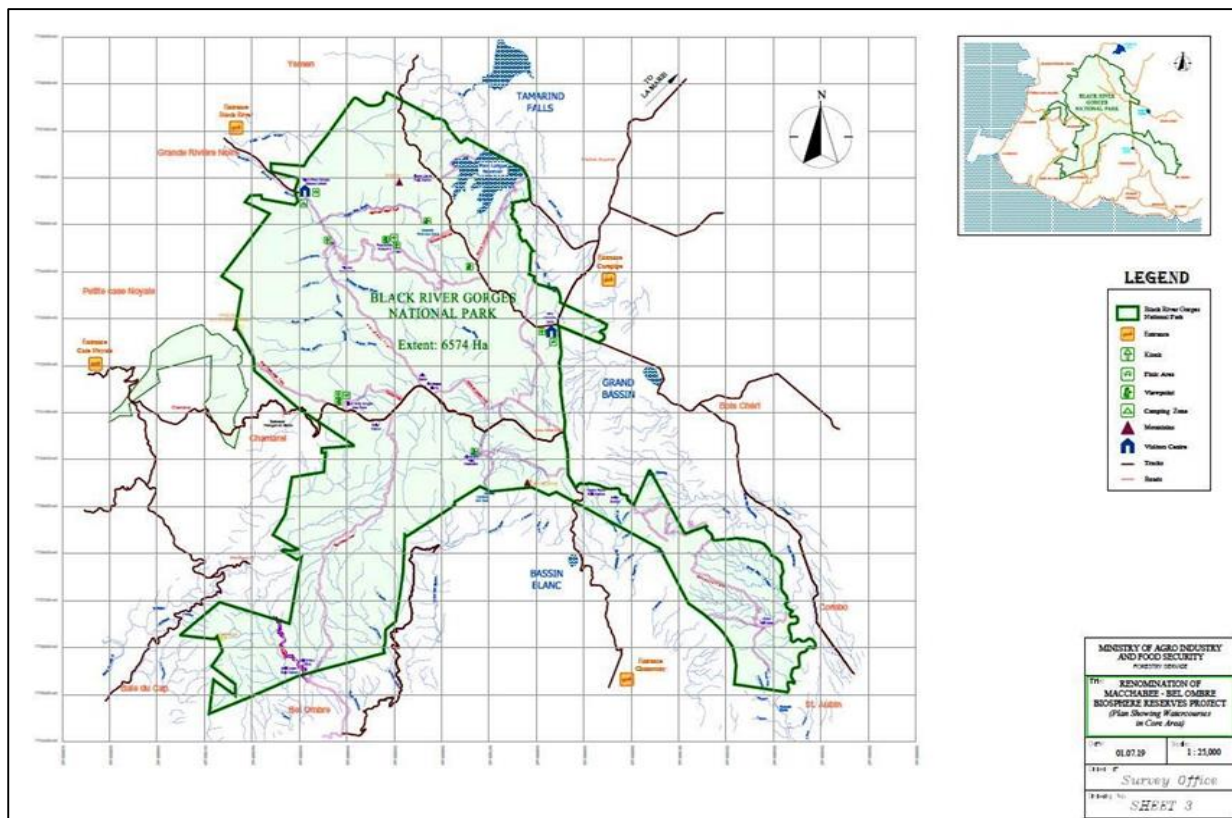


Figure 23: Map showing some of the rivers, streams and reservoirs in the Biosphere Reserve

12.2 Specify whether indicators of ecosystem services are used to evaluate the three functions (conservation, development and logistic) of biosphere reserves. If yes, which ones and give details.

Specific indicators for the biosphere reserve function have not been developed yet. However, there are some indicators which are being used to assess and monitor some of the activities in the different zones. The core zone, being managed by the National Parks and Conservation Service has indicators set within the government budgets for monitoring. One of these is the restoration of degraded forests also earmarked as a government measure to increase the area under restoration. An incremental increase of 100ha is planned for each financial year. For the 2019 – 2020 budget for Mauritius, 745 ha is planned to be restored as at June 2020. The table below provides some of the indicators used for the specific sectors. The National Biodiversity Strategy and Action Plan under the Convention of Biological Diversity also provides some of key actions with key performance indicators to achieve the 2020 Aichi Biodiversity Targets. Some of the indicators include the increase in Protected Area as per Aichi Target. The proposed biosphere reserve would be a first attempt to increase the Protected Area and contribute to this Aichi Target. Mauritius has only 4.4% of its land as Protected Areas.

Table 7: Indicators for specific functions

Functions	Indicators	Zonation
Conservation	Area of native forest under restoration	National Level targeting mainly the core zone
	Number of critically endangered species successfully propagated and reintroduced	National Level including core Zone
	IUCN red listing of species	Island wide
	Increase in Protected Area	National Level
	Population of keystone species	Island wide
Development	Number of visitors/tourists in hotels	Core and Transition zone
Logistics	Number of public awareness activities carried out in the national park	Core zone and transition zone

Several other indicators are planned to be developed within the proposed BR Management Plan to cover all the functions in a holistic manner. These indicators would be in line with international targets such as SDGs, Aichi Targets amongst others. Indicators related to the socio-economic aspect would also be included.

12.3 Describe biodiversity involved in the provision of ecosystems services in the biosphere reserve (e.g. species or groups of species involved).

Table 8: Biodiversity involved in the provision of ecosystem services

Zones	Biodiversity involved	Status	Remarks
Core Zone	Some introduced species which are used include: Chinese guava	Alien Invasive species	Popular for its fruits and guava stick used for staking and handle for tools such as axe, hoe. Also, the wood is becoming quite popular and used for handicrafts
	Wild Strawberry	Alien Invasive Species	
	Selective Native plants	Native species for Mauritius which is not threatened to extinction	Medicinal properties
	Crop wild relatives	Native coffea species found within the core zone	Potential as genetic materials but not yet exploited
	Wild Monkey	Alien Invasive species	Exportation for Scientific and clinical trial in laboratories
Buffer Zone	Deer, wild pigs	Alien Invasive species	
	Sugar cane plantation	Introduced crop	
Transitional Zone	Fish catch	Marine species	

Native bird species such as the pink pigeon, echo parakeet and kestrel have been released in private forests in areas suitable for the survival of these species. Two of the main examples are the Ferney Valley and Ebony forest. Although found outside the proposed biosphere reserve, they represent an important conservation tool for the setting up of viable populations outside the core zone. In addition, such species serve for education, promote research as well as ecotourism in the private sector.

12.4 Specify whether any ecosystem services assessment has been done for the proposed biosphere reserve. If yes, is this assessment used to develop the management plan?

The Ecosystem Services Assessment for Black River Gorges (BG)- BR has been partly assessed without any full or holistic assessment of Ecosystem Services. An ecosystem valuation study was carried out to assess the value and optimum management of ecosystem services of Mare Longue and Mare aux Vacoas water reservoirs. The Mare Longue reservoir is located within the core and buffer zones of the proposed BR. The analysis of the study indicated that Mare Longue reservoir would generate 1.1 to 2.5 million rupees depending on the different management scenarios.

13. MAIN OBJECTIVES FOR THE BIOSPHERE RESERVE’S DESIGNATION:

13.1 Describe the main objectives of the proposed biosphere reserve, integrating the three functions (conservation, development and logistic), presented below (sections 14 to 16), including components of biological and cultural diversity. Please specify the indirect pressures and/or organizational issues.

Overall Objectives of the proposed Biosphere Reserve

Conservation of the fragile ecosystem and native biodiversity of the island in particular is high on the agenda of the Government of Mauritius. Several important strategies in line with International Conventions such as CBD, CITES, AEWAs have been produced and mainstreamed within the Government Vision. A high value has been placed on protecting its endangered flora and fauna species to ensure the functionality and persistence of native ecosystems as well as promoting education, awareness and research for the benefits and livelihood for the people of Mauritius. The Government also promotes sustainable development and wise use of resources. The Government vision is also to develop the Biosphere Reserve as a model of good practice which will be a precursor for the expansion of a bigger Biosphere Reserve to create a network and corridor for the native biodiversity as well as linking the Le Morne World Heritage site with a strong commitment for the inclusion of the community surrounding and Mauritian as a whole.

The specific objectives of the Biosphere Reserve involve mainly:

A. Conservation Function

- Conservation of native terrestrial biodiversity and its genetic resources for the present and future generations, for sustainable livelihoods through continued sustained efforts, which started decades ago, for the protection and conservation of the remaining native biodiversity in line with International obligations and Conventions.
- Prevention of any further species extinction and implementation of *in situ* and *ex situ* conservation management practises for threatened species of flora and fauna including freshwater biodiversity.
- Enhancing the protection of key biodiversity and ecosystems throughout the three zones including both terrestrial and marine.
- Carrying out habitat and ecosystem restoration through the reduction of the impact of invasive alien species.

- Improving and further enhancing ecosystem services and carrying out its proper evaluation.
- Implementation of important national, regional and international strategies and policies such as the National Biodiversity Strategy and Action Plan for Mauritius, Protected Area Network Expansion Strategy, Aichi Targets, SDGs and other Multilateral Environment Agreements.
- Preparing, implementing and mainstreaming the management plan for the proposed biosphere reserve into national policies and strategies.
- Enhancing the ecological landscape and corridor for the benefit of native species of flora and fauna.

B. Development

- Promotion of recreational and aesthetic values of the BR by promoting eco-tourism activities.
- Ensuring sustainable development and wise use through best environmental practices.
- Promoting active participation of the local communities to attain objectives of the BR.
- Ensuring compliance with different environmental laws and policies.
- Encouraging the development of renewable energy production.
- Certification of environmental and biosphere reserve specific products.
- Promoting and developing the BR as an iconic destination that provides opportunities for conservation, economic development and sustainable tourism growth in Mauritius.
- Providing opportunities for local economic development and employment, associated with Mauritius' nature-based tourism industry.
- Attaining and adopting international standards for sustainable development.

C. Logistics

- Enhancing the integration, collaboration and support of all stakeholders in the implementation of the biosphere reserve.
- Promoting the BR as a site with a critical biodiversity hotspot of unique characteristics for research and education.

- Advertising the biosphere reserve as a centre for ecological restoration that provides opportunities for scientific studies and research and raising awareness to the local community as well as at national and international levels.

There may be several indirect pressures and limitations which might hinder the proper implementation and achievement of the various objectives.

- Setting up of a fully functional governance structure with clear cut demarcations and populated with adequate resources together with capacity building.
- Pressure on land availability for development projects due to land scarcity.
- Lack of coordination amongst stakeholders on the project.
- Impact of Climate change.
- Inadequate funding and resources.
- Demands from other locality to be part of the BR as soon as possible.
- Adherence to the rules and regulations set for the Biosphere Reserve.

13.2 Describe the sustainable development objectives of the biosphere reserve.

(If appropriate, please refer to Agenda 21, Rio+20 and SDG post 2015).

See inputs on development in Section 13.1

13.3 Indicate the main stakeholders involved in the management of the biosphere reserve.

The UNESCO MAB National Focal Point has been overseeing all the processes for the preparation of the dossier. There are several stakeholders involved in the management of the proposed biosphere reserve specific to the zonation.

Core Zone

- National Parks and Conservation Service under the aegis of the Ministry of Agro Industry and Food Security is responsible by law for the management of all activities within the Black River Gorges National Park
- NGOs such as the Mauritian Wildlife Foundation is a key and active partner in research and conservation on some key native species
- University of Mauritius for undertaking research

- Private companies sponsoring certain restoration projects
- Hawkers and Traders
- Tourism operators

Buffer Zone

- Forestry Service under the aegis of the Ministry of Agro Industry and Food Security is responsible for monitoring activities of the Lessee for State land forest leased for the buffer zones.
- National Parks and Conservation Service is responsible for the preparation of management plan in consultation with the stakeholders and ensure its implementation.
- Private owners for Buffer Zone under private ownership.

Transition Zone

- Hotel operators
- Compagnie Sucrière de Bel Ombre Estate as a private sector stakeholder
- Savanne District Council
- Ministry of Local Government
- Village councils and elderly
- Beach Authority
- Ministry of Tourism and Leisure
- NGOs such as Reef Conservation, Caritas
- Ministry of Housing and Lands
- Ministry of Social Security, National Solidarity, and Environment and Sustainable Development
- Ministry of Ocean Economy, Marine Resources, Fisheries and Shipping
- National Parks and Conservation Service

13.4 What consultation procedure was used for designing the biosphere reserve?



Figure 24: Awareness workshop on Biosphere Reserve held in May 2019

The preparation for a new nomination dossier for a re designed Biosphere Reserve for Mauritius was assigned by the Government to Mr Vinesh S. Gopal, the UNESCO MAB National Focal Point. He was responsible to prepare the dossier from the inception which implies inter alia ground studies including desk reviews and field surveys, data collecting as well as research for studies and projects on the various aspects of the BR. Several meetings, interviews, delivering sensitization and awareness talks both with policy makers, private sectors and the local community and actively participating in media programmes on the project were amongst the core duties. He was assisted by a team of staff of NPCS for the preparation of the dossier and organization of meetings, workshops and site visits. The drafting team included Ms A. Goury, Mr S. Pandoo, Mr D. Ramjeeawon, Ms H. Naujeer, Mr J. Ramen and Mr S.Nundlall together with the support of other staff of NPCS. The private sector was also involved in the drafting of some sections within the document.

The Ministry of Agro-Industry and Food Security, as the focal ministry for UNESCO MAB was responsible to facilitate, oversee and provide the necessary clearances and approval for the designation of the Biosphere Reserve. Other relevant authorities were also involved in the process as the implementation of the project is multisectorial.

A summary of the process is provided in the following table whereas it is worth mentioning that not all the details of the processes could be spelt out within the document.



Figure 25: Consultation process, workshops and meetings with relevant stakeholders

Negotiation meetings with private sector, district councilors, locally elected members of the village and other key stakeholders formed part of the activities. The following is a list of some of the processes undertaken.

Table 9: Consultation showing the details of major activities for the drafting of the dossier

Details	Date and frequency
International visits and expert advice	
Visit of a UNESCO MAB-Secretariat delegation headed by Dr. Miguel Clüsener-Godt, Director Division of Ecological and Earth Sciences and Secretary Man and the Biosphere (MAB) Programme under Natural Sciences Sector to advise Mauritius on the status of its BR	Dec 2017
Meeting with NPCS where it was recommended that a fresh nomination dossier for the BR for Mauritius has to be drafted to revamp its status as a Biosphere Reserve	
One day round table with NPCS (Research on “Establishment of strategies responding to Climate Change on Island and Coastal Biosphere Reserves”	
Advisory Mission of Dr T. Schaaf and Prof. Jeong to assist Mauritius for drafting of the Nomination dossier	6-10 May 2019
Courtesy call with the Hon Mahen Kumar Seeruttun, Minister of Agro-Industry and Food Security	May 2019
Meeting with Mr B. Boyramboli, Senior Chief Executive, Ministry of Agro-Industry and Food Security	Regularly

Workshops and training	
Stakeholder awareness workshop Capacity building workshop with NPCS Private sector in 2018 Awareness workshop in 2017 7th May 2019	
Consultation Meetings	
Meeting with CSBO Meeting with hotel sector: Heritage group of hotels, Hotel Outrigger, Heritage NR, LUX Tamassa Hotel, SoSofitel, Telfair Meeting with private sector Village representative of St Martin/Bel Ombre and local community NGO Caritas MWF UOM Durrell WILDLIFE Conservation Trust	Regularly
Site visits and working sessions	
1. Site visit in the core zone 2. Meeting with Vallee 23 couleur representatives 3. Meeting with Frederica Nature Reserve representatives 4. Site visit with the local community and village representatives 5. Working session at Bel Ombre with the private sector. 6. Visit to Plankton 7. Visit to Fey Palmis 8. Visit to Heritage NR	
Stakeholder meeting	
1. Village council of St Martin/ Bel Ombre 2. Savanne District Council 3. Compagnie Sucriere de Bel Ombre 4. Conservator of Forest, Forestry Services 5. Land Surveyor, Forestry Services 6. Ministry of Housing and Lands 7. Ministry of Tourism 8. Mr JC Sevathian and Mrs A. D’Hotman de Villiers of Rogers Group 9. Meeting with hotels CEO and managers	Regularly

More than 40 meetings were undertaken by UNESCO National Focal Point and his team with the private sector and other institutions.

13.5 How will stakeholder involvement in implementing and managing the biosphere reserve be fostered?

The intended Management Plan for the proposed biosphere reserve will have objectives which would be more of an inclusive process and would definitely aim at fostering development through a wide consultative process to attain management goals. The setting up of a Biosphere Reserve Advisory Committee and a fully dedicated Secretariat are initial steps towards

regrouping all the stakeholders. The current management plan for the core zone actually provides objectives for community involvement and the setting up of stakeholder consultation processes. The structure is fully defined under Section 17.1.7 and 17.1.8.

13.6 What are the expected main sources of resources (financial, material and human) to implement the objectives of the biosphere reserve and projects within it?

(Please provide formal commitments and engagements.)

The Government of Mauritius under its national budget is already funding the National Parks and Conservation Service for the management of conservation activities within the Black River Gorges National Park. The government also funds the Forestry Service for the monitoring of buffer zones under State land leased areas. All the other areas have individual financing mechanism for the management of the respective areas. In the event of the acceptance of the dossier for a redesigned biosphere reserve for Mauritius, the Government of Mauritius would fund through the National Budget or the National Parks Conservation Fund for the implementation of objectives of the Biosphere Reserve and its related activities. These mainly involve setting up of a governance structure, preparation of management plan, awareness campaigns, conservation activities, management and utilisation of the biosphere reserve. The Native Terrestrial Biodiversity and National Parks Advisory Council will have the mandate to work in consultation with all stakeholders and representatives. A dedicated Management Committee will be set up for the management of the Biosphere Reserve issues on a day to day basis. The human resources will have to be increased once the re-nomination of the biosphere reserve has been accepted by UNESCO MAB Secretariat. The section will be responsible to seek funding for the implementation of projects within the three zones from international funding organisation, the private sector and any other organisations, such as NGOs.

14. CONSERVATION FUNCTION:

14.1 At the level of landscapes and ecosystems (including soils, water and climate)

14.1.1 Describe and give the location of ecosystems and/or land cover types of the biosphere reserve.

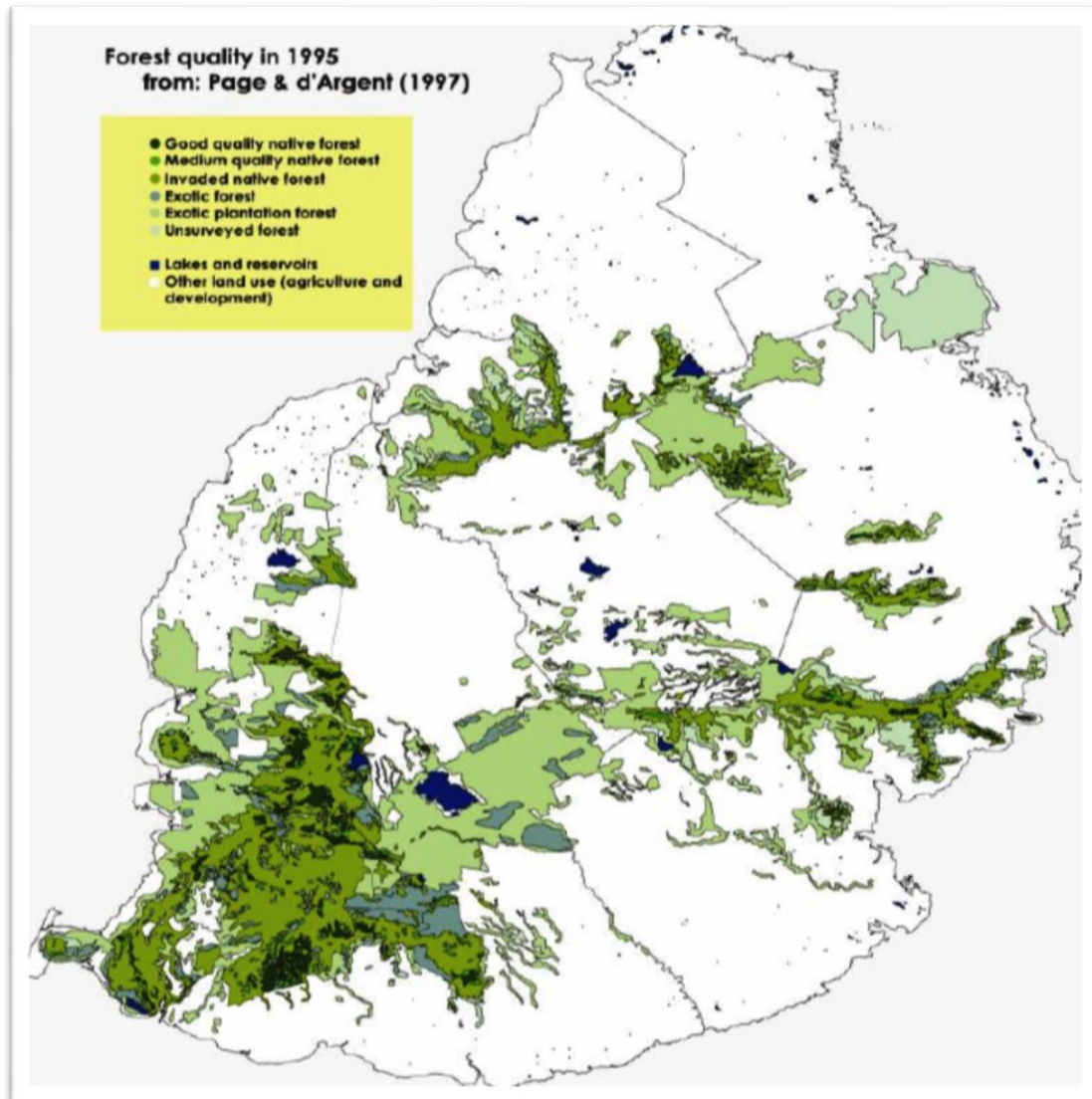


Figure 26: Different forest types in Mauritius

The proposed BR expands over a mosaic of ecosystems and/or land cover types with heterogeneous forest structure (strata) and vegetation from the upland dense forest (predominantly heath-type vegetation cover) to lowland shrub forest exposed to different microclimates due to its land topography. It comprises of both terrestrial and marine ecosystems which are overwhelmed with diverse landscapes, habitats and ecosystems typical for a volcanic island. The Black River Peak which is the highest peak of Mauritius culminating at 828m is found at the heart of the core zone which expands to join the buffer and transition zone

to the coastal lowland ecosystem at sea level. There are several distinct climatic areas which have shaped the untouched forests of the Black River Gorges National Park and harbour some of its unique species of flora and fauna. This has developed into a diverse vegetation community ranging from rainforest, marsh and wetlands, evergreen dry forest and dry season semi-deciduous forest as per the classification of Page and d'Argent on quality of forests, 1997.

Table 10: Land cover types

Ecosystem	Forest type	Location	Zonation
Rainforest	Multistratal evergreen forest		
	Climax forest	Brise fer, Macchabée, Mare Longue	Buffer zone
	Mossy rainforest	Mt Cocotte, Cascade 500ft, Savanne	Core, buffer zones
	Cloud forest	Mt Cocotte, Black River Peak	Core zone
	Transitional forest	Bel Ombre, Combo	Core, buffer and transition zones
	Evergreen scrub associations		
	Open sclerophyllous *mossy forest with closed lower layers	Mare Longue Plateau fringe, Plaine Champagne	Core zone
	Mossy sclerophyllous scrub/dwarf forest	Mare Longue Plateau fringe, Plaine Champagne, Florin, Le Pétrin	Core zone
Marsh and wetlands	Evergreen marsh	Plaines Champagne, Le Pétrin	Core zone
	Evergreen sclerophyllous marsh	Plaine Champagne, Le Pétrin, Florin	Core zone
	Coastal wetlands	Bel Ombre	Transition zone
	Man-made wetlands	Mare Longue, Bel Ombre	Core, and transition zones
Evergreen dry forest	Dwarfed forest and scrub		
	Dry evergreen ridge forest	Morne seche	Core zone
Dry season semi-deciduous forest	Multistratal forest	Morne seche	Core zone
	Ridge forest/scrub	Morne seche	Core zone

* Sclerophyllous according to the vegetation survey report is based for plants whose leaves are thick, coriaceous or have xeromorphic characteristics.

Each type of ecosystem holds specific types of vegetation with particular dominant species.

The Black River which is the major watercourse within the BRGNP drains mostly to the southern and western region. The river responds swiftly to rainfall due to the small steep catchment of the area. It has great erosive power and is capable of shifting heavy materials along its bed which alters the riparian zone.

The river forms the headwaters of three other small rivers to the south, the water of which is used to irrigate sugarcane plantations. The northern drainage of the river flows into the Mare

Longue reservoir (Black River Gorges National Park Mauritius Management Plan, 1998). Also see figure 33 under section 14.1.1

14.1.2 Describe the state and trends of the ecosystems and/or land cover types described above and the natural and human drivers of the trends.



Figure 27: Conservation Management Area fenced area and intensively managed to keep introduced invasive fauna and flora within the rich native forests (photo NPCS)

During the past decades, the ecological landscape structure of the Black River Gorges National Park has changed considerably. The highly invaded forest has now started to harbour patches of regenerated native forest most particularly in the Conservation Management Areas where intensive management interventions are essential for the survival of threatened native species. This was made possible through the proclamation of the National Park under the Wildlife and National Parks Act 1993 conferring a high degree of protection to the biodiversity and its ecosystem. The *Macchabée – Bel Ombre Biosphere Reserve* was included in the National Park and the area nearly doubled from the 3,777 hectares of the BR to 6,574 hectares. The Government has also initiated procedures to compulsory acquire another area rich in native biodiversity called Bassin Blanc found just next to the boundary of the BRGNP. This would eventually be annexed to the National Park and the Biosphere Reserve in the near future and would thus contribute to an increase of the protected area.



Figure 28: Bassin Blanc crater – a site rich in native species acquired by the government and planned to be within the intended expansion of the BR (photo NPC)

Management of the native forest is an important conservation practice which aims at lessening the impact of IAS on the ecosystem as well as improving the habitat for the native fauna to thrive on their own with ultimately minimal human interventions.

The area under conservation has increased significantly during the past decades mainly due to the UNDP/GEF funded project “Expanding Coverage and Strengthening Management Effectiveness of the Terrestrial Protected Area Network on the Island of Mauritius” implemented by the Government of Mauritius.

The project goal was to *conserve the globally significant native forest biodiversity of Mauritius*; and the project objective was to *expand and ensure effective management of the protected area network to safeguard threatened biodiversity*.

One of the main achievements of the project was the increase in the area under conservation management.

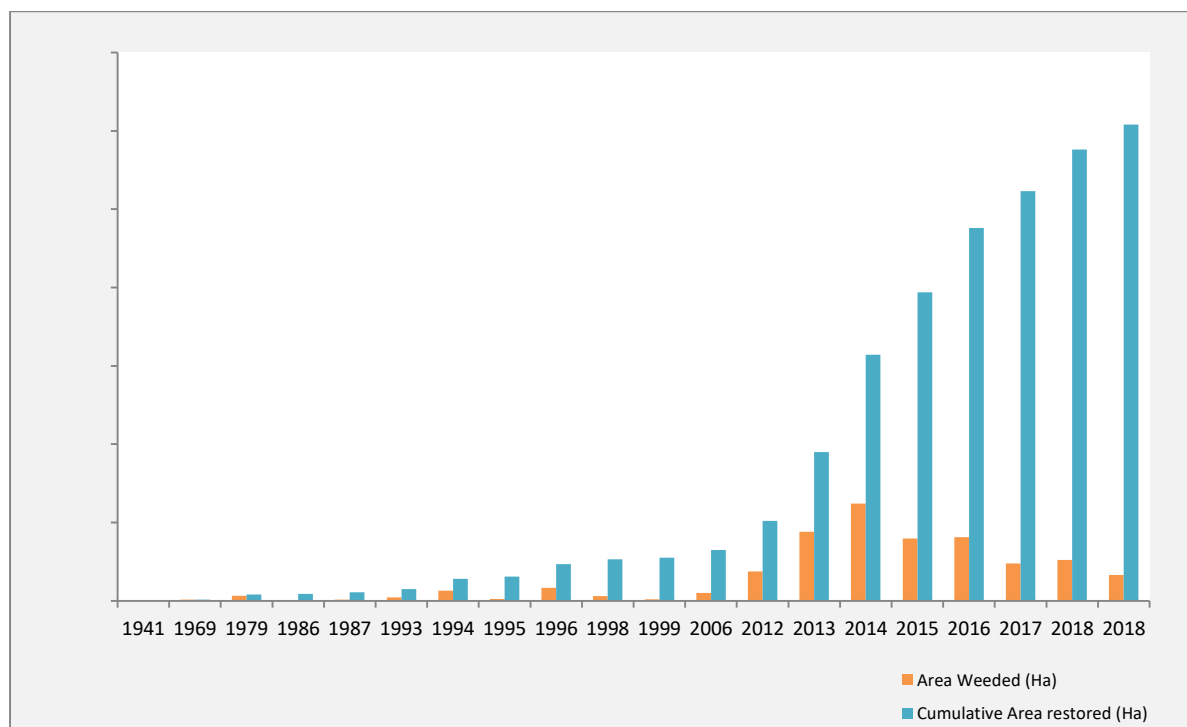


Figure 29: The area of forests restored through intensive weed management (source National Parks and Conservation Service)

Some of the areas in the core zone now represent relics of pristine Mauritius and sites such as Brise Fer and Bel Ombre have shown significant and positive impact on the native biodiversity. Some of the areas are also aimed to be predator free and sustain the nine endemic birds of Mauritius and critically endangered plant species in particular. The Brise Fer area also shelters one of the oldest Conservation Management Areas and a biodiversity hotspot for highly threatened native plants in the wild.

The northern and eastern boundaries of the core zone harbours forest plantations which were mainly established during the early 1970's. Some 3,000 hectares of natural forest were cleared and reforested by soft woods namely eucalyptus, pine and *Tabebuia* (exotic but with high economic value) under the Mauritius Integrated Rural Development Project funded by the Government and the World Bank (Government of Mauritius, 1998). These areas were mainly planted for timber and firewood. This massively changed the landscape of the forests and also caused the decline of some native plants and animal species.

Conservation management is being carried out to slowly replace the pine plantation, *Eucalyptus* and *Tabebuia* spp. with selective native plants. This restoration process is carried out in such a way so as to prevent any negative impact on the soil structure.

The Buffer zones were not affected by the forest clearance for sugar cane plantation due to the difficult terrain to practice agricultural activities. Most of the activities were dedicated for deer

ranching and some of the land was cleared for pasture. In the State-owned Land which were leased some of the areas were cleared for forest plantation. The deer ranching and the conversion to pastureland are strictly regulated and monitored by the Forestry Service of Mauritius.

In the transition area, most of the land at Bel Ombre was mainly under sugar cane plantation. A sugar estate with a closed factory is also found in the region. This has provided job opportunities for the local residents.

However, with the reduction of sugar prices worldwide Mauritius is no longer benefitting from preferential sugar markets, hence there has been considerable impact on the sugar sector. The sugar estates have thus been forced to change their strategy and have diversified their activities. Therefore, the sugar cane plantation is making way to hotels with strong commitments with regards to sustainable development, low carbon foot print, recycling of waste, rain water collection and dedicated green space with native flora. Novel techniques in wetland restoration have been initiated on one site and there is a long-term plan for further projects in this field. The Jacotet River bank found in the transition zone is currently being restored by the private sector and Reef Conservation, an NGO. The main objective is to recreate a suitable habitat for wetlands species and also to improve the lagoon ecology and its health.

14.1.3 What kind of protection regimes (including customary and traditional) exist for the core area(s) and the buffer zone(s)?

The Black River Gorges National Park was proclaimed under the Wildlife and National Parks Act 1993 and same has been repealed and replaced by the Native Terrestrial Biodiversity and National Parks Act 2015. The buffer zone has also been designated under Section 15 of the new Act. The Act makes provision for the protection of the core and buffer zones and NPCS is required to produce a management plan to ensure sustainable management of these zones. The management plan has to be endorsed by the Minister of Agro Industry and Food Security and subsequently gazetted before it comes into force. The management plan for the core zone has already been published while the buffer zone has just been proclaimed for the process of designating a new biosphere reserve. The management plan would be integral to that of the whole BR.

All the state land proclaimed as buffer zone remains under the jurisdiction of the Forestry Services as per the Forests and Reserves Act 1983. State Forest Lands are leased for hunting &

Fishing activities under the Shooting & Fishing Lease Act 1966 and are enforced by the Forestry Service.

With regards to River Reserves which are found on both sides of the rivers in the proposed BR vary in width from 3 to 16 metres on each side according to the size of the river. They are controlled and maintained by the riparian owners or lessees. These are also regularly patrolled by officers of the Forestry Service.

The Water Resources Unit, established in May 1993, is responsible for the assessment, development, management and conservation of water resources in the Republic of Mauritius.

14.1.4 Which indicators or data are used to assess the efficiency of the actions/strategy used?

The Government of Mauritius has produced a Three-year Strategic Plan 2019/2020 – 2021/2022 whereby the protection, conservation of the natural resources and promotion of ecotourism is high on its agenda. There are Strategic Directions and Key Performance Indicators which have been developed to ensure implementation of the objectives. According to the Plan, the strategic directions imply:

- Enhance forests and national parks through restoration and reforestation programmes and protect the unique flora and fauna from invasive species.
- Conduct a comprehensive forest inventory and provide basic amenities in national parks to enhance ecotourism.

The key performance indicators (KPI) have been defined as follows:

Table 11: Key performance indicators

Key Action	KPI	Actual 2018/2019 (ha)	Target 2019/2020 (ha)	Target 2020/2021 (ha)	Target 2021/2022 (ha)
Control of Invasive Alien Species	Land Under Conservation Management	645	745	845	945

Statistics Mauritius also has assigned indicators with respect the population status for threatened native flora and fauna as well as the status of all protected area in Mauritius.

Mauritius is also known worldwide with respect to the conservation of its native biodiversity. Some key indicators on the status of native species follow the guidelines of the IUCN Redlist database.

Other indicators would be developed within the management plan for the biosphere reserve.

14.2 At the level of species and ecosystem diversity:

14.2.1 Identify main groups of species or species of particular interest for the conservation objectives, especially those that are endemic to this biosphere reserve, and provide a brief description of the communities in which they occur.



Figure 30: Billboard of extinct species produced in local creole language under the “Expanding coverage and strengthening management effectiveness of Protected Area Network (PAN) in Mauritius funded under the Government of Mauritius/UNDP/GEF project.

The proposed BR, in particular the core zone supports rich biodiversity and other natural values embedded in a vibrant ecological landscape. The BR is home to a range of some unique and highly vulnerable diversity of native terrestrial flora and fauna species with high levels of endemism. The large size of the BR enables landscape level ecosystem functioning and is critical in maintaining the remnant ecological integrity of Mauritius. It is the only area where all the 11 remaining native bird species of Mauritius can still be found, and it also harbours more than 50% of the native flowering plants of Mauritius. Some of the buffer areas also have some important native flora. Unfortunately, most of the native species are threatened to extinction due to

habitat loss and most recently to the impact of invasive alien species. Several species have already gone extinct and the most famous one being the dodo (*Raphus cucullatus*).

Table 12: Terrestrial fauna species diversity (native and endemic, extinct and extant) in selected groups in Mauritius (Government of Mauritius, 2015)

Mauritius						
Species Group	Total Native species	Endemic species	Extinct species	Endemic Extinct species	Existing species	Endemic Existing species
Mammals (Bats)	5	1	2	-	3	1
Land Birds	28	19	16	12	12	7
Reptiles	17	16	5	5	12	11
Butterflies	30	5	4	1	26	4
Snails	125	81	43	36	82	45

Table 13: Terrestrial floral diversity of Mauritius (Government of Mauritius, 2015)

Species Group	Total Native species	Endemic species	Extinct species	Endemic Extinct species	Existing species	Endemic Existing species
Mauritius	691	273	61	30	630	243
Rodrigues	150	47	17	10	133	37

Table 14: Evolution of populations of some threatened bird species from 2000 to 2016 (NPCS, 2019)

Species/Year	2000	2009	2012/2013	2016	Trend 09-16
Mauritius Kestrel	700 birds	+/- 500 birds	362 birds	350 birds	Decrease
Mauritius Cuckoo-shrike	300 - 350 pairs	>350 pairs	NA	100 – 250 birds	Decrease
Mauritius Black Bulbul	225 - 340 pairs	225 - 340 pairs	NA	900 birds	Increase
Pink Pigeon	400 birds	+/- 400 birds	410 birds	350 – 400 birds	Decrease
Echo Parakeet	120 birds	440 birds	550 birds	650 – 700 birds	Increase
Mauritius Fody	100 – 125 pairs	160 birds IAA	35 birds IAA	240 – 330 birds BRGNP, 200 birds IAA	Increase
Mauritius Olive White-eye	<100 pairs	100 pairs	181 birds IAA	180 – 270 birds BRGNP, 56 birds IAA	Decrease
Mauritius Paradise Flycatcher	250 pairs	251 pairs	NA	800 birds	Increase

Conservation management activities focus on these native species and priority is given to the most critically threatened ones. The activities are carried out by the National Parks and Conservation Service in collaboration with local and international NGOs and institutions. Some private land owners have shown keen interest in carrying out conservation activities, mostly driven for ecotourism purposes. Some avian species are released in appropriate habitats within these areas and hence this creates new sub populations.

The coastal area also harbours native species which play a critical role as ecosystem service provider, eg: mangrove (*Rhizophora mucronata* and *Brugueira gymnorhiza*)

14.2.2 What are the pressures on key species? In other words: what are the threats (example unsustainable management of forest), their immediate causes (drivers of change like forest change or habitat change), their underlying causes (example overgrazing, fire, pollution), and the main driving forces (example: economic, political, social, external, etc.) and the area(s) concerned?

The Island of Mauritius suffered its primary forest loss during the colonial era through massive deforestation for commercial exploitation of the Black Ebony (*Diospyros tessellaria*) and for sugar cane plantation.

The main threats remain the impact of invasive alien species. These have been identified as the major driver of forest landscape alteration. The highly invasive Chinese Guava (*Psidium cattleianum*) has severely invaded the native forest and competed with the growth and regeneration of native plants.

The effect of climate change on the native biodiversity is evident but has not been substantiated through research and monitoring. The drastic changes in the weather has caused various ecological problems such as soil degradation mainly due to erosion, undulating topography, sedimentation and changes in the river courses, impacts on the phenology (flowering and fruiting habits of the plants) although it is to be noted that the forest within the BR is a slow growing sub-tropical forest.

Predators such as rats, cats, mongoose and feral monkeys (*Maccaca fascicularis*) destroy bird nests and predate on eggs, chicks and young fledglings. There is also occasionally trampling of small seedlings of endemic plants by wild pig (*Sus spp.*) and deer (*Cervus timorensis*).

The potential for using native plants by the pharmaceutical industry should not be to the detriment of the native population and therefore their use should be regulated to ensure sustainability as well as contributing to benefit-sharing of the country. The local community does not rely much on the native species for livelihood.

The buffer zone is partly subject to additional pressures from deer ranching as grazing land and sugar cane plantations. Agricultural lands have a tendency of impoverishing soil fertility in particular if there is overuse of chemical fertilisers.

The transition zone on the other hand is subject to significant pressures emanating from intensive socio-economic activities most particularly agricultural activities (sugar cane plantations), hotel developments and the expansion of residential settlements.

14.2.3 What kind of measures and indicators are currently used, or planned to be used to assess both species groups and the pressures on them? Who undertakes this work, or will do so in the future?

The National Parks and Conservation Service is mandated under its legislation for the conservation of native terrestrial biodiversity and the managing authority of the Black River Gorges National Park. Furthermore, the Black River Gorges Management Plan 2017-2021 outlines the conservation management actions for sustainable conservation and use of the National Park.

Some of the indicators for the biodiversity and the control of some threats have already been expressed under section 14.1.4.

In addition, there is a constant monitoring of the population of native fauna in the core and buffer zones. The nine endemic birds as the founder population inhabiting the core zones are monitored with respect to their annual recruitment; mortality and/or survivorship and health status. The cause and effect of any decline observed in bird population are also investigated through research and remedial actions triggered thereof. Island wide surveys of the bird populations are also conducted every five years by NPCS in collaboration with its conservation partners such as the Mauritian Wildlife Foundation (NGO) and other foreign wildlife institutions such as Durrell Wildlife Conservation Trust; Chester Zoo. Furthermore, annual surveys of the Mauritius fruit bat (the only surviving largest frugivorous mammal of the island) have been conducted within the Black River Gorges National Parks for the past decade.

14.2.4 What actions are currently undertaken to reduce these pressures?

The actions for the core zone have been defined in the Black River Gorges National Park Management Plan 2017-2021. The proposed management plan for the BR will integrate these actions together with those of the buffer and transition zones for conservation of biodiversity.

14.2.5 What actions do you intend to take to reduce these pressures?

1. In order to reduce the threats and pressures to the biodiversity, the Government has endorsed a Protected Area Network Expansion Strategy to meet international targets such as SDGs and Aichi Target mainly. The expansion of the protected area is essential to include more areas under protection.

2. It is also intended to promote collaboration between the public and private sectors and the local community in view of raising awareness for conserving the native biodiversity and its associated ecosystem.

3. It is also essential to raise awareness at all levels of the population including educational institutions as well as promoting research.

4. To promote access to resources and sites, taking into account the fragility of the system, so as to encourage more people to become involved in conservation activities.

5. To encourage youth and women to actively participate in conservation management activities.

The intended management plan for the biosphere reserve will be prepared through a consultative process to involve a wide range of stakeholders as defined in sections 13 and 17.

14.3. At the level of genetic diversity:**14.3.1 Indicate species or varieties that are of importance (e.g. for conservation, medicine, food production, agrobiodiversity, cultural practices etc).**

All the native species of flora and fauna are important for conservation as most of them are threatened and require constant attention. The majority of them are protected and regulated by the Native Terrestrial Biodiversity and National Parks Act so as to ensure that there is no illegal exploitation of this scarce resource. Most of the native species of flora and fauna have not been extensively exploited probably due to their critical population level and limited research on their usage. There have been some demands recently from research organisations both private and public to undertake studies on the potential of native species of flora for biomedical research. Some of the native species of plants such as *Erythroxylon sideroxyloides*, *Lomatophyllum purpureum*, *Psiadia viscosa* amongst others have been used for traditional medicine but their usage has been negligible.

The three native coffee species have not been used for commercial purposes but remain crop wild relatives (CWR) of the important coffee crop and have the potential to be used in genetic engineering worldwide. The native palm species also forms under the same category of CWR.

The leaves of Pandanus species together with that of native palms are used for artisanal crafts.

14.3.2 What ecological, economic or social pressures or changes may threaten these species or varieties?

The main threats remain the impact of invasive alien species. The effect of climate change on the native biodiversity is evident but has not been substantiated through research and monitoring. The drastic changes in the weather has caused various ecological problems such as soil degradation mainly caused due to erosion in an undulating topography, sedimentation and changes in the river courses. The potential for using native plants for the pharmaceutical industry should not be to the detriment of the native population and therefore their use should be regulated to ensure sustainability as well as contributing to benefit-sharing of the country.

14.3.3 What indicators, at the level of the species, are used, or will be used, to assess the evolution of population status and associated use?

Please see sections 14.1.4 and 14.2.3

14.3.4 What measures will be used to conserve genetic diversity and practices associated with their conservation?

- To continuously carry out research to assess the genetic diversity of the species.
- To set up new field gene banks as a collection of genetic constituents of native flora including ferns and orchids.
- To set up additional arboretums for collection of flora.
- To encourage development of business models to generate funding to sustain conservation activities.
- To enhance public/private partnerships in view of promoting better conservation of the native biodiversity and the ecosystem.
- To further enhance collaboration with international partner institutions.

15. DEVELOPMENT FUNCTION:

15.1. Potential for fostering economic and human development which is socio-culturally and ecologically sustainable:

15.1.1 Describe how and why the area has potential to serve as a site of excellence/model region for promoting sustainable development.

Mauritius is highly reputed on the conservation management and species recovery programme of some critically endangered endemic species. The proposed Biosphere Reserve would aim at providing a model of good practices for conservation, sustainable management and development. It will also promote the integration – in a holistic manner – of the private sector, the local community and the public sector, thus providing a model for mainstreaming biodiversity amongst all the stakeholders.



Figure 31: Some development projects and ecological activities



Figure 32: Artisanal crafts made by the local community

The proposed Biosphere Reserve incorporates a diversity of landscapes ranging from the upland forest with the highest peak of Mauritius to the coastal ecosystem with white sandy beaches which are icons of Mauritius. The conservation efforts provide enhanced benefits on the welfare of community living downstream as well as ecosystem paybacks. The *Ridge to Reef* approach has been adopted to promote sound conservation practices upstream for the benefits those downstream. The Reef Conservation, a local NGO, working in the marine conservation as well as along the River Jacotet found in the Biosphere Reserve is a perfect model for this kind of approach. The Private Sector in particular the Rogers Group has been actively preparing a sustainability plan for development of the Bel Ombre region mainly in the Transition area in sustainable way respectful of the unique natural assets of the region. Through the various discussions, it has been highlighted the Rogers Group has vision for the restoration of forest habitats, wetlands and coastal zones but also recreate certain ecosystem with characteristics flora and fauna which are in danger of being lost.

The local community have also embarked in several projects namely waste sorting and recycling, planting of native species, creating endemic garden in school. The local communities through several consultation meetings were keen to benefit from the Biosphere Reserve project and contribute towards environmentally sustainable practices. There was even proposition for instance for shifting their fuel generated boat to that of solar generated engines coupled with the tradition sail boat amongst other project ideas.

Sustainable development in the core zone

The Black River Gorges National Park Management Plan (2017 - 2021) vision already encompasses fully the core zone and attempts to achieve most of the three functions of the biosphere reserve. It states:

“To be a well-managed showcase for the protection, recovery and sustainable use of unique and irreplaceable terrestrial biodiversity of global importance, a place of culture, learning and reflection that contributes to the story of Mauritius, from which the country at large as well as local communities in particular will benefit, now and into the future.” The Core Zone is protected under law and therefore development is not allowed except for facilities required for conservation and visitors.”

The National Parks and Conservation Service is promoting the use of renewal energy such as solar panel for the supply of energy in the various facilities. Rainwater harvesting is also used for

supply of water in toilets and other facilities. There is a plan to carry out sorting of waste with a view to recycle plastic waste.

Buffer Zone

Most of the areas of the buffer zones are free from development where only rudimentary semi-permanent infrastructure is allowed. In some areas of State land leased for deer ranching, the activities are strictly regulated in terms of herd density.



Figure 33: Deer ranching also showing planted native shrub used for restoration of pasture land

For the private sector, sustainable agricultural practices are adopted such as management of the pastureland to prevent erosion and siltation as well as minimal use of chemicals or fertilisers.

Following the designation of buffer zones under the Native Terrestrial Biodiversity and National Parks Act, no development would be permitted in this zone except for basic amenities.

Transition Zone

The Bel Ombre region falls on the southern side of the core zone and in contrast with the other parts of Mauritius it has remained virtually untouched by development. It is known to be far from development because of its remote location in relationship to the island economic core areas. This situation has caused the villages to lag behind in their relative development but has preserved the natural character of the region. Most of the villagers were farmers, fisher, craftsmen and worked mainly in the sugar estates. Preservation and rehabilitation of the

existing ecosystems allied with a respectful development of this coastal area would showcase an example of sustainability in action.

Several eco-friendly projects are already in place within the transition zone which promotes sustainable environmental practice and also involves the local community of the villages within the proposed biosphere reserve and the neighbouring regions. Some of the projects are being sponsored by the private sector as well as engaging the local community.

The hospitality and leisure sectors plan for crafted customer experiences incorporating mystery and discovery, with at their core the connection of people with nature.

Local inhabitants have already embarked in ecologically friendly sustainable approaches such recycling of waste (project Plankton and Fey Palmis, waste sorting) and have already in mind some innovative practices such as use of traditional sailing canoe and back-up by solar powered energy, using native plant species for landscaping and decoration.

Plankton Project



Figure 34: Glass bottles (collected from the surrounding hotels) and recycled by the community

Most hotels and restaurants produce glass bottles as waste. The Plankton Recycling Co-operative Society Ltd, a local Small and Medium Enterprise regrouping local communities initiated a project involving collection of empty glass bottles from the hotels of the region.

This Bel-Ombre cooperative collects hundreds of bottles, mainly from the four hotels in the village. These are processed into six different by-products used in construction and to filter the water of swimming pools. At present, the company employs people from the community.

Fey Palmis Project



Figure 35: Fey Palmis project using palm leaves for producing biodegradable plates.

“Fey palmis” is a creole local dialect meaning palm leaves. The project regroups women from the village who are employees and founders of Bel-Ombre's Outgrowing Ltd. and who exploit the treasures offered by mother nature that is the dried palm to make plates and out of which, they earn their living. They contribute to the world of Small and Medium Enterprises through the manufacturing of plates with palm kernel leaves. The palm leaves usually shed naturally and are collected and used by the village women. The plates are being used in some hotels replacing the plastic one. The use of palm kernel for manufacture of these plates is a first in Mauritius.

- **Recycling organic waste**

The waste management has contributed in creating a local circular economy of the region. The garden waste of hotels is sent for composting by the agricultural sector and sold back to the landscapers; the hotels' food waste is recycled by the NGOs supporting youth at risk or sent to pig farmers. Sewage treatment plants are already operational in the premises of some of the hotels.

- **Innovative coastal protection measures**

The Ministry of Ocean Economy, Marine Resources, Fisheries and Shipping under community-based projects undertook a coral reef planting project carried out by the inhabitants of St Martin /Bel Ombre village.

In 2016 a survey showed substantial beach erosion in the area. Four hotels joined efforts in restoring the Bel Ombre coastline. Breakwaters were placed along the beach to slow down the current and allow sand refilling.

Artificial proto-reef structures have been added adjacent to the breakwaters in order to stimulate coral and fauna population regeneration. Reef Conservation (NGO) conducts environmental monitoring of the lagoon every three years.

- **Restoration and conservation activities**

The Heritage Nature Reserve underwent a rehabilitation program where invasive species were removed and 2,500 endemic plants were reintroduced in 100 acres privately owned land. It also sponsored NGOs for the conservation of key endemic bird species namely Mauritian Kestrel, Mauritian Pink Pigeon, Mauritian Echo Parakeet.

Tamassa Hotel in collaboration with Ebony Forest is contributing to rehabilitate native forest found at Chamarel close to the BR.

- **Bel Ombre Coastal Vegetation & River Corridor**

Scientific surveys of our Coastal Vegetation & River Corridors showed that previously densely forested areas with native vegetation, rich with aquatic fauna, bird life and numerous insect species were present and same has suffered from four centuries of deforestation and monoculture.

A reforestation and species regeneration plan for the Jacotet River corridors and river mouth will be soon underway involving community support and participation. The project is funded by the private sector.

- **Ecotourism sustainability standards**

Several hotel operators found within the Transition Zones have endorsed international sustainability certifications as a measure to ensure eco-friendly practices respectful to the environment but also integrating local community. It promotes wise use of natural resources and minimise the impact of wastes generated by the hotels activities.

- *Green Key Label*

Heritage Resorts found in the heart of the transition area, respect the *Green Key Label* standards in matters of environmental and social responsibility.

Heritage Resorts have for two consecutive years obtained recognition in their efforts of reducing, reusing and recycling their resource use (water, energy, wastes, etc.); for setting up and implementing a policy of eco-friendly practices and local products; and for training all their stakeholders in environmental issues.

- *Tread lightly programme*

Tamassa Resort has a “Tread lightly programme” where guests can enjoy a carbon free holiday. Laundry asterix is available in rooms which sensitise guests about eco-friendly practices e.g. switching off lights when not in room, keeping doors and windows closed when air condition is on. Through “Tread Lightly”, Tamassa Resort intends to further invest in technologies towards reduction of carbon emissions for a carbon clean future.

- *Don't Waste*

Outrigger Mauritius Beach Resort adopted the Don't Waste for the rubbish removal standards (www.dontwaste.co.za). The main achievement has been the reduction in the volume and number of plastic bottles used and only 3% of the waste generated by the hotel is plastics (Source: Outrigger Mauritius Beach Resort)

Table 15: The volume and number of plastic bottles used at Hotel Outrigger Mauritius (Source: Outrigger Mauritius Beach Resort)

Year	Volume of plastic bottle	Number of plastic bottles used (unit)
2016	500 ml	184,352
2017	500 ml	185,484
2018	500 ml	44,126
2016	18.9 L	3,966
2017	18.9 L	1,870
2018	18.9 L (discontinued)	0
2016	1 L	37,496
2017	1 L	12,756
2018	1 L (discontinued)	0
2016	1 L (Dasani water)	14,076
2017	1 L (Dasani water)	6,867
2018	1 L (Dasani water)	3,804

- *Geo-Golf*

The dwindling of the sugar cane industry has urged for the diversification of the economy. Formerly used for sugarcane (monoculture) plantation in the transition area have slowly been replaced to give way to several tourism products. Heritage Golf now hosts diverse vegetation with various wild grasses and trees planted on around 30 ha golf course including native trees. The golf courses and the future phases of development would comply with international golf

sustainable standards namely Geo Golf and will demonstrate best ecological practices and developed in 2020 as stated by the promoter, the Rogers Group.

15.1.2 How do you assess changes and successes (which objectives and by which indicator)?

The hotel sectors already have a quality standard which is regularly monitored. Each hotel has its own specific KPIs which measure and assess heat, light, power, water, petrol and waste. Evaluation indicators would be developed within the Management Plan for the Biosphere Reserve to assess the impact of the Biosphere Reserve on the livelihood of the community and the region. Future indicators will involve the number of new employments for local community, energy saving devices put in place, wastes recycled and area under restoration and conservation.

15.2. If tourism is a major activity:

Tourism is a major pillar for the economy of Mauritius. The proposed Biosphere Reserve is on the other hand one of the main tourism attractions. In the advent of positive response for the application for Biosphere Reserve, it would be expected to bring considerable gain to both the economy and the local community.

15.2.1 Describe the type(s) of tourism and the touristic facilities available. Summarize the main touristic attractions in the proposed biosphere reserve and their location(s).

The proposed Biosphere Reserve provides great potential for the tourism sector. It is expected to play a significant role in the economy of the region as well as improving the livelihoods of the local community while respecting the environment.

There are various types of tourism activities in the proposed Biosphere Reserve given the outstanding value of its natural resources including both terrestrial and coastal landscapes.

Ecotourism activities:

The Black River Gorges National Park is one of the most visited natural places in Mauritius both by foreign and Mauritian. There has been propositions upon the nomination of the proposed Biosphere Reserve to construct a dedicated trail at Bel Ombre region which passes through the whole Biosphere including the village and some of the less sensitive conservation zones. Consultations with all parties both private, public and the local community have already started. At present the following ecotourism activities are undertaken within the Transition Zone mainly.

- Heritage Nature Reserve has developed Conservatoire Tropical de la Nature (Concept)-Forest Life with a Visitor Information Centre adjacent to the UNESCO Biosphere Reserve entry and adjacent to Jacotet River to showcase the sustainable ecotourism programme. The private company also encourages Trekking, Trailing, Safari
- A Conservatoire Tropical de la Nature (2020) for Marine Life is planned to be constructed at Old Bel Ombre Sugar Cane Factory at Place du Moulin by the Rogers Group
- Bel Ombre Bay 2 Bay Tour: Historical & Cultural Tour (10 stops)
- Racing Republic involves the organisation of Leading Sport Events in Mauritius: Mauritius Marathon, Royal Raid, Mauritius Triathlon, Mauritius Surf Ski Competition and some of which promotes the Biosphere Reserve

Daily bike trips are organised for guests to appreciate the scenic route so that they can witness the coastal villages within the Biosphere Reserve and the stunning coastal view well known for its natural beauty and its wild, rugged coastlines.

Culinary Tourism

Mauritius is also renowned for its culinary diversity. The local community of Bel Ombre village already offers several varieties of exquisite culinary local dishes for both Mauritian and tourists. Some innovative approaches have been adopted by the local community for instance in one of the projects an old metal scrap bus has been converted into a restaurant. The hotels on the other hand also offer diversified cuisine of our Paradise Island. The Heritage Le Château offers Fine Dining using products of the Biosphere Reserve together with using organic farming products. Some hotels promote truly Authentic Mauritian Home Cooking

Heritage Tourism

The Bel Ombre region was predominantly under sugar cane plantation and associated activities to the sector. The vestige of the past has not been forgotten and various attractions offer a reminder of the past history of Mauritius. There are several projects in the pipeline which would enhance the tourism diversity and which include the Garden of Chateau de Bel Ombre Tour (2019/2020), Bel Ombre Sugar Factory Tour (2019/2020).

Coastal and Marine Tourism

The lagoon within the Bel Ombre area are planned to be declared as non-motorized zones in line

to reduce the Carbon footprint. Most of the activities involve the local inhabitants and the hotel sectors. With Biosphere Reserve project it is expected to enhance the collaboration for the benefits of the local community.

Emerging Agri-tourism

Recycling of the organic waste as already been mentioned in previous chapters. The compost generated is contributing for the promotion of organic farming. The locally produced tropical fruits and vegetables, local beehives & honey production as well as endemic & exotic plant & flower nursery are much appreciated by the tourists.

The Black River Gorges National Park (BRGNP) offers stunning view of gorges and valleys, lakes, marshes myriad of cascades, rivers and streams, the highest peak of Mauritius, beautiful native flowers, orchids, ferns, unique birds and invertebrates.

The major tourism attractions within the biosphere reserves have been listed in the table below.

Table 16: Major tourism attractions

Facilities/ Infrastructure	Location	Key Users
Viewing Tower/View Point	Alexandra Falls View point	Tourists, researchers, scientists, hikers and the general public
Mountain Summit	Black River Peak	Tourists, researchers, hikers and the general public
View Point	Black River Gorges View Point	Tourists, researchers, hikers and the general public
Visitors Centre	Pétrin Visitors Centre	Tourists, researchers, hikers and the general public
Lower Gorges Information Centre	Lower Black River Gorges	Tourists, researchers, hikers and the general public
Public Beach	Bel Ombre Public Beach	Tourists, researchers, hikers and the general public
Tracks and Trails	80 km of Trails in the BRGNP	Tourists, researchers, hikers and the general public
Field Research Station	Pétrin, Pigeon wood, Plaine Lièvre, Bel Ombre and Combo	Researchers, scientists and students
Kiosks	Pétrin, Gorges View Point and Macchabée View Point	Tourists, researchers, hikers and the general public
Heritage Nature Reserve	Bel Ombre	Tourists, researchers, hikers and the general public
Frederica Reserve	Bel Ombre	Tourists, researchers, hikers and the general public
Game Hunting	Bel Ombre Chassée	Tourists and public

Besides the above described places of attraction and tracks/ trails found in the proposed Biosphere Reserve, the five hotels in the surrounding regions of Bel Ombre offer a unique and broad plethora of hospitality experiences in Hotels, Leisure, Wellness and Adventure.

15.2.2 How many visitors come to the proposed biosphere reserve each year? (Distinguish between single-day visitors and overnight guests, visitors only visiting the proposed biosphere reserve or only passing on the way to another place). Is there an upward or downward trend, or a particular target?

The number of tourists visiting Mauritius is on the increase. Compared to 2017, tourist arrivals increased by 57,548 or 4.3% to reach 1,399,408 in 2018. There has not been a comprehensive visitors' survey carried out within the proposed Biosphere Reserve. There are some sporadic attempts to estimate the visitors in the BRGNP whereas some hotels in the transition area do have some individual statistics. There would need to have a comprehensive survey to be carried out on the number of visitors within the proposed BR.

Core Zone

No in-depth study has been undertaken so far to determine realistic estimates of the number of visitors that enjoy the National Parks. However, there are several literature studies which attempted to provide some crude estimates. The Annual Report for NPC (2015) provides the most recent estimates of the number of visitors where some 500,000 tourists both local and international visited the core area. Based on a survey carried out at the BRGNP, it was observed that 50% of the visitors were from abroad.

Currently, visitors are not allowed to stay overnight in the core zone. There are public roads which pass through the core area. In this respect, the number of people passing is much higher and has never been accounted for. Some parts of the core zone are dedicated for scientific research and hence access is restricted to visitors due to the presence of important conservation projects related to threatened flora and fauna.

Buffer Zone

There is not much information available. There are however several activities carried out within the area which includes game hunting, ecotourism, restaurants, hiking and any other activities.

Transition Zone

Some of the hotels already have individual statistics for visitors staying in the region. Some hotels have records in terms of bed night occupancy.

According to one of the private sector namely Rogers Group, approximately 75,000 tourists stayed in the region in 2017-2018, representing 6% of total incoming tourists in Mauritius.

15.2.3 How are tourism activities currently managed?

The Ministry of Tourism and Leisure is the government entity which regulates all aspect of tourism in Mauritius. There is no such structure right now for the management of tourism for the Biosphere Reserve in a holistic manner. Tourism management is carried out on an individual basis mainly within the buffer and transition zones. However, all the tourism activities related to the core zone is managed by the National Parks and Conservation Service in compliance with the BRGNP Management Plan 2017 –2021. In the buffer and transition zones, the lessees or the private land owners manage their own activities. But this would be organised through the future Management Plan where activities are undertaken in strict conformity to the agreements made with all parties. Principles of ecology and good governance will equally be applied in strict respect of our precious environment.

15.2.4 Indicate possible positive and/or negative impacts of tourism at present or foreseen and how they will be assessed (linked to section 14)?

So far, there is minimal usage in the proposed UNESCO Biosphere Reserve in terms of tourism. The tourism presence is currently not a pressure in Mauritius. The tourism sector represents 8 % of the GDP for Mauritius and the industry is still having some positive trends. However, an increase in tourist number will lead to construction of more hotels and facilities. With land being a serious limiting factor, the pressure on natural resources is always high. However, with the setting up of new national guidelines, policies and existing legislations currently in force, the Ministry of Tourism and Leisure and the Ministry of Social Security, National Solidarity, and Environment and Sustainable Development in particular play vital roles in regulating development in a sustainable manner. In addition, the by-products of tourism such as the generation of waste, use of resources (water) and high energy consumption could possibly destroy the ecosystem balance of the region and require upmost good governance principles by the key organisations.

The assessment part would be critically emphasised within the proposed Management Plan for the BR. A MELI (Monitoring, Evaluation, Learning and Intervention) type has previously been adopted within the Management Plan for the National Park.

15.2.5 How will these impacts be managed, and by whom?

There are various Ministries and Government Departments directly involved to assess the tourism impact on the environment. The Ministry of Local Government, Ministry of Tourism and

Leisure, the Mauritius Tourism Promotion Authority, the Ministry of Agro-Industry and Food Security and the National Parks and Conservation Service amongst others would be the lead agencies and will be mainly responsible for identifying the characteristics of tourists, diversifying tourism attractions and carrying out marketing and awareness campaigns to promote a tourism product respectful of the environment.

Research would need to be carried out to assess the anthropogenic impact resulting from tourism industry on the natural resources. The various research institutions would be required to be taken on board to gather and assess all the aspects related to the tourism impacts. These research studies would be essential in guiding decision-making processes in this regard.

The impact within the core zone as well as most of the buffer zone would need to be managed by the NPC. In the transition area, some private entities such as the Rogers Group have already embarked in a master plan following the establishment of all the business sector projects and as from this year, the company will adhere to a sustainability plan.

15.3. Agricultural (including grazing) and other activities (including traditional and customary)

15.3.1 Describe the type of agricultural (including grazing) and other activities, area concerned and people involved (including men and women).

Agriculture was the main pillar for the economic development of Mauritius. Even though the economic activities have diversified considerably, the agricultural sector still remains important for the economy of the country.

Core Zone

According to the National Strategic Action Plan for the Conservation and Sustainable Use of Crop Wild Relatives (2016 – 2025), a total of 43 crop wild related species were identified in the Republic of Mauritius and 21 species were prioritized for conservation actions. The core zone has been identified as a critical site with CWR hotspots where several species occur. Furthermore, two species namely the Mauritian endemic *Coffea* species and the native palm species (*Dictyosperma album*) are CWR species and might be of global importance as food source in the near future. These species are known to occur in large populations within the core area. There are at present practically no agricultural activities within the core zone as the area is devoted mainly for protection of the native biodiversity. However, recently there have been demands for sustainable agricultural activities mainly for beekeeping. The National Park is also

attracting more beekeepers and is having beehives within the native forest areas. This has yielded in production of good quality organic honey derived from native flowering plants.



Figure 36: Endemic coffee species

Buffer Zone

Historically most of the areas found adjacent to the BRGNP were inaccessible and less suitable areas for agriculture. The only economic and leisure activities that could be pursued was mainly for deer ranching and forest exploitation. The buffer zones designated have mostly deer ranching in both private and State Land leased areas. In some cases, this also includes game hunting for other non-native species such as wild pigs. The hunting activities are regulated according to the Section of the NTBPN Act 2015. For the State Land forest areas leased for Shooting and Fishing, the deer ranching activities are regulated by the Forestry Service through sets of conditions where the population heads and the area for pastures are monitored and enforced. In the private sector, the management is carried out by the private entity under the supervision of relevant authorities. The meat production is supplied to the local hotels and residents which ensures promotion of local products and contributes to food security.

The Compagnie Sucrière de Bel Ombre is the first private land owner to have a declared buffer zone and has already adopted a sustainable approach towards deer ranching where the herds population are managed so as to prevent land degradation and is advocating minimal use of chemical fertilisers for pasture.

As per the NTBPN Act 2015, the Director of NPCS is required to prepare a management plan for the buffer zone in consultation with all the owners and lessees in the buffer zone.

Transition Zone

Previously most of the land was under sugar cane plantation as per the information received from sugar cane estate. The company is still present in the Bel Ombre area with some areas still

devoted to sugar cane plantation. However, due to the significant reduction of sugar prices worldwide as well as loss of preferential quotas, the company has diversified its activities. This has led to the emergence of new diversified activities related to tourist sector. The Heritage group of hotels have also embarked in Agri- Tourism where organic farming is being practiced and the products (fruits, vegetables and honey) are supplied to the hotels.

The local community contributes significantly to the agricultural sector. This region along with the neighbouring village, Baie du Cap, is well known for banana plantations, which are supplied in the locality and also to other regions of the island.

15.3.2 Indicate the possible positive and/or negative impacts of these activities on biosphere reserve objectives (section 14).

The inhabitants of the village have shown pride for their locality and they adhere to the novel development taking place as previously there was a perception that they were left on their own and most of the development occurred elsewhere. In fact, Bel Ombre village is ranked 133rd out of a total of 145 villages in Mauritius with regards to Relative Development Index 2011. Young people are very optimistic that the tourism development and operations would create job opportunities. However, since the local community activities were mainly based on agriculture and fisheries, there might be concern with regards to the lack in skills to be able to work in the hospitality sector (source Social Needs Assessment report).

The deer ranching activities if not managed in a sustainable way might cause problems of overgrazing leading to soil erosion as well as an increase in use of fertiliser.

The increase in the tourism activities will impact negatively on the natural resources and ecosystem in the region due to construction of infrastructures and amenities for the tourism sector demand. The Tourism Industry will generate more waste and the demand in energy will increase exponentially.

15.3.3 Which indicators are, or will be used to assess the state and its trends?

The indicators have to be developed during the preparation of the Management Plan. The indicators would also involve the biodiversity status and trends for both terrestrial and marine.

15.3.4 What actions are currently undertaken, and which measures will be applied to strengthen positive impacts or reduce negative impacts on the biosphere reserve objectives?

There are several actions which need to be undertaken to enhance the positive impacts as well as mitigate any negative impacts to the proposed BR.

- Defining a set of guiding principles for activities undertaken and to be undertaken in the future in the BR. These principles apply to the environment, social, economic aspects of the BR taking into consideration both the terrestrial and marine components.
- Preparation, adoption and implementation of the Management Plan for the whole Biosphere Reserve inclusive of the different zones and functions as specified by the UNESCO MAB. There is already the Management Plan for the core zone in place and being implemented.
- There is a sustainability plan in place by the Rogers Group for the sustainable development of the region.
- The adoption and promotion of organic farming and recycling of agricultural waste is already being implemented.
- Restoration of native forests.
- Community involvement in sustainable ecological activities such as recycling of waste, organic farming.

15.4 Other types of activities positively or negatively contributing to local sustainable development, including impact/influence of the biosphere reserve outside its boundaries.

15.4.1 Describe the type of activities, area concerned and people involved (including men and women).

1. Fisheries

About 15 % of the St Martin – Bel Ombre local community workforce is skilled in agricultural, forestry and fisheries. The fishers of the region are mainly artisanal and carry out lagoon fishing using traditional and environmentally friendly fishing practices. This activity is essentially male dominated although some women are encountered doing some amateur fishing. From interview with fisher, most of the catches are mainly sold to the local community. They could not sell to hotels directly as their catch are irregular and continuously decreasing in fish. According to one of the fishermen interviewed, the impact on the fish catch for the winter 2019 has been severe

affected compared to past years due to unprecedented cold weather. There are some signs of climate change impacts.



Figure 37: Artisanal fishing at St Martin lagoon

2. Forestry

The forest exploitation has reduced drastically with time especially in the St Martin/ Bel Ombre area. The timber was mainly used for construction and in some cases used as fence for deer ranches. The trend has now changed since the core zone is fully protected and no timber exploitation is allowed. In the construction sector, timber is being gradually replaced by iron tubes.

3. Waste recycling

3a. Waste recycling for organic farming

In most of the hotels found in the region, recycling of organic waste is an established practice. At Heritage group of hotels, the organic waste is recycled to produce compost which is used in the plant nurseries, vegetable cultivations and orchards. The products are used in the hotels and the surplus is put on sale to the local community. It is important to note that most of the staffs working in the farm are from the locality who previously worked in the sugar estate. Women are also employed on site.

3b. Recycling glass bottles

The glass bottles generated as waste in hotels and the local community are collected and recycled by a local NGO named Plankton. The bottles are crushed and the by-products are used as materials which are incorporated in the filters for swimming pools, decorative material in construction and landscape. It is also used as additives in paints to enhance the colour effect.

4. Towards non-use of motorized boats and equipment in lagoon

Some hotels such as Outrigger Mauritius Beach Resort are offering non-motorized water sports. The vision is to have Bel Ombre Lagoon as a non-polluting zone using ecofriendly engine in boats (use of solar and wind energy) and only in cases of emergency that motorized engine boats will be allowed to operate.

15.4.2 Indicate the possible positive and/or negative impacts of these activities on biosphere reserve objectives (section 14). Have some results already been achieved?

The organic farming is being considered as an environment friendly practice and aims at reducing the impact of chemical fertilisers and pesticides. The products are known to be more nutritious and highly beneficial for health. The conversion of organic waste to compost is also contributing to lessen the volume waste produced. It is important to note that most of the wastes generated are landfilled.

The village council showed keen interest towards the BR project during the consultation process. Their qualms were mainly on where to find funds for specific sustainable projects such as converting their fossil fuel motorized boats to solar powered engines. This has showed their willingness and commitments to the value of protecting their environment.

15.4.3 What indicators are, or will be used to assess the state and its trends?

Indicators have not yet been developed. These will be elaborated while preparing the management plan.

15.4.4 What actions are currently undertaken, and which measures will be applied to strengthen positive impacts or reducing negative ones on the biosphere reserve objectives?

Wastes Recycling Initiatives such as:

- Zero waste management programme

- Offering carbon free holidays to guests
 - Protecting and zoning our lagoon
 - Cleaning campaign throughout the whole Biosphere Reserve
- Community engagements
- Entrepreneur training and support for our local community
 - Involving team members living in the local community in participating in hotel activities organised for the guests such as Flash Mob dance, Manze lakaz, a local traditional food concept.

15.5 Benefits of economic activities to local people:

15.5.1 For the activities described above, what income or benefits do local communities (including men and women) derive directly from the site proposed as a biosphere reserve and how?

The proposed Biosphere Reserve would offer enumerable opportunities and benefits mainly in terms of ecotourism opportunities that may enhance the hotel business. The biosphere reserve will create international visibility for the area and this in turn attracts more tourists/visitors. These would have positive impact to the local community in terms of job creation, development of small and medium enterprise and encourage youth integration to the economic and social development. Training opportunities offered by the hotels themselves are more and more available to the youngsters of the neighbouring villages in view of improving their employability.

With respect to the tourism industry, our island was mostly known as a destination with regards to its sun, sea and sand. In order to cope with the ever-changing demand and to have a more complete edge with other countries, the government has implemented a new strategy; Green tourism. This diversification has created new opportunities in the field of eco-tourism.

For those who love nature, there is much to contemplate and a vivid example is the Black River Gorges National Park, which extends over 6500 hectares and provides a haven to endangered native plants and animals. It is home to around 311 species of native and endemic flowering plants and nine species of birds that are only found in Mauritius. Nevertheless, there is also private sectors which have ventured in eco-tourism mainly in the BR region. This new niche has triggered the number green tourists which had positive impact with regards to creation of job opportunities for the local community. There is also boom in local products demands such as

handicrafts, local food, artistic creations and other activities ranging from trekking to canyoning to horse-riding, all offering exceptional panoramic views over the beautiful Mauritian landscape.

The Sugar Estate CSBO is an important employer to the local communities. The Hospitality, Agribusiness and Real Estate activities of Heritage Resorts, CSBO and VBO, currently employ 421 people in the region, which represents 20% of the population employed by the group in Bel Ombre. For the Tamassa Resorts, out of 197 staffs living in the south, 46 live in the neighbouring village.

In addition, this has enhanced opportunities for other services such as transport rental agencies, tour operators, supply of seafood, fruits & vegetables, entertainment, restaurants, handicrafts/souvenir shops, as well as maintenance / gardening. This has a positive influence in terms of upgrade of living standards through enhance education and job satisfaction.

15.5.2 What indicators are used to measure such income or other benefits?

A Social Impact Assessment & a Social Needs Analysis study of the 4 villages of the vicinity were assessed in 2006 and recently in 2017 and this has been used as baseline information.

The Annual Statistic Report from the Central Statistics Office would be used as indications to measure such income or other benefits.

15.6 Spiritual and cultural values and customary practices:

(Provide an overview of values and practices, including cultural diversity).

15.6.1 Describe any cultural and spiritual values and customary practices including languages, rituals, and traditional livelihoods. Are any of these endangered or declining?

Mauritius is a multi-ethnic country with several religious denominations. Each Mauritian citizen can live his/her worldview in all liberty. The people of Mauritius originated from different parts of the world mainly from Asian, African European continents. Mauritius is a religiously diverse nation and is often used as example of numerous religious communities living in harmony.

Most of the local residents speak several languages. They use many languages and dialects as means of communication and the multi-ethnic characteristics of Mauritius make it a multi-lingual country. The official language is English but other languages such as: Mauritian Creole, French, and ethnic languages such as Hindi, Telugu, Tamil, Malayalam, Marathi, Urdu, or Mandarin are also used.

The traditional livelihood of the local people is mainly agriculture and fisheries. But due to economic diversification especially in tourism and provision of services sector has led to demands in new fields, most of the young generation seize this opportunity for economic and educational growth and have shifted from the tradition work to novel jobs appeal. The traditional livelihood will unfortunately disappear in the long run.

15.6.2 Indicate activities aimed at identifying, safeguarding, promoting and/or revitalising such values and practices.

At present the activities have been carried out in isolation with the different stakeholders, it is expected that there will be a more concerted approach with the nomination of the Biosphere Reserve.

15.6.3 How should cultural values be integrated in the development process: elements of identity, traditional knowledge, social organizations, etc.?

The Management Plan should aim at promoting research and identify any such values for the other region for the proposed extension of the BR.

15.6.4 Specify whether any indicators are used to evaluate these activities. If yes, which ones and give details.

(Examples of indicators: presence and number of formal and non-formal education programmes that transmit these values and practices, number of revitalisation programmes in place, number of speakers of an endangered or minority language).

Indicators not yet developed.

16. LOGISTIC SUPPORT FUNCTION:

16.1 Research and monitoring:

16.1.1 Describe existing and planned research programmes and projects as well as monitoring activities and the area(s) in which they are (will be) undertaken in order to address specific questions related to biosphere reserve management and for the implementation of the management plan (please refer to variables in Annex I).

A formal management plan for the whole BR is under preparation and it will include various aspects of research, education and monitoring. The finalisation of the management plan will include the contribution of the relevant stakeholders (government, private entities, academia as well as the general public). This management plan will go through public consultation before final endorsement by the Government.

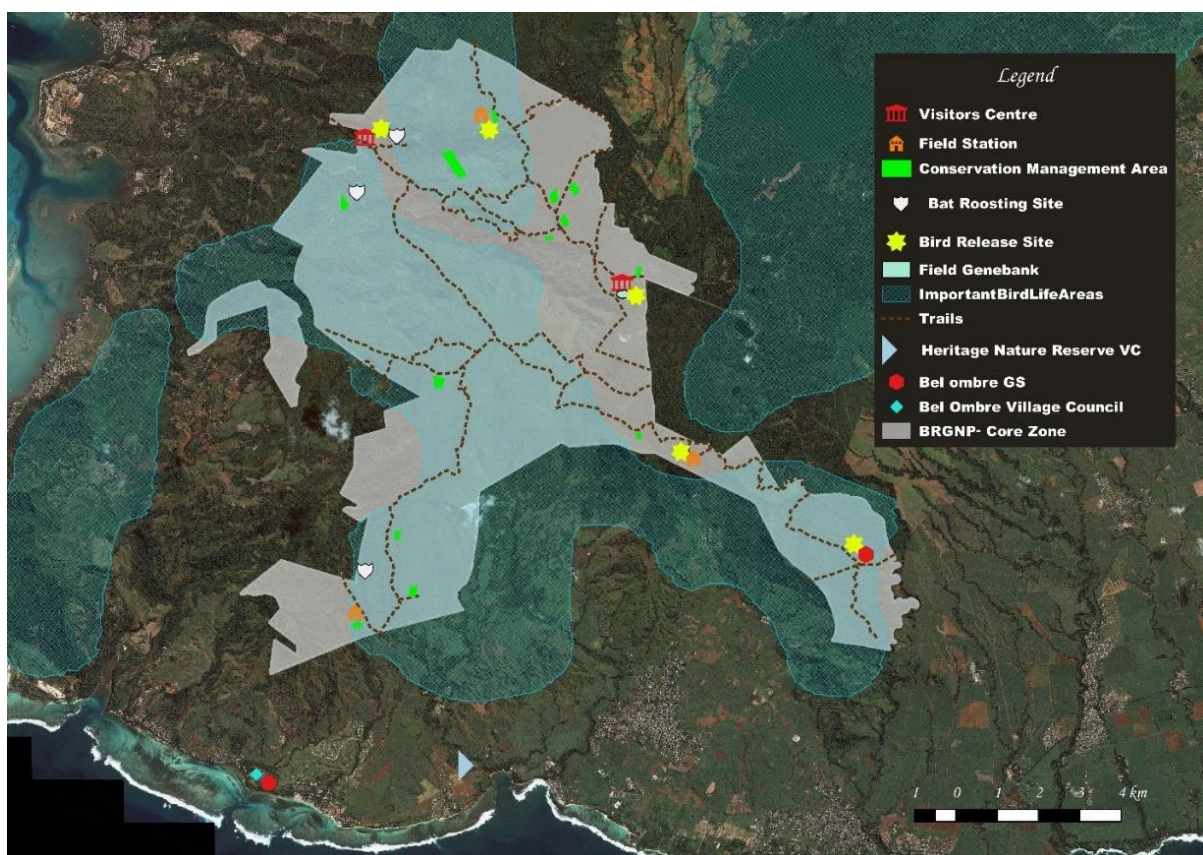


Figure 38: Research and logistics in proposed Biosphere Reserve

Research activities

Core zone

Black River Gorges National Park Management Plan (2018 - 2021) was unveiled on 26th July 2018 by the Minister of Agro Industry and Food Security. The framework presented in this

Management Plan sets a trajectory for the sustainable use of the Park, while safeguarding its essential values at the same time. The Management Plan took on board all inputs from relevant stakeholders, hence ensuring its effective implementation. Education and research are one of the Action Categories defined in the Management Plan and read as follows:

“Education and Research relates to the potential of the National Park to promote and support education and research”.

Early research and conservation work on active native vegetation restoration in Mauritius dates from last century. The first clearly documented example of active native vegetation restoration in Mauritius dates from the early 1940s with the establishment of a 0.1 ha weeded forest plot at Macchabée (now part of the Black River Gorges National Park – core zone) by Reginald E. Vaughan and Paul Octave Wiehe (Vaughan & Wiehe 1941).

With regards to research, the core zone provides opportunities for people to learn about and understand Mauritius’ natural environment, its species and the fragility of its ecology. The area is recognised as a world recognised centre for ecological restoration that provides opportunities for scientific studies and research.

There are numerous ongoing research programmes already being implemented on various themes such as fauna conservation, captive breeding programmes and *in-situ* management of populations in the wild which has contributed greatly to the persistence of avian species such as Mauritius Kestrel (*Falco punctatus*); Pink Pigeon (*Nesoenas mayeri*); Echo Parakeet (*Psittacula eques*).

The *Pteropus niger* (Mauritius fruit bat) is the only remaining endemic mammal in Mauritius and is commonly found in the National Park and in the valleys south of Plaine Champagne. This species population is surveyed yearly with numerous roosting sites found within the national park and in areas rich in native forest cover.

With regards to flora conservation, numerous researches are being carried and some research outcomes have been incorporated in the species and their ecosystem management programmes such as propagation and monitoring of critical endangered species, restoration of sites by removal of invasive species and reintroduction of native plants where regeneration is negligible. Under the GoM/UNDP/GEF project “Expanding Coverage and Strengthening Management Effectiveness of the Protected Area Network (PAN) in Mauritius” more than 340 hectares have been restored and the cost of operation have been reduced by three-fold. A booklet entitled

“Good Practice Guide to Native Vegetation Restoration in Mauritius” has been completed in 2018. It was finalised through a multi-sectoral approach which took into consideration all the research and inputs from all studies and through shared knowledge from all relevant stakeholders. This project has also produced numerous awareness materials such as booklets on terrestrial biodiversity, billboards, roller banners, posters, national photo competition and several clips to as to sensitise the public at large on importance of biodiversity.

Buffer zone

Along the buffer zones, negligible research has been carried out. However, this component will be integrated in the future management plan for the whole biosphere reserve as there are some important aspects of biodiversity and ecosystem which still prevails.

Transition zone

There are several projects which have been undertaken in the transition zone mainly with respect to the marine ecosystem.

The NGO Reef Conservation has undertaken a project entitled ‘Ridge to Reef Ecosystem Approach to Restoration Demonstration Project – Jacotet River’. The main objectives of the project are:

- To incorporate a ridge to reef ecosystem-based approach for the restoration of the Jacotet river corridor for biodiversity protection and exchange.
- To implement holistic management practices in critical areas along the river corridor to reduce negative impacts including soil erosion, and for the protection of downstream coastal and lagoon ecosystems through the production of a restoration and management plan as well as increase capacity-building for all relevant stakeholders.
- To develop a partnership approach among NGOs, key experts, the private sectors as well as Government institutions. The Project was funded by AFD through IOC.

This project also addresses some key areas within the buffer zone. It clearly provides a proper harmony between the terrestrial and marine inter-linkage.

The Ministry of Ocean Economy, Marine Resources, Fisheries and Shipping has an ongoing mangrove replantation campaign. This is an important component for promoting a more resilient coastline in the advent of climate change impacts. The South West coastline has many

patches where mangroves were reintroduced to provide better shoreline stabilisation. The local community has also been engaged in some aspects of marine conservation implemented by public, private sectors and NGOs such as coral farming, lagoon monitoring and impacts of wetlands on the marine ecosystem.

However, gap analysis has to be carried out taking into account variables relevant to the proposed BR during the preparation of the management plan. There are some topics with regard to the historical and cultural aspects of the National Park, on wetlands ecosystem as well as on the impact of climate change on native biodiversity which will have to be addressed.

Research on the socio-economic aspects has been really understated and would also be earmarked in the future management plan.

16.1.2 Summarize past research and monitoring activities related to biosphere reserve management (please refer to variables in Annex I).

In the early days, conservation and research were more geared towards species conservation namely avifauna species (e.g. Kestrel, Pink pigeon, Echo parakeet) as well as for very rare native flora species. In the meantime, this traditional method of conservation has evolved and a more holistic approach was adopted for the conservation of a functional and resilient habitat. There are numerous studies which have enabled policy makers as well as site managers to adopt this approach. There are several studies being carried out by both local and international institutions.

The National Parks and Conservation Service has long been undertaking research in collaboration with local and international research institutions. Numerous studies have been carried out as evidenced by the list of scientific publications (See Annex 3)

16.1.3 Indicate what research infrastructure is available in the proposed biosphere reserve, and what role the biosphere reserve will play in supporting such infrastructure.

In the core area there are four field research stations, namely: Plaine Lievre, Plaine Paul (Pigeon Wood), Bel Ombre and Combo. A new facility for the research and monitoring for biodiversity conservation has been built in 2013 at Pétrin. Two additional bird release sites at Lower Black River Gorges and Pétrin have been also completed and are fully operational.



Figure 39: Native Bird Release site at Pétrin

These infrastructures are important for monitoring of endemic flora and fauna species as well as control of invasive alien species.

For the future BR, this infrastructure will act as a catalyst for further research in various thematic areas as well as for generating new funding sources. It will also enable better private and public sector collaboration.

With the new impetus provided through the international recognition by UNESCO of the extended BR, it is expected that even more researchers and students from the University of Mauritius and as well as scientists from abroad will conduct studies in different thematics at this site. Studies will also be encouraged on human-environment relationships in the fields of economy and sociology (see also Section 16.2 below).

16.2 Education for sustainable development and public awareness:

16.2.1 Describe existing and planned activities, indicating the target group(s) and numbers of people involved (as “teachers” and “students”) and the area concerned.

Education for sustainable development is a fundamental asset of the proposed BR and contributes to achieving the Government’s vision 2030 which aligns national policies and plans to targets of the SDGs. The aim is to ensure inclusive and equitable quality education and promotes lifelong learning opportunities for all.

There is a wide spectrum of existing activities within the different zones of the BR that sustains the SDG 4. These include and are not limited to awareness and sensitisation programs on

terrestrial and marine biodiversity conservation, history and cultural assets of the BR, hospitality and sustainable environment practices.

- School curriculum (primary and secondary level)

The importance of conservation of biodiversity is included in the school syllabus which targets students' age groups from 6 years to 21 years.

- Graduate and post graduate programmes

Students and researches undertake field and research studies pertaining to native terrestrial biodiversity in the BR. As a matter of fact, graduate and post graduate students also undertake research studies as part of fulfillment of their end of year dissertation. The Post Graduate Diploma Programme in Endangered Species Recovery Programme (PGDip) run by Durrell Wildlife Conservation Trust in collaboration with the NPCS and the NGO MWF proved to be one of the most impacting and successful education programme in the BR for specialised training in endangered species recovery. The PGDip course targets both local and international students across the world.

- Visit in the BR

The number of students in the BRGNP for the year 2017 was around 3,300. Conservation areas within the BR such as bird release sites, visitors' centres, trails as well as conservation management areas are mostly visited by students for educational purposes.

- Conservation activities



Figure 40: School community involved in the restoration of native forest.

Forest restoration activities such as native tree planting, cleaning and removal of invasive alien species (Chinese guava plants) are also undertaken by the school community. It is noteworthy that the private sectors and NGOs have actively supported restoration of native forests through engaging youth from the neighboring community. There are occasional guided educational tours

for visiting researchers and other people such as distinguished members of the civil society, e.g. Force Vive and parliamentary (SADC) in the BRGNP to take cognizance of sustainable natural resource management within the SADC biosphere region.

Gaps and issues

Currently there is no harmonised strategy for education and sustainable development for the whole BR. The proposed management plan for the BR would integrate a holistic educational development strategy and promote the ridge to reef education and sustainable development programme through school awareness materials including talks, pamphlets, brochures and clips and videos.

In addition, the inclusion of the UNESCO Man and Biosphere Programme and the goals and functions of the BR would be advocated in school programmes.

16.2.2 What facilities and financial resources are (or will be) available for these activities?

Facilities

BRGNP has four field research stations which provide accommodation for field staffs working on threatened species recovery programmes. The field research stations are adjacent to bird release sites and in some cases native plant propagation facilities. The field stations have been established to facilitate research and monitoring of the fauna and flora. This is part of the conservation strategy that was initiated to re-introduce threatened bird species in the wild such as the Mauritius Kestrel, Pink Pigeon and the Echo Parakeet.

It is important to highlight that all research projects on Native Terrestrial Biodiversity within the core and buffer of the BR is subject to approval from the Parent Ministry and regulated by the NPC. Scientific cadre from the NPC coordinates and often acts as Supervisors for graduate and post graduate research studies.

The transition zone of the BR accommodates primary, secondary schools and social welfare centres for community development.

Information and knowledge on historical and cultural aspect of the BR is facilitated through an information desk of Heritage Nature Reserve and the Racing Republic hosted by the private sector and established in an ancient French governors' summer house. There are plans to have facilities for a concept developed by Heritage Nature Reserve for setting up a developed

Conservatoire Tropical de la Nature (Concept) - Forest Life with a Visitors' Information Centre adjacent to the UNESCO Biosphere Reserve entry.

Heritage Nature Reserve invites visitors to discover the authentic South West coastal region of the island depicting its history and rich biodiversity. Visitors are also offered a plethora of sport activities.

Their staffs (Reserve Rangers/Tour Guides) are fully trained in Mauritian ecology and to the highest standard of health and safety to ensure better service to the visitors.

With this new visitors' center found on the boundary of the Nature Reserve, there is scope to extend the discovery offer of Heritage Nature Reserve. Propertyed with 1,300 hectares of preserved nature, the latter is also dotted with an amazing playground that beautifully serves as exploration for visitors including Mauritians and foreign tourists.

Heritage Nature Reserve has also developed a concept namely the Conservatoire Tropical de la Nature (Concept)- River Life with a Visitor Information Centre adjacent to Jacotet River.

In the near future, a Conservatoire Tropical de la Nature (2020) in cooperation with the Musée Oceanographique de Monaco will be set up with a focus on client education of lagoon/coral marine life and scientific research.

There is also the project of setting up of an Academia developed by the Rogers Group to initiate local communities and youngsters on sustainable activities.

The plan is to also include aspects of conservation of the natural resources within the academia.

Financial resources

At the present state, each organisation is funding its own project. For the core zone, all the funding is provided through budget allocations from Central Government, GEF/UNDP project, National Parks Conservation Fund and NGOs. The private sector is funding its own projects. The creation of the Biosphere Reserve Advisory Committee will look into the harmonisation of activities including a Financial Mechanism and resource mobilisation for the effective and efficient running of the proposed BR to attain its goals and objectives.

16.3 Contribution to the World Network of Biosphere Reserves

16.3.1 How will the proposed biosphere reserve contribute to the World Network of Biosphere Reserves, its Regional and Thematic Networks?

Mauritius is already party to the AfriMAB Network and is willing to contribute and participate fully to the network by sharing information and resources. Mauritius through the Macchabée – Bel Ombre Biosphere Reserve is also a member of the World Network of Island and Coastal Biosphere Reserves and participates regularly in workshops, meetings and forums. It also holds very good relationship with the UNESCO MAB and WNICBR Secretariats.

Mauritius can also create and establish a network of the Biosphere Reserve across the Indian Ocean Islands and promote exchanges of expertise and experience. This can be achieved through the already active Indian Ocean Commission which regroups five nations: Comoros, Madagascar, Mauritius, Réunion (an overseas region of France), and Seychelles.

Mauritius through Mr. V. Gopal is also a member of the research group regarding four other island biosphere reserve namely Menorca (Spain), Jeju Island (Republic of Korea), Principe Island (Sao Tome and Principe) and St. Kitts Island (Federation of St. Kitts and Nevis). This research team works on several aspects of biosphere reserves, such as on the impact of climate change and socio-economic evaluation. A focus is on the “Establishment of strategies responding to climate change on Island and Coastal Biosphere Reserves”.

16.3.2 What are the expected benefits of international cooperation for the biosphere reserve?

Mauritius is already benefitting from international cooperation in terms of support from the UNESCO Secretariat, WNICBR and AfriMAB. In addition, experts from Jeju (Republic of Korea) are also providing support for the preparation of the nomination dossier and capacity-building for staffs. This will definitely create an environment of opportunity to benefit from international cooperation through sharing of information and expertise, exchange programmes as well as funding opportunities. Our BR can also be used as a model for other countries (especially Small Island States) to follow and to provide greater visibility for the World Network of Biosphere Reserves.

Through this BR, Mauritius will be included worldwide in various networks and will benefit from:

- Biosphere Reserve will help Mauritius to contribute to achieve International sustainability targets such as SDGs, Aichi Targets.

- Greater opportunities for development initiatives in the future.
- Poverty reduction, creating more jobs in the area and upgrading the standard of living of inhabitants in the BR.
- Possibilities to attract international funding to the region where more opportunities would arise.
- International expertise and support on BR related fields.
- Increasing visibility for the area and attracting more tourists.
- Facilitating collaborative management between public, private sectors and local communities to the benefit of the region.
- Promoting Co-management where each stakeholder has an equal say in management decisions.

16.4 Internal and external communication channels and media used by the biosphere reserve:

16.4.1 Is (will) there (be) a biosphere reserve website? If yes, what is its URL?

At present the Government is posting any matter related to the core zone on its relevant websites, whereas the private sectors have their own websites with respect to the buffer and transition zones. The plan is to have a single consolidated website to display all the zones, objectives, functions and activities of the BR.

The Native Terrestrial Biodiversity and National Parks Advisory Council might have an overarching view on the content and administration of the website.

16.4.2 Is (will) there (be) an electronic newsletter? If yes, how often will it be published?

It is not yet available, but there are plans to produce electronic awareness materials such as pamphlets, brochures, posters as well as newsletters and magazines.

16.4.3 Does (will) the biosphere reserve belong to a social network (Facebook, Twitter, etc.)?

Presently, the Government organisations managing the core zone do not have any social media network. Each private sector organisations have their own means of social media

communications. There will be plan for a communication strategy for the whole biosphere reserve.

17. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION:

[Describe the following characteristics in the prospective that the site is being designated.]

17.1 Management and coordination structure:**17.1.1 What is the legal status of the biosphere reserve?**

There is currently no dedicated law for the whole of the proposed biosphere reserve in Mauritius but the particular zones earmarked have different level of protections.

The Black River Gorges National Park as the biosphere reserve's core zone has been conferred the highest level of protection. It was established by proclamation of the President of Mauritius on 15 June 1994 under Section 11 of the Wildlife and National Parks Act 1993 which has now been repealed and replaced by the Native Terrestrial Biodiversity and National Parks Act 2015 to give further protection to the native species.

All the buffer zones for the biosphere reserve have been designated by the Minister of Agro Industry and Food Security under the provision of Section 15 of the Native Terrestrial Biodiversity and National Parks Act 2015. The State Forest Land has been leased under the Forests and Reserves Act 1983 to private entity for shooting and fishing. These activities are regulated by the Forestry Service under this Act.

Actions have been initiated for the transition zone which is within the settlement boundary of the St Martin and Bel Ombre Village and part of private land to be defined within the Development Planning Scheme by Ministry of Housing and Lands.

17.1.2 What is the legal status of the core area(s) and the buffer zone(s)?

See section 17.1.1 above.

It is important to add that it is the first time that buffer zones have been declared by the Government to be part of the biosphere reserve. The biosphere reserve also fulfills international obligations mainly regarding SDG and CBD Aichi Targets mostly with respect to increasing its protected area networks. There has been an intensive consultation process whereby it is also the first time that a private entity has declared part of its land as buffer zone.

17.1.3 Which administrative authorities have competence for each zone of the biosphere reserve (core area(s), buffer zone(s), transition area(s))?

All the activities of the proposed biosphere reserve will be regulated and monitored by the Native Terrestrial Biodiversity and National Parks Advisory Council. Each zone has its own respective administrative authorities.

Table 17: Administrative authorities of the Biosphere Reserve

Biosphere Reserves Zones	Administrative Authority	Role and Responsibilities
Core Zone	National Parks and Conservation Service under the Aegis of the Ministry of Agro Industry and Food Security	Management of the Black River Gorges National Parks and Conservation Service according to an Act through the Management Plan approved by the Cabinet
Buffer Zone	National Parks and Conservation Service	Preparation of a Management Plan for the buffer zones in consultation with the private owners and the lessees.
	Private Land Owners	Managing the buffer zone according to the Management Plan
	Forestry Service under the Aegis of the Ministry of Agro Industry and Food Security	For leased State Land Forest under the Forest and Reserves Act 1983
Transitional Zone	Savanne District Council and Ministry of Housing and Lands	For the management of the settlement boundary of the Bel Ombre and St Martin Village
	Ministry of Agro-Industry and Food Security	For the overall management of the BR

17.1.4 Clarify the respective competence of each of these authorities. Make a distinction between each zone if necessary and mention any decentralized authority.

The role and responsibilities of the respective authorities have been defined in Table 16 of section 17.1.3 above.

It is important to emphasise that the management of the core zone is carried out as per the Black River Gorges National Park Management Plan 2017- 2025 approved by Cabinet.

The National Parks and Conservation Service is also required to prepare a management plan for all buffer zones declared as per the Act.

A Management Plan is intended to be prepared to integrate the whole of the proposed BR.

The Native Terrestrial Biodiversity and National Parks Advisory Council, with an extended Terms of Reference, will be the overall regulating body for the BR and would regroup a range of institutions as well as NGOs, private sector entities, local government and local community councilors and representatives.

17.1.5 Indicate the main land tenure (ownership) for each zone.

Core Zone

The land tenure of the core zone and the State Land Buffer Zone are under the jurisdiction of National Parks and Conservation Service and the Forestry Service respectively. Being State Lands, they are owned by the Government of Mauritius. The leased land is under leased agreements and are governed by the Forestry Service under the Forest and Reserves Act 1983 (see detail map in Chapter 19)

Buffer Zone

The buffer zone with serial No A to E is owned by private entities.

Transition Zone

The Transition Zone will be as per the settlement boundary for the village of St Martin – Bel Ombre as defined by the Outline Planning Scheme for the Savanne District Council.

17.1.6 Is there a single manager/coordinator of the biosphere reserve or are several people in charge of managing it? If one manager/coordinator, who designates and employs him/her (national authorities, environmental administrative agency, local authorities)?

The Ministry of Agro Industry and Food Security is responsible for the management of the whole biosphere reserve and has to report to the Cabinet and the Parliament of the Republic of Mauritius.

The Government has the vision to include further areas within the proposed biosphere reserve upon acceptance by UNESCO of the present nomination proposal. The governance structure will be as follows:

- The Native Terrestrial Biodiversity and National Park Advisory Council would be responsible for the overall monitoring and regulation of activities within the whole BR as per

their Terms of Reference. A management Committee will be set up to manage the overall issue of the BR.

- The National Parks and Conservation Service is responsible for the effective and efficient management of the core zone.
- The State Land leased buffer zones are regulated by the Forestry Service. The National Parks and Conservation Service will be required to produce a management plan for the management of the buffer zone.
- The transition zone will be managed by the local authorities and the private sector upon consultation process.

Several public institutions will be also involved and responsible for the activities as per their mandates. Ministry of Social Security, National Solidarity, and Environment and Sustainable Development (Environment and Sustainable Development Division) will be responsible for regulating development within the transition zone and ensure protection of environmentally sensitive areas; the Ministry of Ocean Economy, Marine Resources, Fisheries and Shipping will be responsible for matters pertaining to mangroves (coastal areas) and marine protection; and the Ministry of Housing and Lands for delivering development permits amongst the main ones.

17.1.7 Are there consultative advisory or decision-making bodies (e.g., scientific council, general assembly of inhabitants of the reserve) for each zone or for the whole biosphere reserve?

- o **If yes, describe their composition, role and competence, and the frequency of their meetings.**

There has not been a dedicated structure for the time being but the Native Terrestrial Biodiversity and National Park Advisory Council is already a statutory body set up under provision of Part II of the Native Terrestrial Biodiversity and National Park Act 2015. The members and the role of the Council are defined under the Act.

The Committee would have the authority to establish a Management Committee to look into the matters pertaining to the day to day running of the Biosphere Reserve and constituted of experts on related fields to advise the Committee on technical matters.

The final decision-making process will be upon the Ministry of Agro Industry and Food Security.

17.1.8 Has a coordination structure been established specifically for the biosphere reserve?

- o **If yes, describe in detail its functioning, composition and the relative proportion of each group in this structure, its role and competence.**
- o **Is this coordination structure autonomous or is it under the authority of local or central government, or of the manager/coordinator of the biosphere reserve?**

Currently, up till the submission of the application for re nomination of the Biosphere Reserve, the UNESCO MAB National Point was entrusted to look into all the matters related to the biosphere reserve and was in charge of drafting the Nomination Dossier. Consultations with all stakeholders and coordinating the whole structure of the biosphere reserve was also part of his duty.

The Council proposed in Section 17.1.7 would be responsible for coordinating all aspects of the Biosphere Reserve after the submission of the application for re nomination.

17.1.9 How is the management/coordination adapted to the local situation?

The Management Plan for the Biosphere Reserve would define the modalities for engaging in active communication, discussion and consultation with the local community residents, elected members, the Local Authority as well as the private sector within the transition area in particular. Clear agendas have to be set for the promotion of the BR and which will occur following approval from the Advisory Council and the Ministry of Agro Industry and Food Security.

17.1.10 Is there a procedure for evaluating and monitoring the effectiveness of the management?

The Management Plan for the Black River Gorges National Park specifies for the establishment for a Monitoring and Evaluation Committee to monitor progress of the planned activities from this management plan. As proposed, the committee should consist of relevant stakeholders including relevant NGOs. There are also recommendations to prepare an Annual Operational Plan, based on the Strategic Objectives, Action Categories, and defined **Specific, Measurable, Attainable, Realistic and Timely (SMART)** indicators. It has also been proposed that the Annual Operational Plan should also consider the performance of the staff members with attainable goals set within their key performance areas of their respective contracts. The Operational Plan

should be monitored on an ongoing basis and evaluated annually. The results should be used to set the priorities for activities for the following year.

The same model would apply while preparing the Management Plan for the Biosphere Reserve while integrating that of the core zone.

17.2 Conflicts within the biosphere reserve:

17.2.1 Describe any important conflicts regarding the access or the use of natural resources in the area considered (and precise period if accurate). If the biosphere reserve has contributed to preventing or resolving some of these conflicts, explain what has been resolved or prevented, and how this was achieved for each zone.

The current Black River Gorges National Park Management Plan has defined specific zonation within the National Park and dedicated zones have been defined for public use, where visitors are allowed to enjoy the beauty of the scenery and also access to regulated resources such as the strawberry guava which is an IAS for the native species. A “Biosphere Trail” is in plan to be set up, awaiting nomination of the new biosphere reserve to be inaugurated. The trail is planned to cut across all the three zones and include all the features of the BR. The Management Plan for the core zone has already determined the management of conflicts.

The Native Terrestrial Biodiversity and National Parks Advisory Council regrouping all the stakeholders would be a platform to discuss any related conflicts to the BR and to aim at resolving any problems. In addition, the proposed BR will be integrated in the relevant Outline Planning Scheme and National Development Strategy.

17.2.2 If there are any conflicts in competence among the different administrative authorities in the management of the biosphere reserve, describe these.

Existing conflicts emerge primarily among users of natural resources. The designation of protected areas and the biosphere reserve at large can give rise to conflicts between the tourism industry, local residents, fishermen and their association with respect to the utilization of the natural resources. Often, environmental activists and NGOs outcry with respect to development projects.

17.2.3 Explain the means used to resolve these conflicts, and their effectiveness.

The Advisory Council will be analyzing any such conflicts and try to resolve them. Conflict management already exists for the core zone management plan. This essential aspect will be defined in the management plan to be developed.

17.3 Representation, participation and consultation of local communities:**17.3.1 At what stages in the existence of a biosphere reserve have local people been involved: design of the biosphere reserve, drawing up of the management/cooperation plan, implementation of the plan, day to day management of the biosphere reserve? Give some specific examples.**

During the event of the Macchabée – Bel Ombre Biosphere Reserve, there were very limited consultations with local communities as the BR was constituted only of a core zone. However, the preparation of the Black River Gorges National Park Management Plan emphasized the importance of community participation: **“Community Involvement”** relates to the need to provide opportunities and benefits to communities surrounding the BRGNP and the Mauritian society at large, for them to be able to provide input into the National Park through clear lines of communication”.

In the preparation of the current nomination dossier there has been wide consultation with the private sector and the local community as well.

Also see Section 13.4

The representative of the community has also been identified and proposed to be a member of the Native Terrestrial Biodiversity and National Parks Advisory Council.

The proposed management plan would also include the community and stakeholder involvement as preconceived in the BRGNP Management Plan.

17.3.2 Describe how the local people (including women and indigenous communities) have been, and/or are represented in the planning and management of the biosphere reserve (e.g., assembly of representatives, consultative groups).

In the process of preparing the management plan for the BR, a survey on the perception of the BR by the local community and public at large will be undertaken. The key research

organisations have been made aware of such a necessity which would address the implication and involvement of people in the planning and management of the BR.

During many of the meetings with the local community and the private sector as well, there were concerns about whether some of their activities would be restricted and questions on the benefits that the biosphere reserve would entail. After several awareness campaigns, meetings and explanations, local people were more confident and comfortable about the project and expressed their keen interest to be part of the newly designed BR. In this context it noteworthy to point out that it is the first time in Mauritius that a private sector namely the CSBO declared part its land as buffer zone to the core zone (see letter of acceptance). It is also the first time that a village has unanimously agreed to be part of the BR (see letter of acceptance).

The village councilor and District Council were also invited in the awareness workshop and for the validation of the nomination dossier.

17.3.3 Describe the specific situation of young people in the proposed biosphere reserve (e.g., potential impacts of the biosphere reserve on youth, consideration of their interests and needs, incentives to encourage them to participate actively in the governance system of the biosphere reserve).

The National Parks and Conservation Service has been carrying out conservation education programmes mainly. It is planned to include the UNESCO MAB Programme and the biosphere reserve within the curriculum in the education program at all levels so as to give a sense of pride for the youth in the natural resources. University students are also encouraged to undertake their research within the BR. Currently most of the research is geared towards biodiversity conservation in the core zone mainly.

There is need to further engage the youth in the BR as well as to recruit younger staff for the management of the BR.

17.3.4 What form does this representation take (e.g., companies, associations, environmental associations, trade unions)?

The village council elections are carried out in a democratic way and are regulated by the Electoral Commission. In general, residents of the St Martin Bel Ombre settlement boundary elect their representatives and the elected head of the community is then part of the village councils (which have a higher status and position in the communities) and then represents the locality in the Savanne District Council. All the information and consultation meetings have been

done with all the levels including the local representatives, village council and District Councils. For the private sector - mainly in the tourism industry - the meetings were carried out in groups except in some cases where individual meetings were required.

17.3.5 Are there procedures for integrating the representative body of local communities (e.g., financial, election of representatives, traditional authorities)?

At present there is no official procedure for the integration of the community. There is a plan to integrate the village representatives and the local authorities within the Native Terrestrial Biodiversity and National Parks Advisory Council and would have the task to communicate with the local community, associations and the private sector.

17.3.6 How long-lived are consultation mechanisms (permanent assembly, consultation on specific projects)? Make a complete description of this consultation. What are the roles of involved stakeholders compared to the role of the biosphere reserve?

There have been consultations with a wide range of stakeholders all along the process of preparing the nomination dossier. As mentioned in Section 17.3.1, the Management Plan for the core zone has already been approved by Cabinet and implementation has already been initiated by the NPC. The plan indicates and recommends community involvement and stakeholder consultation.

Importantly the preparation of the Management Plan for the BR would be a consultative process which would include a wide range of stakeholders and the same principle of community involvement and stakeholder participation would prime.

The Native Terrestrial Biodiversity and National Parks Advisory Council regrouping all relevant stakeholders will be imperative in planning and decision-making processes with the objective of promoting transparency and good governance.

17.3.7 What consultation mechanisms have been used, and who has been involved? Are they for specific purposes or long-term? What impacts have they had on decision-making processes (decisional, consultative or merely to inform the population)?

The UNESCO MAB National Focal Point together with a team of NPC has been responsible for spearheading the process for preparing the nomination dossier and for organizing and undertaking all consultative mechanisms.

As mentioned in Section 17.3.1 and 17.3.6, the various consultative processes will be integrated in the future Management Plan for the BR.

17.3.8 Do women participate in community organizations and decision-making processes? Are their interests and needs given equal consideration? What incentives or programmes are in place to encourage their representation and participation (e.g.: was (were) a “gender impact assessment(s)” carried out)?

The principle of gender equality and equal rights between men and women has always been high on the agenda of the Government of Mauritius. Women have been actively participating in all the biosphere reserve relevant processes and were involved with the drafting team for the preparation of the nomination dossier. There is, however, need to conduct some kind of research to understand the perception amongst women of the BR. This would be a proposal for the chapter on research in the Management Plan.

17.4. The management/cooperation plan/policy:

17.4.1 Is there a management/cooperation plan/policy for the biosphere reserve as a whole?

There is no management plan for the whole proposed BR. However, the Black River Gorges National Park Management Plan covered the whole of the Macchabée - Bel Ombre Biosphere Reserve but contained only the core zone. In addition, in 2016 a lagoon survey was commandeered from REEF Conservation’s marine biologists and a common Bel Ombre Lagoon Management Plan emerged as the way forward. Implementation of Lagoon Management Plan is in process.

17.4.2 Which actors are involved in preparing the management/cooperation plan? How are they involved?

The same principle applies as mentioned in Sections 17.3.1, 17.3.5 and 17.3.6.

17.4.3 Do local authorities formally adopt the management/cooperation plan? Are local authorities making reference to it in other policies and/or plans? If so, please provide details.

The local authorities would be an important stakeholder in the preparation of the management plan process as the BR would be mainstreamed in the respective planning scheme. There are already working sessions to define the list of regulatory activities and also devising an

implementation protocol for the processing of development applications within the proposed BR.

17.4.4 What is the duration of the management/cooperation plan? How often is it revised or renegotiated?

The Plan will be for a period for 5 years. The Management Plan for the core zone (Black River Gorges National Park) has an Operation Plan as well as a Monitoring Plan as stated in Section 17.1.10. The same principle would be applicable for the future management plan of the entire biosphere reserve.

17.4.5 Describe the contents of the management/cooperation plan. Does it consist of detailed measures or detailed guidelines? Give some examples of measures or guidelines advocated by the plan? (Enclose a copy).

The management plan to be developed will be customized as per the one of the core zone but will focus on a holistic approach for the BR.

The main principles of the Black River Gorges National Park Management Plan 2017-2022 remain as per the following action categories:

- 1.1 Ecological Management relates to biodiversity management, restoration of degraded ecological areas and the maintenance of ecological function and integrity;
- 1.2 Operational Management relates to the day-to-day management aspects of the BRGNP;
- 1.3 Community Involvement relates to the need to provide opportunities and benefits to communities surrounding the BRGNP and the Mauritian society at large, for them to be able to provide input into the National Park through clear lines of communication;
- 1.4 Visitor and Tourism Management relates to the tourism market and visitor activities that can be developed in the BRGNP, so as to provide a wide range of high-quality visitor experiences as well as putting a cost-recovery system in place;
- 1.5 Marketing and Awareness Creation relates to the need to create awareness about the National Park and what it has to offer;
- 1.6 Historical and Cultural Management relates to the archaeological, cultural and historical importance of the National Park; and

1.7 Education and Research relates to the potential of the National Park to promote and support education and research.

17.4.6 Indicate how this management/cooperation addresses the objectives of the proposed biosphere reserve (as described in section 13.1).

The BRGNP Management Plan fully addresses the conservation function of the BR as well as partly fulfilling the logistic functions. As far as for development, the intended management plan for the BR would serve to formalize the management functions and actions in addition to those of conservation and logistics with a view to encompassing all three zones.

17.4.7 Is the plan binding? Is it based on a consensus?

The preparation of the management plan for the BR is a highly consultative process with a wide range of stakeholders including publication of the draft in local media for public comments, representations and suggestions. The same principle would apply as per the one produced for the core and buffer zones where the development of the Management Plan is inscribed within the Section 16 of the Native Terrestrial Biodiversity and National Parks Act 2015. The process has been clearly described and includes the gazetting of the document making it a bidding instrument for management.

17.4.8 Which authorities are in charge of the implementation of the plan, especially in the buffer zone(s) and the transition area(s)? Please provide evidence of the role of these authorities.

The National Parks and Conservation Service would be the main institution managing the the Core Zone and monitoring activities of the Buffer Zone within the biosphere reserve under the umbrella of the Ministry of Agro Industry and Food Security as per the NTBNP Act 2015. The NPCCS has to work in collaboration with the Forestry Service for the management of the State Land buffer zone and the private sector for the privately-owned buffer zone. As far as the transition zone is concerned the collaboration of the Savanne District Council, the Ministry of Local Government and Outer Islands together with the Ministry of Housing and Lands would be essential. The Ministry of Agro Industry and Food Security remains the main decision-making body and would rely on the advice of the Native Terrestrial Biodiversity and National Parks Advisory Council. This governing principle would need to receive agreements after consultation with all stakeholders while preparing the management plan and gazetting to become statutory.

17.4.9 Which factors impede or help its implementation (e.g.: reluctance of local people, conflicts between different levels of decision-making).

There might be several factors which might impede the implementation:

- Setting up of an effective institutional arrangement might take time and depends in some cases of the motivation of lead organizations and decision-makers to embrace the importance of such initiatives.
- Limited staffing and resources.
- The management and the motivation of staff where the added responsibility if not acknowledged and incentivized would be an issue during implementation.
- Proper and effective framework for formalisation of collaborative work between public, private institutions and local community.
- Benefits sharing are well distributed and reaching the local community.
- Local community adherence to the project.
- Change in management decisions.

During the preparation of the management plan, a SWOT analysis has to be undertaken where stakeholders identify the Strength, Weakness, Opportunities and Threats which may impede or help in the implementation of the plan. These key challenges have to be addressed and action categories developed.

17.4.10 Is the biosphere reserve integrated in regional/national strategies? Vice versa, how are the local/municipal plans integrated in the planning of the biosphere reserve?

It would be integrated into national and international Strategies. It would be harmonized and mainstreamed within the NBSAP, SDGs, Climate Change Adaptation Plan of the UNFCCC, Tourism Strategy for Mauritius and the National Development Strategy. Mauritius being party of some important conventions and agreements such as UNESCO-MAB, WNIBR, CBD, Ramsar Convention, CITES, AEWA, the biosphere reserve would also contribute to achieve the country's obligations. The BR would be integrated with the Town and Country Planning Outline Scheme. Given that the site is also an Important Bird Area and KBA, and Mauritius being a biodiversity hotspot, contribution to these initiatives already exist.

17.4.11 Indicate the main source of the funding and the estimated yearly budget.

Ministry of Agro Industry and Food Security would be the main authority to allocate the appropriate budget for the implementation of the objectives of the Biosphere Reserve. The budget for the National Parks and Conservation Service would be consolidated and additional funds made available under the National Parks Conservation Fund. The table below provides the summary of expenditure for the National Parks and Conservation Service as per the government budget 2019/2020.

Table 18: Summary of Expenditure (Source: Government of Mauritius, 2019)

Details	2018/19 Estimates (*Rupees 000)	2019/20 Estimates (Rupees 000)	2020/21 Planned (Rupees 000)	2021/22 Planned (Rupees 000)
Recurrent Expenditure	58,700	68,300	68,400	69,100
Capital Expenditure	41,700	31,500	32,100	21,000
Total	100,400	99,800	100,500	90,100

**Indicative exchange rate on 25th August 2019 (1 US \$: Rs36.60)*

17.5 Conclusions:

17.5.1 In your opinion, what will ensure that both the functioning of the biosphere reserve and the structures in place will be satisfactory? Explain why and how, especially regarding the fulfillment of the three functions of biosphere reserves (conservation, development, logistic) and the participation of local communities.

The Black River Gorges – Bel Ombre Biosphere Reserve has a rich and unique ecosystem with several rare endemic species occurring only there. It is a site of high conservation value having natural and global significance. It represents such a diverse landscape ranging from the highest peak of Mauritius to the coastline regrouping some of the breathtaking sceneries. The proposed Biosphere Reserve would be one of the first attempts in Mauritius to reconcile biodiversity conservation with economic development for the benefits of the local community and the society at large. It would enhance the livelihood of local community while promoting sound

environmentally friendly sustainable practices. It would also considerably benefit and diversify the tourist industry and bring added value to the village of St Martin – Bel Ombre.

The present application would be the first phase of the Biosphere Reserve project. The Intention is to increase further the buffer and transition zones to achieve a bigger and contiguous landscape surrounded by more settlements and localities. It would all together serve as a model to become a larger Biosphere Reserve in the future. The Black River Gorges – Bel Ombre Biosphere Reserve will gain international recognition for this unique site. It will play crucial role in contributing to combat the impact of climate change to which island states such as Mauritius are vulnerable. The Biosphere Reserve will contribute towards achieving international targets such as Aichi Targets and SDGs. It would add to the list of Biosphere Reserve found within the Indian Ocean and may be setting a stepping stone to creating the Indian Ocean Network of Biosphere Reserve.

18. SPECIAL DESIGNATIONS:

[Special designations recognize the importance of particular sites in carrying out the functions important in a biosphere reserve, such as conservation, monitoring, experimental research, and environmental education. These designations can help strengthen these functions where they exist or provide opportunities for developing them. Special designations may apply to an entire proposed biosphere reserve or to a site included within. They are therefore complementary and reinforcing of the designation as a biosphere reserve. Check each designation that applies to the proposed biosphere reserve and indicate its name]

Name:

- UNESCO World Heritage Site**
- RAMSAR Wetland Convention Site**
- Other international/regional conservation conventions/directives (specify)**
- Long term monitoring site (specify)**
 - Fruit Bat (*Pteropus niger*) population survey carried out annually which started in 2004
 - Monitoring of flagship bird species of Mauritius namely the PinkPigeon, Mauritian Kestrel and Echo Parakeet
- Long Term Ecological Research (LTER site)**
- Other (specify)**

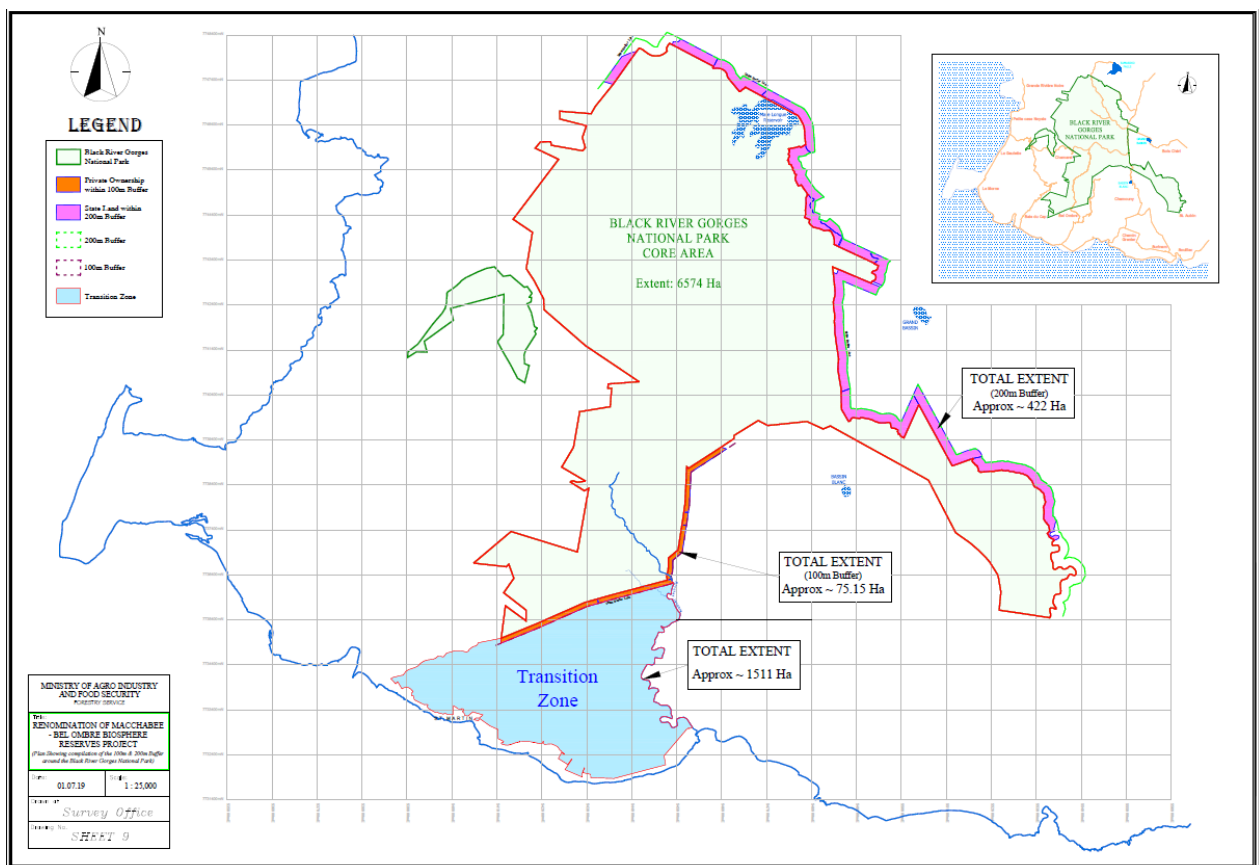
19. SUPPORTING DOCUMENTS (to be submitted with nomination form):

(1) Location and zonation map with coordinates

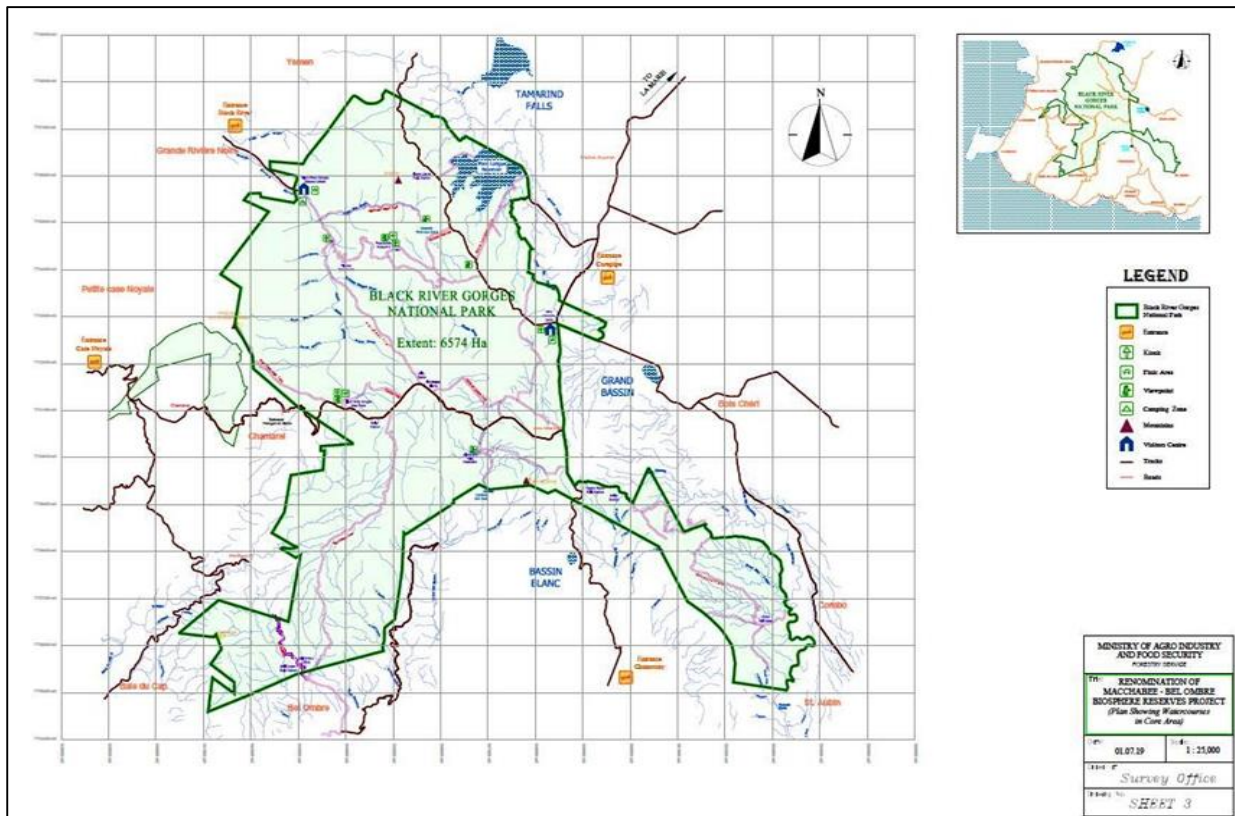
[Provide the biosphere reserve’s standard geographical coordinates (all projected under WGS 84).

Provide a map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve (Map(s) shall be provided in both paper and electronic copies). Shapefiles (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form. If applicable, also provide a link to access this map on the internet (e.g. Google map, website).]

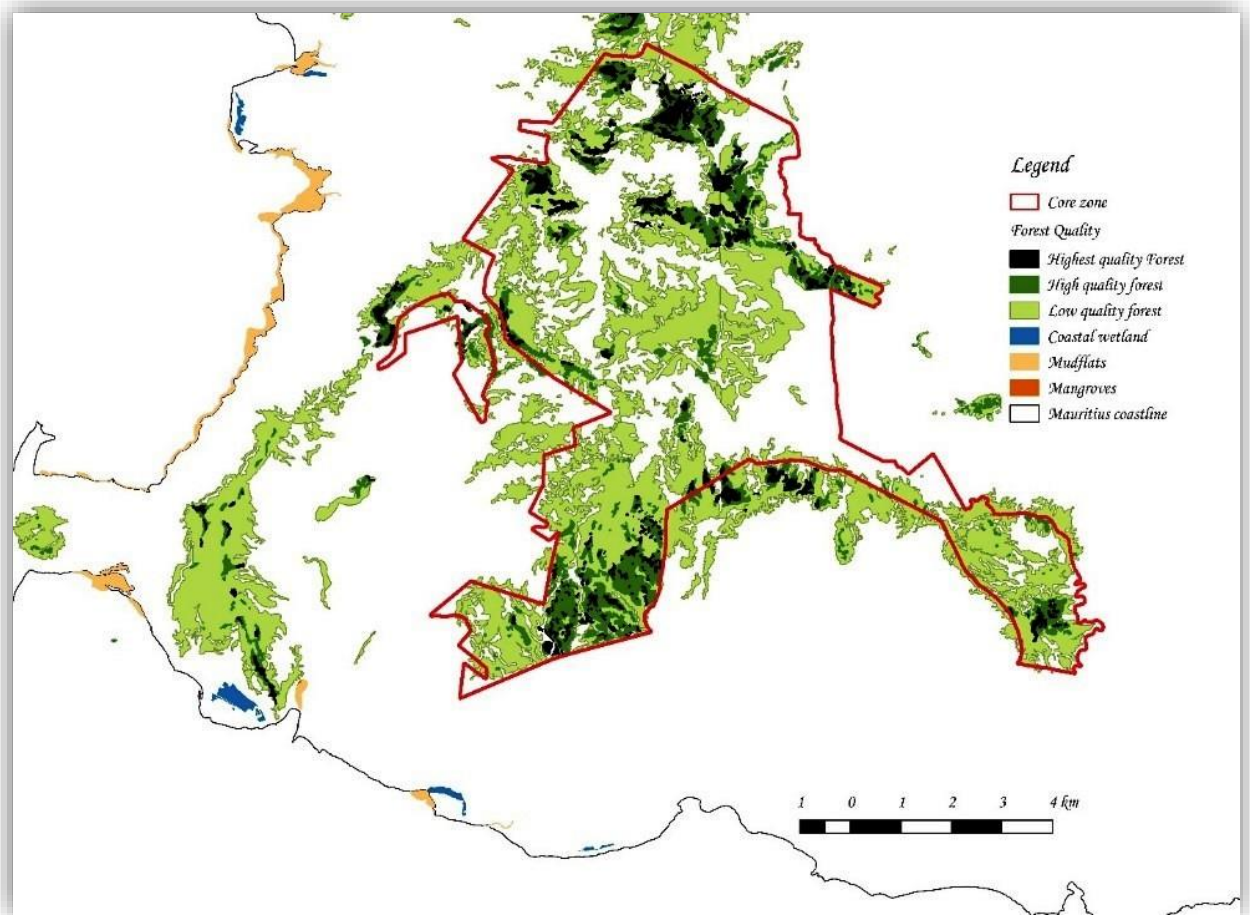
Maps and shapes files are provided in soft copies.



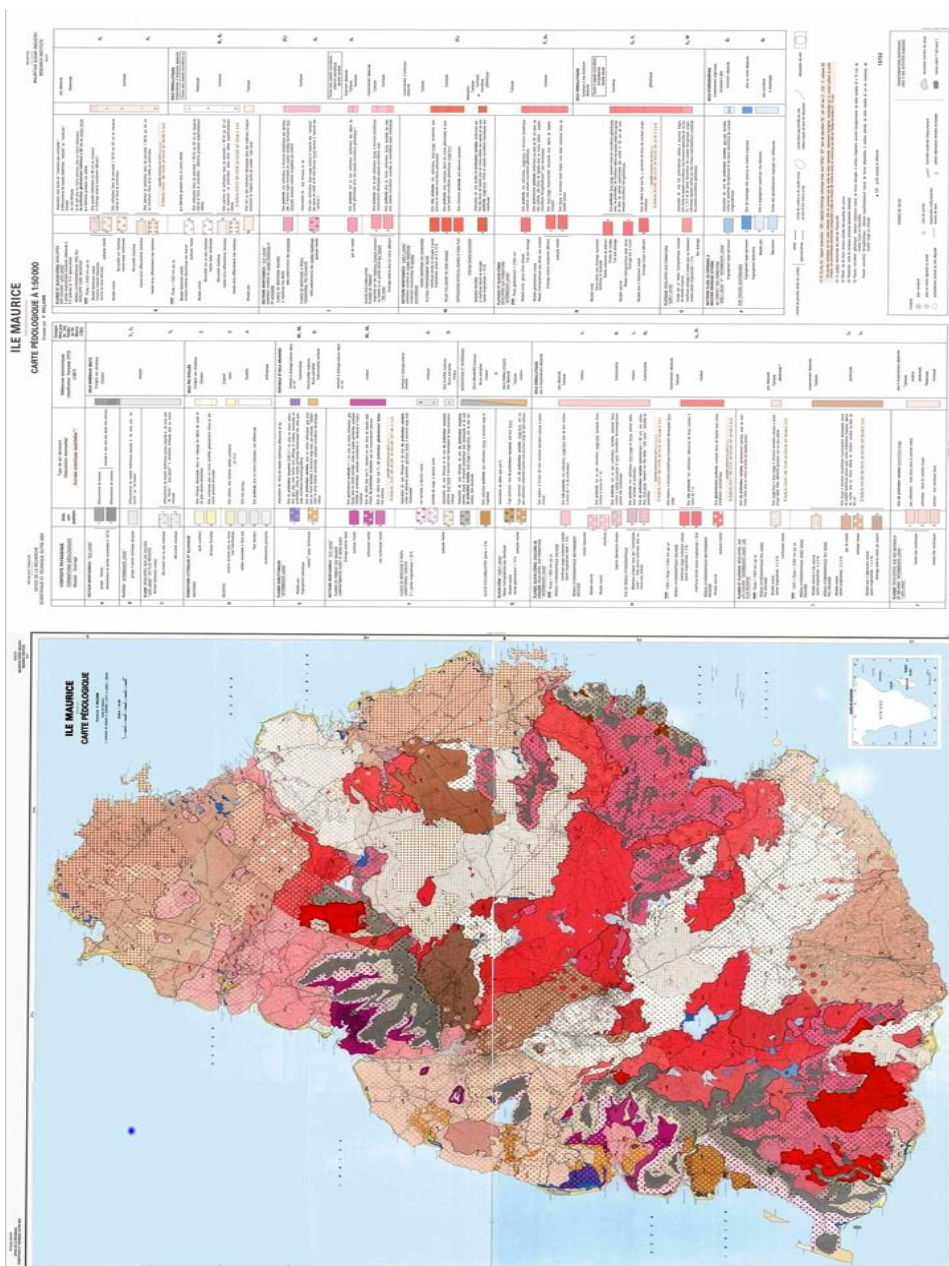
Map showing the location of the three zones



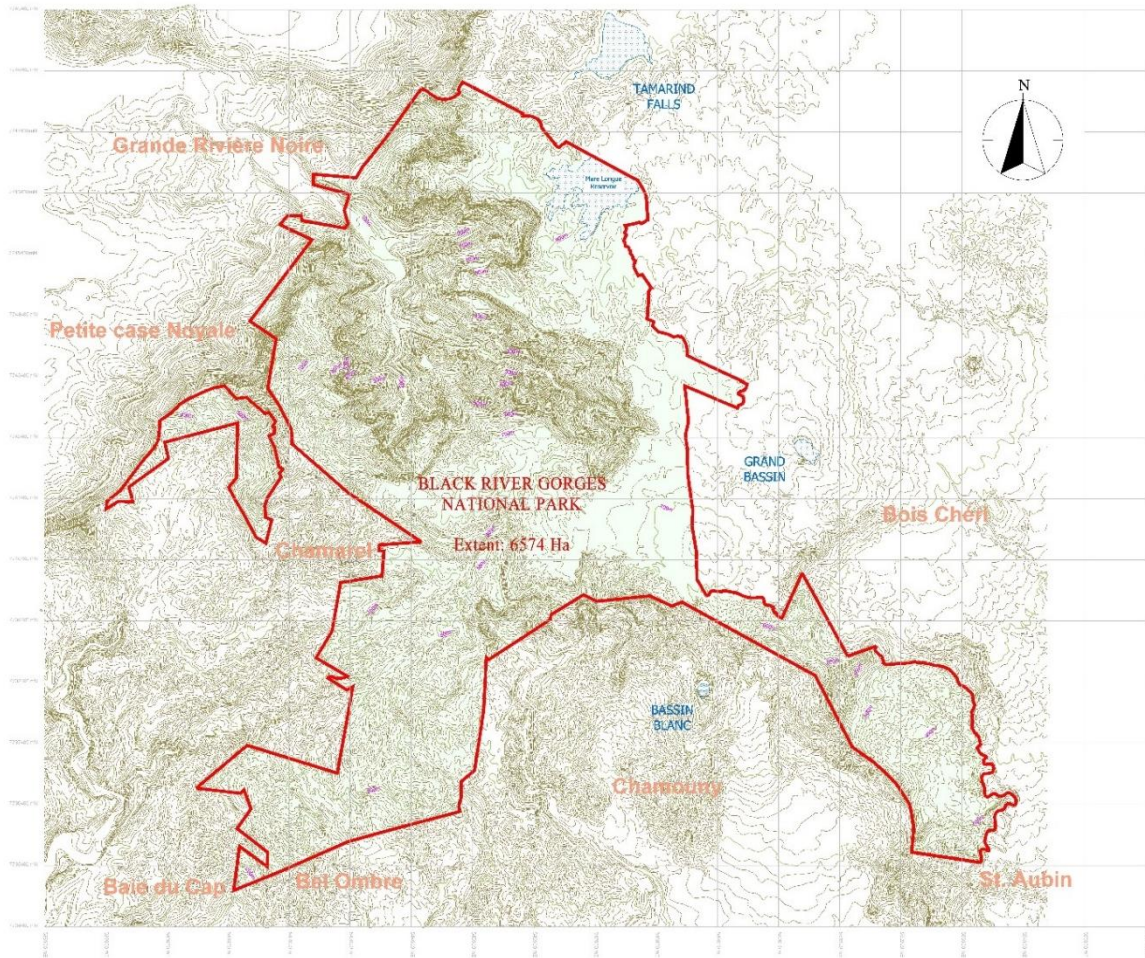
Map showing some of the rivers, streams and reservoirs in the Biosphere Reserve



Map showing Environmental Sensitive Areas and different types of habitat



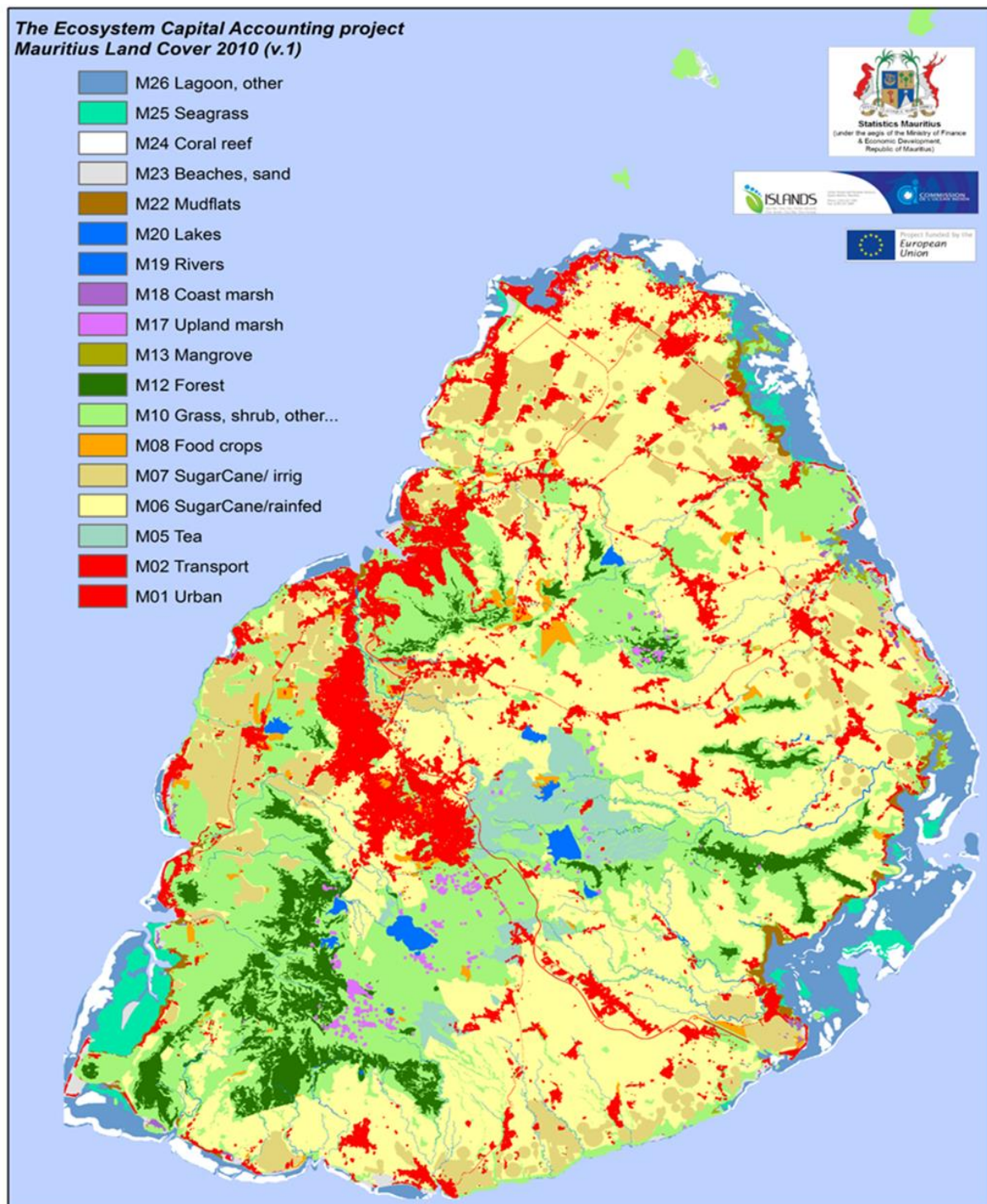
Map and table showing soil map of Mauritius



Contour lines for the proposed BR

(2) Vegetation map or land cover map

[A vegetation map or land cover map showing the principal habitats and land cover types of the proposed biosphere reserve should be provided, if available].



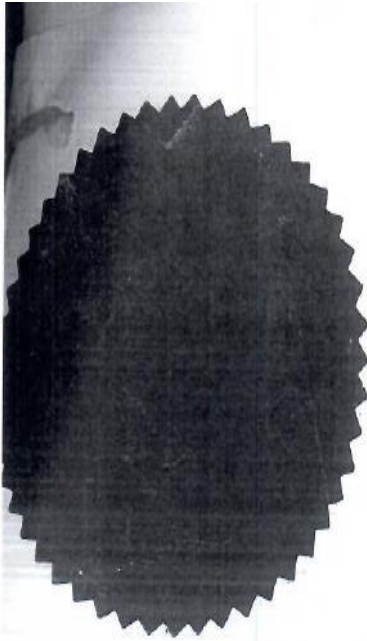
Land use in Mauritius (Weber 2014)

(3) List of legal documents (if possible with English, French or Spanish synthesis of its contents and a translation of its most relevant provisions)

[List the principal legal documents authorizing the establishment and governing use and management of the proposed biosphere reserve and any administrative area(s) they contain. Provide a copy of these documents.]

	Document	HTML Link (URL)
01	Native Terrestrial Biodiversity and National Parks Act 2015	http://agriculture.govmu.org/english/documents/acts%20and%20regulation/native%20terrestrial%20bd%20and%20national%20parks%20act%202015.pdf
02	Environment Protection Act 2002	http://environment.govmu.org/english/documents/epa%202002%20as%20amended%20in%202008-%20supreme%20court%20version.pdf
03	Forest and Reserve Act 1983	http://attorneygeneral.govmu.org/english/documents/az%20acts/f/page%202/forests%20and%20reserves%20act,%20no%2041%20of%201983.pdf

Proclamation notice for BRGNP



PRESIDENT OF THE REPUBLIC OF MAURITIUS

Proclamation No. 7 of 1994

TO DECLARE THE BLACK RIVER GORGES NATIONAL PARK

President of the Republic

CASSAM UTEEM – *By His Excellency CASSAM UTEEM, Grand Commander of the Order of the Star and Key of the Indian Ocean and President of the Republic of Mauritius.*

&c., &c., &c.

WHEREAS by section 11 of the Wildlife and National Parks Act 1993, it is enacted that the President may declare any State Land, nature reserve, Pas Géométriques or other land to be a national park or other reserve where the land fulfils the conditions specified in that section.

AND WHEREAS the land described in the schedule fulfils the above conditions.

NOW THEREFORE, by virtue of section 11 of the Wildlife and National Parks Act 1993, I do hereby proclaim and declare the land described in the Schedule to be a national park as from 15 June 1994 and to be known as the Black River Gorges National Park.

Given at State House, Le Reduit, this 15th day of June, one thousand nine hundred and ninety-four.

(4) List of land use and management/cooperation plans

[List existing land use and management/cooperation plans (with dates and reference numbers) for the administrative area(s) included within the proposed biosphere reserve. Provide a copy of these documents. It is recommended to produce English, French or Spanish synthesis of its contents and a translation of its most relevant provisions]

Black River Gorges National Park Management Plan -

<http://agriculture.govmu.org/English/Documents/npcs/blackriver.pdf>

(5) Species list (to be annexed)

[Provide a list of important species occurring within the proposed biosphere reserve, including common names, wherever possible.]

List provided in Annex 4 and Annex 5

(6) List of main bibliographic references (to be annexed)

[Provide a list of the main publications and articles of relevance to the proposed biosphere reserve over the past 5-10 years].

List provided in Annex VII

(7) Original Endorsement letters according to paragraph**1. Letter from CSBO****CSBO**

Compagnie Sucrière de Bel Ombre Limited
 Coastal Road · Domaine de Bel Ombre · Mauritius
 T +230 623 5068 F +230 622 6539
 E info@csbo.mu
 BRN C06000033 VAT 20000593
 www.csbo.mu

15th July 2019

The Senior Chief Executive
 Min. of Agro-industry and Food Security
 9th Floor NPF Building
 Port Louis

Dear Sir,

Object: Designation of Buffer Zone at Bel Ombre

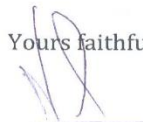
Compagnie Sucrière de Bel Ombre Ltée (CSBO) has the great pleasure to be part of the UNESCO Biosphere Project for Mauritius and would like to put on record our appreciation at being given the opportunity to contribute towards this project of National importance.

CSBO is pleased to confirm the authorisation for the designation of one hundred meters (100m) as buffer zone along all its private land bordering the Black River Gorge National Park at Bel Ombre, as per agreed survey plan produced by the survey unit of the Forestry Services. CSBO authorisation mentioned above is subject to the following conditions:

1. The land designated as buffer zone should remain the private property of CSBO.
2. Access to the buffer zone will be regulated by CSBO only.
3. Before submitting the declaration CSBO should vet the description on the said buffer zone.
4. CSBO current activities within the buffer zone should not be affected in whatsoever way by the proclamation of same.

CSBO also wishes to reiterate that its vision is strongly anchored towards a sustainable future of the development of the region and its communities with a strong focus on environment protection and conservation.

Yours faithfully



Michel Pilot
 Chief Executive Officer

a *Rogers* enterprise**(8) Further supporting documents.**

Villa Valriche (IRS) -Social Impact Assessment and Social Needs Analysis- Bel Ombre Region -
 2017Social needs assessment

20. ADDRESSES:**20.1. Contact address of the proposed biosphere reserve:**

[Government agency, organization, or other entity (entities) to serve as the main contact and to whom all correspondence within the World Network of Biosphere Reserves should be addressed.]

A. Name: Ministry of Agro Industry and Food Security

Name: Senior Chief Executive

Street or P.O. Box: Maillard Street, Renganaden Seeneevassen Building, Port Louis

City with postal code: 11321

Country: Republic of Mauritius

Telephone: 00 230 210 2713

E-mail: moapssecretariat@govmu.org

Web site: agriculture.govmu.org

B. Name: Director, National Parks and Conservation Service

Street or P.O. Box: Reduit

City with postal code: 80835

Country: Republic of Mauritius

Telephone: 00 230 464 2993

Fax No.: 00 230 466 0453

E-mail: npcs@govmu.org

Web site: npcs.govmu.org

20.2. Administering entity of the core area(s):

Name: Director, National Parks and Conservation Service

Street or P.O. Box: Reduit

City with postal code: 80835

Country: Republic of Mauritius

Telephone: 00 230 464 2993

Fax No.: 00 230 466 0453

E-mail: npcs@govmu.org

Web site: npcs.govmu.org

20.3. Administering entity of the buffer zone(s):

Name: National Parks and Conservation Service

Street or P.O. Box: Reduit

City with postal code: 80835

Country: Republic of Mauritius

Telephone: 00 230 464 2993

Fax No.: 00 230 466 0453

E-mail: npcs@govmu.org

Web site: npcs.govmu.org

Name: Forestry Service

Street or P.O. Box: Botanical Garden Street, Curepipe

City with postal code:

Country: Republic of Mauritius

Telephone: 6707254

Fax No.: 6743449

E-mail: moa-forestry@govmu.org

Web site: forestry.govmu.org

20.4. Administering entity of the transition area(s):

Name: The District Council of Savanne

Street or P.O. Box: Lady Barkly Street

City with postal code: 60806, Souillac

Country: Republic of Mauritius

Telephone: 00 230 603-7930

Fax No.: 00 230 625-5750

E-mail: dcsavanne@mail.la.govmu.org

Web site: dcsavanne.mu

Name: Ministry of Agro Industry and Food Security

Street or P.O. Box: Maillard Street, Renganaden Seeneevassen Building, Port Louis

City with postal code: 11321

Country: Republic of Mauritius

Telephone: 00 230 210 2713

E-mail: moapssecretariat@govmu.org

Web site: agriculture.govmu.org

Annex I to the Biosphere Reserve Nomination Form, January 2013**MABnet Directory of Biosphere Reserves****Biosphere Reserve Description¹****Administrative details**

Country: REPUBLIC OF MAURITIUS

Name of BR: BLACK RIVER GORGES – BEL OMBRE

Year designated: *(to be completed by MAB Secretariat)*

Administrative authorities: Ministry of Agro Industry and Food Security

Name Contact: National Parks and Conservation Service, Ministry of Agro Industry and Food Security

Contact address: Street or P.O. Box: Reduit

City with postal code: 80835

Country: Republic of Mauritius

Telephone: 00 230 464 2993

Fax No.: 00 230 466 0453

E-mail: npcs@govmu.org

Web site: npcs.govmu.org

Related links: *(web sites):*

Not yet developed

Social networks:

Not yet developed

¹ To be posted on the MABnet once the nomination has been approved. The numbers refer to the relevant sections of the nomination form.

Description

General description: (*Site characteristics in 11.1; human population in 10*)

Mauritius has been formed from volcanic origin. The sequence of volcanic eruption occurring had resulted in the crafting of spectacular landforms. The Black River Gorges - Bel Ombre Biosphere Reserves is of no exception. It offers outstanding and diverse landscapes which make it unique. The Black River Gorges National Park, being fully designated as the Core Zone boasts with its scenic viewpoints and outlooks ranging from the highest Peak of Mauritius to the coastal nature forest. It is the only area having the largest native forest cover of Mauritius. All the endemic bird species occur in the Core Zone. Some of Unique and most threatened native flora composed of flowering plants and pteridophytes thrive there. The Buffer Zones have diverse land uses. Most of the lands are under mixed forests with patches of native cover where sustainable deer ranching and ecotourism are amongst the major activities. The Bel Ombre St Martin village has characteristics spots of coastal vegetation and wetlands. The lagoon ecosystem has virtually remained untouched making it a perfect choice for the transition zone. Most of the local community were primarily dependant on the Sugar Estate. The latter has ceased many of its operation and is diversifying its economy to shift towards sustainable tourism. The Local Community has also attempted to move along the economic shift. This is enhanced by the training and employment opportunities provided by the tourism sector. There are several hotels which operate within the area promoting sustainable environmentally friendly practices.

Major ecosystem type:

- Rainforest comprises of multistratal evergreen forest and evergreen scrub association occurring within the Core Zone and the higher altitude of Mauritius characterised with annual rainfall of more than 4000mm per annum. The Mossy cloud forests are the wettest part of Mauritius containing unique species of flowering plants, ferns, orchids and mosses.
- The upland marshes and wetlands ecosystems, classified as evergreen marshes, are found at the heart of the core zone and play major role both in terms of the ecosystem services and they contribute mainly in the provision of freshwater and harbour rich native biodiversity. These areas are the main habitat for *Pandanus* marsh and *Philippia* heath.

There are still important coastal wetlands which exist mainly within the transition zone.

➤ Dry season semi-deciduous forest, it is a multistratal forest and transitional forests between the upland and coastal forests rich in *Sideroxylon*, *Mimusops*, *Labourdonnaisia* species. The coastal native forest was once dominated by dry palm savannah which was lost after colonization.

Major habitats & land cover types:

Heath type and upland marsh forest found within the Black River Gorges National Park is unique to Mauritius characterized by *Lycopodium* spp., *Pandanus* spp., *Sphagnum* spp.; *Philippia/Phylica* heath with the endemic *Coffea* spp. as a crop wild relatives to the cultivated coffee; tropical upland evergreen forest dominated endemic hardwood species belonging to the Sapotaceae, Myrtaceae and Ebenaceae species; Transition evergreen forest is a shift from the upland humid to dry coastal plain; Wetlands vegetation with the characteristics *Typha* spp. and mangrove ecosystems.

Bioclimatic zone : “Tropical Humid Climate” (A), and in the sub-region “Tropical Wet” (AF)

Location (latitude & longitude):

Cardinal points	UTM Coordinates – WGS 84 (40S)		Latitude	Longitude
Northernmost point	545686.5691	7748462.8521	20° 21' 41.09753"S	57° 26' 15.92441"E
Easternmost point	554989.6406	7736382.5542	20° 28' 13.17302"S	57° 31' 38.1553"E
Southernmost point	541876.2906	7734836.0412	20° 29' 4.6895"S	57° 24' 5.64378"E
Westernmost point	539914.8726	7741235.2654	20° 25' 36.67774"S	57° 22' 57.41775"E
Most central point	546646.5264	7742682.2746	20° 24' 49.0538"S	57° 26' 49.57873"E

Total Area (ha): 8,582.21

Core area(s): 6574 ha

Buffer zone(s): 497.21 ha

Transition area(s): 1511 ha

Different existing zonation:

The Core Zone consists of the Black River Gorges National Park which also contains the whole of the former Macchabée -Bel Ombre Biosphere Reserve. It is known worldwide for its outstanding and unique biodiversity. It is the largest forest with native cover which still subsists in Mauritius. It includes various habitats and ecosystems of some of the rarest endemic species of fauna and flora.

The Buffer Zone has been established with areas located within 200 m from the boundary of the Core Zone throughout the state-owned forests adjoining the core zone and within 100m from the boundary for land belonging to the Compagnie Sucrière de Bel Ombre, a privately-owned forest adjoining the core zone. The Buffer Zones have legal protection where activities compatible with the core zone are permitted. The plan is to further expand the buffer zone in the near future. Consultations with the other private land owner have already been initiated.

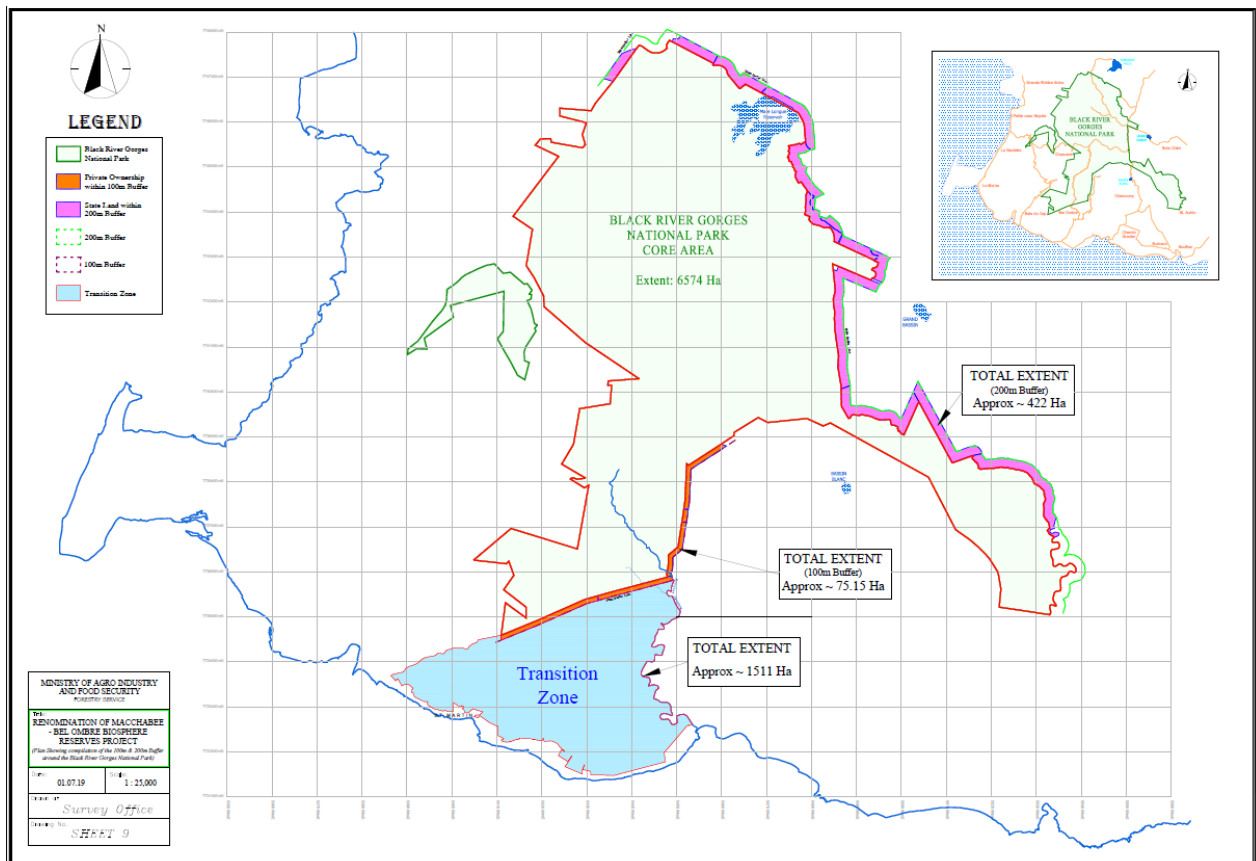
The Transition Zone is areas where the residents of Bel Ombre – St Martin are fully involved in economic activities where sustainable development activities are encouraged. It is a perfect interface between the upland forest and coastal ecosystem.

Altitudinal range (metres above sea level):

Highest height above sea level: 828 m (Black River Peak) found in the Core Zone

Lowest height above sea level – 0m – coast of St Martin – Bel Ombre

Zonation map(s): (6.2)



Location and zonation map

Main objectives of the biosphere reserve

Brief description

The Black River Gorges – Bel Ombre Biosphere Reserve would be in line with all the criteria set by the UNESCO Man and Biosphere Programme according to the “Seville Strategy for Biosphere Reserves and the Statutory Framework of the World Network” (published by UNESCO in 1996), the “Madrid Action Plan for Biosphere Reserves (2008-2013)” and the “New Roadmap for the MAB Programme and its World Network of Biosphere Reserves” as per its *MAB Strategy (2015-2025)* and its *Lima Action Plan (2016-2025)*. It would promote conservation and protection of important biodiversity and the fragile ecosystem. The aim is to foster collaboration with the private sector for the management of the buffer zone and promote sustainable development throughout the transition area. It will also promote and consolidate stakeholder engagement in the decision-making process.

The long term objective is to further expand the biosphere reserve to provide a larger contiguous system embracing a fully functional BR.

Research

Brief description

Research and studies on the native flora and fauna of Mauritius together on their threats such as IAS, are key for the conservation of the fragile ecosystem. There is need to further extend the scope of research to cover other fields such as social sciences, anthropogenic aspects, economic valuation of natural resources both terrestrial and marine and the impacts of climate change to the Biosphere Reserve, freshwater biodiversity and conservation.

Monitoring

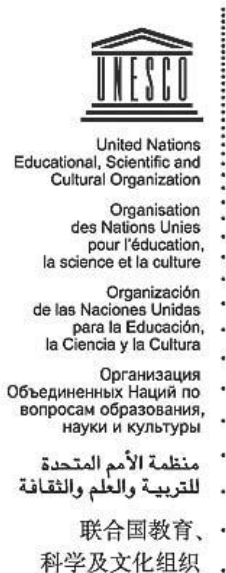
Brief description (16.1.1)

The Monitoring, evaluation, Learning and Intervention (MELI) principle has been adopted as part of the Management Plan of the Core Zone which has already been prepared and covers the period 2017 – 2021. It is planned to extend this principle to the management of the Buffer and Transition Zone.

Annex II to the Biosphere Reserve Nomination Form, January 2013**Promotion and Communication Materials****For the Proposed Biosphere Reserve**

Provide some promotional material regarding the proposed site, notably high quality photos, and/or short videos on the site so as to allow the Secretariat to prepare appropriate files for press events. To this end, a selection of photographs in high resolution (300 dpi), with photo credits and captions and video footage (rushes), without any comments or sub-titles, of professional quality – DV CAM or BETA only, will be needed.

In addition, return a signed copy of the following Agreement on Non-Exclusive Rights. A maximum of ten (10) minutes on each biosphere reserve will then be assembled in the audiovisual section of UNESCO and the final product, called a B-roll, will be sent to the press.



UNESCO Photo Library

Bureau of Public Information

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Reference:

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Name and Address:

Date :

Signature:

(sign, return to UNESCO two copies of the Agreement and retain the original for yourself)

Mailing address: 7 Place Fontenoy, 75352 Paris 07 SP, Direct Telephone: 00331 – 45681687

Direct Fax: 00331 – 45685655; e-mail: photobank@unesco.org; m.ravassard@unesco.org

Annex III: Specific variables (fill in the table below and tick the relevant parameters)

Abiotic factors	Biodiversity			
Abiotic factors	Afforestation/Reforestation	X	Indicators	X
Acidic deposition/Atmospheric factors	Algae		Invertebrates	X
Air quality	Alien and/or invasive species	X	Island systems/studies	
Air temperature	Amphibians		Lagoon systems	X
Climate, climatology	And and semi-and systems		Lichens	
Contaminants	Autoecology		Mammals	X
Drought	Beach/soft bottom systems		Mangrove systems	X
Erosion	Benthos		Mediterranean type systems	
Geology	Biodiversity aspects	X	Microorganisms	
Geomorphology	Biogeography		Migrating populations	
Geophysics	Biology		Modeling	
Glaciology	Biotechnology		Monitoring/methodologies	X
Global change	Birds	X	Mountain and highland systems	
Groundwater	Boreal forest systems		Natural and other resources	X
Habitat issues	X Breeding	X	Natural medicinal products	X
Heavy metals	Coastal/marine systems	X	Perturbations and resilience	
Hydrology	Community studies		Pests/Diseases	X
Indicators	X Conservation	X	Phenology	
Meteorology	Coral reefs		Phytosociology/Succession	
Modeling	Degraded areas	X	Plankton	
Monitoring/methodologies	X Desertification		Plants	X
Nutrients	Dune systems		Polar systems	
Physical oceanography	Ecology	X	Pollination	X
Pollution, pollutants	X Ecosystem assessment	X	Population genetics/dynamics	
Siltation/sedimentation	Ecosystem functioning/structure	X	Productivity	
Soil	Ecosystem services	X	Rare/Endangered species	X
Speleology	Ecotones		Reptiles	
Topography	Endemic species	X	Restoration/Rehabilitation	X
Toxicology	Ethology		Species (re) introduction	X
UV radiation	Evapotranspiration		Species inventorying taxon	X
	Evolutionary studies/Palaeoecology		Sub-tropical and temperate rainforest	
	Fauna	X	Taxonomy	
	Fires/fire ecology		Temperate forest systems	
	Fishes	X	Temperate grassland systems	
	Flora	X	Tropical dry forest systems	
	Forest systems	X	Tropical grassland and savannah systems	
	Freshwater systems		Tropical humid forest systems	
	Fungi		Tundra systems	
	Genetic resources	X	Vegetation studies	X
	Genetically modified organisms		Volcanic/Geothermal systems	
	Home gardens		Wetland systems	X
			Wildlife	

Socio-economic		Integrated monitoring	
Agriculture/Other production systems	X	Biogeochemical studies	
Agroforestry	X	Carrying capacity	
Anthropological studies	<input type="checkbox"/>	Climate change	
Aquaculture	<input type="checkbox"/>	Conflict analysis/resolution	
Archaeology		Ecosystem approach	X
Bioprospecting		Education and public awareness	
Capacity building	<input checked="" type="checkbox"/>	Environmental changes	X
Cottage (home-based) industry		Geographic Information System (GIS)	
Cultural aspects		Impact and risk studies	
Demography		Indicators	
Economic studies		Indicators of environmental quality	
Economically important species		Infrastructure development	
Energy production systems		Institutional and legal aspects	
Ethnology/traditional practices/knowledge		Integrated studies	
Firewood cutting		Interdisciplinary studies	
Fishery		Land tenure	
Forestry	X	Land use/Land cover	
Human health	X	Landscape inventorying/monitoring	
Human migration		Management issues	
Hunting		Mapping	X
Indicators		Modelling	
Indicators of sustainability		Monitoring/methodologies	X
Indigenous people's issues		Planning and zoning measures	
Industry		Policy issues	
Livelihood measures		Remote sensing	
Livestock and related impacts		Rural systems	
Local participation		Sustainable development/use	
Micro-credits		Transboundary issues/measures	
Mining		Urban systems	
Modelling		Watershed studies/monitoring	
Monitoring/methodologies			
Natural hazards			
Non-timber forest products			
Pastoralism			
People-Nature relations			
Poverty			
Quality economies/marketing			
Recreation			
Resource use			
Role of women			
Sacred sites			
Small business initiatives			
Social/Socio-economic aspects			
Stakeholders' interests			
Tourism	X		
Transports			

Annex IV: List of some studies carried out in the proposed BR

Abiotic

- Daby, D., 2006. Coastal pollution and potential biomonitors of metals in Mauritius. *Water, Air, and Soil Pollution* 174, 63–91. <https://doi.org/10.1007/s11270-005-9035-4>
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- The conservation and restoration of the flora of Mauritius and Rodrigues, PhD Thesis, University of Reading, Wendy Ann Strahm, 1993
- Study in Mauritius on the conservation of its Endemic Flora and its Habitat- Lee Oram, Royal Botanic of Kew Garden 2012
- Identifying Suitable Locations for Echo Parakeet Nestboxes (George Sayer from PG Dip 2015)
- Alien Plant Invasions and Butterfly Communities (Carlota González Noguer from PG Dip 2015)
- Impacts of predator control on small Indian mongoose (*Herpestes auropunctatus*) in Mauritius (Edward Ellis from PG Dip 2015)
- Into the Woods: Preferences and Perceptions of the Visitor of the Black River Gorges National Park, Mauritius (Li Ling Ho from PG Dip 2016)
- Caught in the traps? Assessing the effectiveness of the trapping grid in the Black River Gorges National Park. (Mala Curroah from PG Dip 2016)
- The role of *Pteropus niger* in forest regeneration (Raphael from PG Dip 2016)
- Parrot beak colour and shape is hereditary, not based on sex or environment (Monica Griffith from PG Dip 2016)
- Habitat quality or artificial interventions? Predictors for nest site selection in the Endangered echo parakeet *Psittacula eques* (Matthew Boyd from PG Dip 2016)
- Beak and feather disease virus (BFDV) in endangered Echo parakeets (*Psittacula eques*) undergoing translocations in Mauritius (Laura King from PG Dip 2016)
- Seasonal variation in infection with the haematozoan parasite *Leucocytozoon marchouxi* in the Pink pigeon (*Nesoenas mayeri*) in Mauritius (Ando Miharifetra from PG Dip 2017)
- Mapping Mauritius Cuckoo-shrike *Lalage typica* territories to inform a translocation project (Andy Cox from PG Dip 2017)
- Evaluating the impact of intensive conservation management in Mauritius; chick-feather plucking in the endangered parakeet, *Psittacula eques* (Sion Henshaw from PG Dip 2017)
- Outreach and public engagement in (insect) conservation: conserving Mauritian endemic butterflies (Irina Nantenaina RAKOTOMALALA ANDRIANAVALONA from PG Dip 2017)
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Annex V: List of some of the native flora (source BRGNP Management Plan)

Family	Species	Origin
Achariaceae	<i>Erythrospermum monticolum</i> var. <i>amplifolium</i>	Endemic to Mauritius
Achariaceae	<i>Erythrospermum monticolum</i> var. <i>cordifolium</i>	Endemic to Mauritius
Achariaceae	<i>Erythrospermum monticolum</i> var. <i>monticolum</i>	Endemic to Mauritius
Achariaceae	<i>Erythrospermum monticolum</i> var. <i>pyrifolium</i>	Endemic to Mauritius
Anacardiaceae	<i>Poupartia pubescens</i>	Endemic to Mauritius
Annonaceae	<i>Xylopia amplexicaulis</i>	Endemic to Mauritius
Annonaceae	<i>Xylopia lamarckii</i>	Endemic to Mauritius
Annonaceae	<i>Xylopia richardii</i>	Endemic to Mascarenes
Aphloiaceae	<i>Aphloia theiformis</i>	Native
Apocynaceae	<i>Carissa spinarum</i>	Endemic to Mascarenes
Apocynaceae	<i>Cynanchum staubii</i>	Endemic to Mauritius
Apocynaceae	<i>Ochrosia borbonica</i>	Endemic to Mascarenes
Apocynaceae	<i>Secamone dilapidans</i>	Endemic to Mascarenes
Apocynaceae	<i>Secamone volubilis</i>	Endemic to Mascarenes
Apocynaceae	<i>Secamone volubilis</i> var. <i>salicifolia</i>	Endemic to Mauritius
Apocynaceae	<i>Tabernaemontana persicariaefolia</i>	Endemic to Mascarenes
Apocynaceae	<i>Tylophora coriacea</i>	Endemic to Mauritius
Araliaceae	<i>Polyscias dichroostachya</i>	Endemic to Mauritius
Araliaceae	<i>Polyscias maraisiana</i>	Endemic to Mauritius
Araliaceae	<i>Polyscias mauritiana</i>	Endemic to Mauritius
Araliaceae	<i>Polyscias neraudiana</i>	Endemic to Mauritius
Araliaceae	<i>Polyscias paniculata</i>	Endemic to Mauritius
Arecaceae	<i>Acanthophoenix crinite</i>	Endemic to Mascarenes
Arecaceae	<i>Acanthophoenix rubra</i>	Endemic to Mascarenes
Arecaceae	<i>Dictyosperma album</i> var. <i>album</i>	Endemic to Mascarenes
Arecaceae	<i>Hyophorbe vaughanii</i>	Endemic to Mauritius
Arecaceae	<i>Tectiphiala ferox</i>	Endemic to Mauritius
Asparagaceae	<i>Asparagus umbellulatus</i>	Native
Asparagaceae	<i>Cordyline mauritiana</i>	Endemic to Mauritius
Asparagaceae	<i>Dracaena floribunda</i>	Endemic to Mauritius
Asparagaceae	<i>Dracaena reflexa</i> var. <i>angustifolia</i>	Native
Asparagaceae	<i>Dracaena reflexa</i> var. <i>linearifolia</i>	Native
Asparagaceae	<i>Dracaena reflexa</i> var. <i>reflexa</i>	Native
Asteliaceae	<i>Astelia hemichrysa</i>	Native
Asteraceae	<i>Blumea axillaris</i>	Native
Asteraceae	<i>Faujasiopsis flexuosa</i> ssp. <i>Erecta</i>	Endemic to Mauritius
Asteraceae	<i>Faujasiopsis flexuosa</i> ssp. <i>Flexuosa</i>	Endemic to Mauritius
Asteraceae	<i>Helichrysum caespitosum</i>	Endemic to Mauritius
Asteraceae	<i>Helichrysum proteoides</i>	Endemic to Mauritius
Asteraceae	<i>Helichrysum yuccaefolium</i>	Endemic to Mauritius
Asteraceae	<i>Hubertia ambavilla</i> var. <i>ambavilla</i>	Endemic to Mascarenes
Asteraceae	<i>Launaea sarmentosa</i>	Native
Asteraceae	<i>Parafaujasia mauritiana</i>	Endemic to Mauritius
Asteraceae	<i>Psiadia terebinthina</i>	Endemic to Mauritius
Asteraceae	<i>Psiadia viscosa</i>	Endemic to Mauritius
Begoniaceae	<i>Begonia salaziensis</i>	Endemic to Mascarenes
Bignoniaceae	<i>Colea coleii</i>	Endemic to Mauritius
Boraginaceae	<i>Cynoglossum borbonicum</i>	Endemic to Mascarenes
Boraginaceae	<i>Cynoglossum rochelia</i>	Endemic to Mascarenes
Boraginaceae	<i>Hilsenbergia petiolaris</i>	Native
Burseraceae	<i>Canarium paniculatum</i>	Endemic to Mauritius
Burseraceae	<i>Protium obtusifolium</i>	Endemic to Mauritius
Cactaceae	<i>Rhipsalis baccifera</i>	Native
Campanulaceae	<i>Lobelia anceps</i> var. <i>anceps</i>	Native
Campanulaceae	<i>Lobelia filiformis</i> var. <i>filiformis</i>	Native

Campanulaceae	<i>Lobelia filiformis</i> var. <i>natalensis</i>	Native
Campanulaceae	<i>Lobelia serpens</i> var. <i>serpens</i>	Endemic to Mascarenes
Campanulaceae	<i>Nesocodon mauritanus</i>	Endemic to Mauritius
Celastraceae	<i>Cassine orientalis</i>	Endemic to Mascarenes
Celastraceae	<i>Maytenus pyria</i>	Endemic to Mauritius
Celastraceae	<i>Pleurostyliya leucocarpa</i>	Endemic to Mauritius
Chrysobalanaceae	<i>Grangeria borbonica</i>	Endemic to Mascarenes
Clusiaceae	<i>Calophyllum eputamen</i> var. <i>eputamen</i>	Endemic to Mauritius
Clusiaceae	<i>Calophyllum eputamen</i> var. <i>grandis</i>	Endemic to Mauritius
Clusiaceae	<i>Calophyllum parviflorum</i>	Endemic to Mauritius
Clusiaceae	<i>Calophyllum tacamahaca</i>	Endemic to Mascarenes
Combretaceae	<i>Terminalia bentzoë</i> ssp. <i>Bentzoë</i>	Endemic to Mascarenes
Connaraceae	<i>Cnestis glabra</i>	Native
Convolvulaceae	<i>Merremia peltata</i>	Native
Cunoniaceae	<i>Weinmannia mauritiana</i>	Endemic to Mascarenes
Cunoniaceae	<i>Weinmannia tinctoria</i>	Endemic to Mascarenes
Cyperaceae	<i>Carex boryana</i>	Endemic to Mascarenes
Cyperaceae	<i>Carex brunnea</i>	Native
Cyperaceae	<i>Carex wahlenbergiana</i>	Endemic to Mascarenes
Cyperaceae	<i>Carpha costularioides</i>	Endemic to Mauritius
Cyperaceae	<i>Cladium mariscus</i>	Native
Cyperaceae	<i>Cyperus latifolius</i>	Endemic to Mauritius
Cyperaceae	<i>Cyperus longifolius</i>	Native
Cyperaceae	<i>Cyperus prolifer</i>	Endemic to Mauritius
Cyperaceae	<i>Cyperus rubicundus</i>	Native
Cyperaceae	<i>Cyperus stoloniferus</i>	Native
Cyperaceae	<i>Eleocharis caduca</i>	Native
Cyperaceae	<i>Eleocharis dulcis</i>	Native
Cyperaceae	<i>Eleocharis variegata</i>	Native
Cyperaceae	<i>Fimbristylis dichotoma</i>	Native
Cyperaceae	<i>Hypolytrum mauritanum</i>	Endemic to Mauritius
Cyperaceae	<i>Juncellus laevigatus</i>	Native
Cyperaceae	<i>Kyllinga elata</i>	Native
Cyperaceae	<i>Machaerina anceps</i>	Native
Cyperaceae	<i>Machaerina iridifolia</i>	Endemic to Mascarenes
Cyperaceae	<i>Pycreus intactus</i>	Native
Cyperaceae	<i>Rhynchospora corymbosa</i>	Native
Cyperaceae	<i>Rhynchospora holoscheonoides</i>	Native
Cyperaceae	<i>Scleria sieberi</i>	Endemic to Mascarenes
Ebenaceae	<i>Diospyros boutoniana</i>	Endemic to Mauritius
Ebenaceae	<i>Diospyros chrysophyllos</i>	Endemic to Mauritius
Ebenaceae	<i>Diospyros leucomelas</i>	Endemic to Mauritius
Ebenaceae	<i>Diospyros melanida</i>	Endemic to Mauritius
Ebenaceae	<i>Diospyros neraudii</i>	Endemic to Mauritius
Ebenaceae	<i>Diospyros nodosa</i>	Endemic to Mauritius
Ebenaceae	<i>Diospyros pterocalyx</i>	Endemic to Mauritius
Ebenaceae	<i>Diospyros revaughanii</i>	Endemic to Mauritius
Ebenaceae	<i>Diospyros tessellaria</i>	Endemic to Mauritius
Elaeocarpaceae	<i>Elaeocarpus integrifolius</i>	Endemic to Mauritius
Ericaceae	<i>Agarista salicifolia</i> var. <i>salicifolia</i>	Endemic to Mauritius
Ericaceae	<i>Erica brachyphylla</i>	Endemic to Mauritius
Eriocaulaceae	<i>Eriocaulon willdenovianum</i>	Endemic to Mauritius
Erythrollyaceae	<i>Erythroxylum hypericifolium</i>	Endemic to Mascarenes
Erythrollyaceae	<i>Erythroxylum laurifolium</i>	Endemic to Mascarenes
Erythrollyaceae	<i>Erythroxylum macrocarpum</i>	Endemic to Mauritius
Erythrollyaceae	<i>Erythroxylum sideroxyloides</i>	Endemic to Mascarenes
Erythrollyaceae	<i>Poupartia borbonica</i>	Endemic to Mascarenes
Euphorbiaceae	<i>Acalypha integrifolia</i> subsp. <i>integrifolia</i> var. <i>integrifolia</i>	Endemic to Mascarenes

Euphorbiaceae	<i>Acalypha integrifolia</i> subsp <i>integrifolia</i> var. <i>longifolia</i>	Endemic to Mauritius
Euphorbiaceae	<i>Acalypha integrifolia</i> subsp <i>integrifolia</i> var. <i>parvifolia</i>	Endemic to Mauritius
Euphorbiaceae	<i>Acalypha integrifolia</i> subsp <i>marginata</i> var. <i>crateriana</i>	Endemic to Mauritius
Euphorbiaceae	<i>Acalypha integrifolia</i> subsp <i>marginata</i> var. <i>marginata</i>	Endemic to Mauritius
Euphorbiaceae	<i>Acalypha integrifolia</i> subsp <i>marginata</i> var. <i>saltuum</i>	Endemic to Mauritius
Euphorbiaceae	<i>Acalypha reticulata</i>	Native
Euphorbiaceae	<i>Antidesma madagascariense</i>	Native
Euphorbiaceae	<i>Claoxylon grandifolium</i>	Endemic to Mascarenes
Euphorbiaceae	<i>Claoxylon linostachys</i> ssp. <i>brachyphyllum</i>	Endemic to Mauritius
Euphorbiaceae	<i>Claoxylon linostachys</i> ssp. <i>linostachys</i>	Endemic to Mauritius
Euphorbiaceae	<i>Claoxylon linostachys</i> ssp. <i>pedicellare</i>	Endemic to Mauritius
Euphorbiaceae	<i>Cordemoya integrifolia</i>	Endemic to Mascarenes
Euphorbiaceae	<i>Croton fothergillifolium</i>	Endemic to Mauritius
Euphorbiaceae	<i>Croton grangerioides</i>	Endemic to Mauritius
Euphorbiaceae	<i>Croton tiliaefolium</i>	Endemic to Mauritius
Euphorbiaceae	<i>Euphorbia pyrifolia</i>	Native
Euphorbiaceae	<i>Macaranga mauritiana</i>	Endemic to Mauritius
Euphorbiaceae	<i>Margaritaria anomala</i>	Endemic to Mauritius
Euphorbiaceae	<i>Orfilea neraudiana</i>	Endemic to Mauritius
Euphorbiaceae	<i>Securinea durissima</i>	Endemic to Mascarenes
Euphorbiaceae	<i>Stillingia lineata</i> subsp <i>lineata</i>	Endemic to Mascarenes
Fabaceae	<i>Abrus precatorius</i> subsp <i>africanus</i>	Native
Fabaceae	<i>Dendrolobium umbellatum</i>	Native
Fabaceae	<i>Desmodium repandum</i>	Native
Fabaceae	<i>Tephrosia purpurea</i> subsp. <i>Purpurea</i>	Native
Flagellariaceae	<i>Flagellaria indica</i>	Native
Haloragaceae	<i>Laurembergia tetrandra</i>	Native
Hypoxidaceae	<i>Hypoxis angustifolia</i>	Native
Icacinaceae	<i>Apodytes dimidiata</i>	Native
Juncaceae	<i>Juncus effuses</i>	Native
Labatieae	<i>Plectranthus madagascariensis</i>	Native
Lauraceae	<i>Cassytha filiformis</i>	Native
Lauraceae	<i>Ocotea laevigata</i>	Endemic to Mauritius
Lauraceae	<i>Ocotea lancilimba</i>	Endemic to Mauritius
Lauraceae	<i>Ocotea mascarena</i>	Endemic to Mauritius
Lauraceae	<i>Ocotea obtusata</i>	Endemic to Mascarenes
Lecythidaceae	<i>Foetidia mauritiana</i>	Endemic to Mascarenes
Leeaceae	<i>Leea guineensis</i>	Native
Linaceae	<i>Hugonia serrata</i>	Endemic to Mascarenes
Linaceae	<i>Hugonia tomentosa</i>	Endemic to Mauritius
Loganiaceae	<i>Geniostoma borbonicum</i>	Endemic to Mascarenes
Loganiaceae	<i>Geniostoma pedunculatum</i>	Endemic to Mascarenes
Loranthaceae	<i>Bakerella hoyifolia</i> subsp <i>bojeri</i>	Endemic to Mascarenes
Loranthaceae	<i>Korthalsella opuntia</i> var. <i>bojeri</i>	Endemic to Mascarenes
Loranthaceae	<i>Korthalsella opuntia</i> var. <i>gaudichaudii</i>	Native
Loranthaceae	<i>Korthalsella opuntia</i> var. <i>richardii</i>	Native
Lythraceae	<i>Tetrataxis salicifolia</i>	Endemic to Mauritius
Malvaceae	<i>Abutilon mauritianum</i>	Endemic to Mauritius
Malvaceae	<i>Dombeya ferruginea</i> ssp. <i>Ferruginea</i>	Endemic to Mauritius
Malvaceae	<i>Dombeya mauritiana</i>	Endemic to Mauritius
Malvaceae	<i>Dombeya sevathiani</i>	Endemic to Mauritius
Malvaceae	<i>Hibiscus columnaris</i>	Endemic to Mascarenes
Malvaceae	<i>Sida pusilla</i>	Native
Malvaceae	<i>Trochetia blackburniana</i>	Endemic to Mauritius
Malvaceae	<i>Trochetia triflora</i>	Endemic to Mauritius
Malvaceae	<i>Trochetia uniflora</i>	Endemic to Mauritius
Malvaceae	<i>Urena lobata</i> subsp <i>lobata</i> var. <i>mauritiana</i>	Endemic to Mauritius
Melastomataceae	<i>Memecylon cordatum</i>	Endemic to Mascarenes
Melastomataceae	<i>Memecylon myrtiforme</i>	Endemic to Mauritius

Melastomataceae	<i>Memecylon ovatifolium</i>	Endemic to Mauritius
Melastomataceae	<i>Warneckea trinervis</i>	Endemic to Mauritius
Meliaceae	<i>Turraea oppositifolia</i>	Endemic to Mascarenes
Meliaceae	<i>Turraea rigida</i>	Endemic to Mauritius
Meliaceae	<i>Turraea thouarsiana</i>	Endemic to Mascarenes
Monimiaceae	<i>Monimia ovalifolia</i>	Endemic to Mascarenes
Monimiaceae	<i>Tambourissa amplifolia</i>	Endemic to Mauritius
Monimiaceae	<i>Tambourissa coccottensis</i>	Endemic to Mauritius
Monimiaceae	<i>Tambourissa cordifolia</i>	Endemic to Mauritius
Monimiaceae	<i>Tambourissa ficus</i>	Endemic to Mauritius
Monimiaceae	<i>Tambourissa pedicellata</i>	Endemic to Mauritius
Monimiaceae	<i>Tambourissa peltata</i>	Endemic to Mauritius
Monimiaceae	<i>Tambourissa quadrifida</i>	Endemic to Mauritius
Monimiaceae	<i>Tambourissa sieberi</i>	Endemic to Mauritius
Monimiaceae	<i>Tambourissa tau</i>	Endemic to Mauritius
Monimiaceae	<i>Tambourissa tetragona</i>	Endemic to Mauritius
Moraceae	<i>Ficus densifolia</i>	Endemic to Mascarenes
Moraceae	<i>Ficus mauritiana</i>	Endemic to Mascarenes
Moraceae	<i>Ficus reflexa</i>	Native
Moraceae	<i>Ficus rubra</i>	Native
Myrtaceae	<i>Eugenia alletiana</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia crassipetala</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia elliptica</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia fasciculata</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia kanakana</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia lucida</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia orbiculata</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia petrinensis</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia pixidata</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia pollicina</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia sieberi</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia tinifolia</i>	Endemic to Mauritius
Myrtaceae	<i>Eugenia vaughanii</i>	Endemic to Mauritius
Myrtaceae	<i>Psiloxylon mauritanum</i>	Endemic to Mascarenes
Myrtaceae	<i>Syzygium commersonii</i>	Endemic to Mauritius
Myrtaceae	<i>Syzygium contractum</i>	Endemic to Mauritius
Myrtaceae	<i>Syzygium coriaceum</i>	Endemic to Mauritius
Myrtaceae	<i>Syzygium glomeratum</i>	Endemic to Mauritius
Myrtaceae	<i>Syzygium latifolium</i>	Endemic to Mauritius
Myrtaceae	<i>Syzygium mamillatum</i>	Endemic to Mauritius
Myrtaceae	<i>Syzygium mauritanum</i>	Endemic to Mauritius
Myrtaceae	<i>Syzygium petrinense</i>	Endemic to Mauritius
Myrtaceae	<i>Syzygium populifolium</i>	Endemic to Mauritius
Myrtaceae	<i>Syzygium rampans</i>	Endemic to Mauritius
Myrtaceae	<i>Syzygium vaughanii</i>	Endemic to Mauritius
Myrtaceae	<i>Syzygium venosum</i>	Endemic to Mauritius
Nyctaginaceae	<i>Pisonia costata</i>	Endemic to Mauritius
Nyctaginaceae	<i>Pisonia lanceolate</i>	Endemic to Mascarenes
Ochnaceae	<i>Ochna mauritiana</i>	Endemic to Mauritius
Oleaceae	<i>Olea psittacorum</i>	Endemic to Mascarenes
Oleaceae	<i>Chionanthus ayresii</i>	Endemic to Mauritius
Oleaceae	<i>Chionanthus broomeana</i> var. <i>broomeana</i>	Endemic to Mauritius
Oleaceae	<i>Jasminum fluminense</i> subsp. <i>Mauritanum</i>	Native
Oleaceae	<i>Olea lancea</i>	Native
Onagraceae	<i>Ludwigia jussiaeoides</i>	Native
Onagraceae	<i>Ludwigia octavolis</i> var. <i>sessiliflora</i>	Native
Onagraceae	<i>Ludwigia stolonifera</i>	Native
Orchidaceae	<i>Aeranthes arachnitis</i>	Endemic to Mascarenes
Orchidaceae	<i>Aeranthes tenella</i> var. <i>borbonica</i>	Endemic to Mascarenes

Orchidaceae	<i>Angraecopsis parviflora</i>	Native
Orchidaceae	<i>Angraecum cadetii</i>	Endemic to Mascarenes
Orchidaceae	<i>Angraecum calceolus</i>	Native
Orchidaceae	<i>Angraecum caulescens</i>	Native
Orchidaceae	<i>Angraecum cucullatum</i>	Endemic to Mascarenes
Orchidaceae	<i>Angraecum mauritianum</i>	Native
Orchidaceae	<i>Angraecum minutum</i>	Endemic to Mascarenes
Orchidaceae	<i>Angraecum nr rutenbergianum</i>	Endemic to Mauritius
Orchidaceae	<i>Angraecum parvulum</i>	Endemic to Mascarenes
Orchidaceae	<i>Angraecum pectinatum</i>	Native
Orchidaceae	<i>Angraecum ramosum</i>	Endemic to Mascarenes
Orchidaceae	<i>Beclardia macrostachya</i>	Native
Orchidaceae	<i>Benthamia latifolia</i>	Endemic to Mascarenes
Orchidaceae	<i>Benthamia spiralis</i>	Native
Orchidaceae	<i>Bulbophyllum caespitosum</i>	Endemic to Mauritius
Orchidaceae	<i>Bulbophyllum clavatum</i>	Endemic to Mascarenes
Orchidaceae	<i>Bulbophyllum densus</i>	Endemic to Mascarenes
Orchidaceae	<i>Bulbophyllum elliotii</i>	Native
Orchidaceae	<i>Bulbophyllum erectum</i>	Native
Orchidaceae	<i>Bulbophyllum incurvum</i>	Endemic to Mascarenes
Orchidaceae	<i>Bulbophyllum longiflorum</i>	Native
Orchidaceae	<i>Bulbophyllum nutans</i>	Native
Orchidaceae	<i>Bulbophyllum occultum</i>	Native
Orchidaceae	<i>Bulbophyllum pendulum</i>	Endemic to Mascarenes
Orchidaceae	<i>Bulbophyllum pusillum</i>	Endemic to Mauritius
Orchidaceae	<i>Bulbophyllum sambiranense</i>	Native
Orchidaceae	<i>Calanthe candida</i>	Endemic to Mascarenes
Orchidaceae	<i>Calanthe sylvatica</i>	Native
Orchidaceae	<i>Corymborkis corymbis</i>	Native
Orchidaceae	<i>Cryptopus dissectus</i>	Native
Orchidaceae	<i>Cynorkis cylindrostachys</i>	Endemic to Mauritius
Orchidaceae	<i>Cynorkis fastigiata</i>	Native
Orchidaceae	<i>Cynorkis purpurascens</i>	Native
Orchidaceae	<i>Cynorkis purpurea</i>	Native
Orchidaceae	<i>Cynorkis squamosal</i>	Native
Orchidaceae	<i>Disperis oppositifolia</i>	Native
Orchidaceae	<i>Disperis tripetaloides</i>	Native
Orchidaceae	<i>Hederorkis scandens</i>	Endemic to Mauritius
Orchidaceae	<i>Jumellea fragrans</i>	Endemic to Mascarenes
Orchidaceae	<i>Jumellea recta</i>	Endemic to Mascarenes
Orchidaceae	<i>Jumellea recurve</i>	Endemic to Mascarenes
Orchidaceae	<i>Liparis caespitose</i>	Native
Orchidaceae	<i>Liparis disticha</i>	Native
Orchidaceae	<i>Liparis flavescens</i>	Native
Orchidaceae	<i>Liparis purpurascens</i>	Native
Orchidaceae	<i>Nervilia bicarinata</i>	Native
Orchidaceae	<i>Oberonia disticha</i>	Native
Orchidaceae	<i>Oeceoclades monophyllum</i>	Endemic to Mascarenes
Orchidaceae	<i>Phaius longibracteatus</i>	Endemic to Mascarenes
Orchidaceae	<i>Phaius pulchellus</i>	Native
Orchidaceae	<i>Phaius tetragonus</i>	Endemic to Mascarenes
Orchidaceae	<i>Platylepis occulta</i>	Native
Orchidaceae	<i>Polystachya concreta</i>	Native
Orchidaceae	<i>Taeniophyllum coxii</i>	Native
Pandanaceae	<i>Pandanus barkleyi</i>	Endemic to Mauritius
Pandanaceae	<i>Pandanus carmichaelii</i>	Endemic to Mauritius
Pandanaceae	<i>Pandanus eydouxia</i>	Endemic to Mauritius
Pandanaceae	<i>Pandanus glaucocephalus</i>	Endemic to Mauritius
Pandanaceae	<i>Pandanus palustris</i>	Endemic to Mauritius

Pandanaceae	<i>Pandanus prostrata</i>	Endemic to Mauritius
Pandanaceae	<i>Pandanus pyramidalis</i>	Endemic to Mauritius
Pandanaceae	<i>Pandanus rigidifolius</i>	Endemic to Mauritius
Pandanaceae	<i>Pandanus spathulatus</i>	Endemic to Mauritius
Pandanaceae	<i>Pandanus wiehi</i>	Endemic to Mauritius
Phormiaceae	<i>Dianella ensifolia</i>	Native
Phyllanthaceae	<i>Phyllanthus casticum</i>	Native
Phyllanthaceae	<i>Phyllanthus lanceolatus</i>	Endemic to Mauritius
Phyllanthaceae	<i>Phyllanthus phillyreifolius</i> var. <i>commersonii</i>	Endemic to Mauritius
Phyllanthaceae	<i>Phyllanthus phillyreifolius</i> var. <i>gracilipes</i>	Endemic to Mauritius
Phyllanthaceae	<i>Phyllanthus phillyreifolius</i> var. <i>stylifer</i>	Endemic to Mauritius
Phyllanthaceae	<i>Phyllanthus phillyreifolius</i> var. <i>telfairianus</i>	Endemic to Mauritius
Piperaceae	<i>Peperomia borbonensis</i>	Endemic to Mascarenes
Piperaceae	<i>Peperomia elliptica</i>	Native
Piperaceae	<i>Peperomia goudotii</i>	Endemic to Mascarenes
Piperaceae	<i>Peperomia portulacoides</i>	Native
Piperaceae	<i>Peperomia tetraphylla</i>	Native
Piperaceae	<i>Piper borbonense</i>	Endemic to Mascarenes
Pittosporaceae	<i>Pittosporum ferrugineum</i>	Endemic to Mauritius
Pittosporaceae	<i>Pittosporum senacia</i> subsp. <i>senacia</i>	Endemic to Mascarenes
Plumbaginaceae	<i>Plumbago zeylanica</i>	Native
Poaceae	<i>Arthraxon mauritanus</i>	Endemic to Mauritius
Poaceae	<i>Brachiaria serpens</i>	Endemic to Mascarenes
Poaceae	<i>Chloris filiformis</i>	Endemic to Mauritius
Poaceae	<i>Digitaria didactyla</i>	Native
Poaceae	<i>Digitaria longifolia</i>	Endemic to Mascarenes
Poaceae	<i>Eragrostis chariis</i>	Native
Poaceae	<i>Eragrostis tenella</i> var. <i>insularis</i>	Native
Poaceae	<i>Isachne mauritiana</i> var. <i>mauritiana</i>	Native
Poaceae	<i>Lepturus repens</i>	Native
Poaceae	<i>Oplismenus burmanni</i>	Native
Poaceae	<i>Oplismenus hirtellus</i>	Native
Poaceae	<i>Panicum brevifolium</i>	Native
Poaceae	<i>Panicum multimoda</i>	Native
Poaceae	<i>Panicum umbellatum</i>	Native
Poaceae	<i>Paspalum distichum</i>	Native
Poaceae	<i>Paspalum polystachyum</i>	Native
Poaceae	<i>Sporobolus mauritanus</i>	Endemic to Mauritius
Poaceae	<i>Stenotaphrum dimidiatum</i>	Native
Portulacaceae	<i>Portulaca oleracea</i>	Endemic to Mauritius
Primulaceae	<i>Badula insularis</i>	Endemic to Mauritius
Primulaceae	<i>Badula multiflora</i>	Endemic to Mauritius
Primulaceae	<i>Badula platyphylla</i>	Endemic to Mauritius
Primulaceae	<i>Badula reticulate</i>	Endemic to Mauritius
Primulaceae	<i>Badula sieberi</i>	Endemic to Mauritius
Primulaceae	<i>Embelia angustifolia</i>	Endemic to Mascarenes
Primulaceae	<i>Embelia micrantha</i>	Endemic to Mascarenes
Putanjiaceae	<i>Drypetes caustic</i>	Endemic to Mascarenes
Ranunculaceae	<i>Clematis mauritiana</i>	Native
Rhamnaceae	<i>Gouania tiliifolia</i>	Endemic to Mascarenes
Rhamnaceae	<i>Phyllica nitida</i>	Endemic to Mascarenes
Rhamnaceae	<i>Scutia myrtina</i>	Native
Roussaceae	<i>Roussea simplex</i>	Endemic to Mauritius
Rubiaceae	<i>Antirhea bifurcate</i>	Endemic to Mascarenes
Rubiaceae	<i>Antirhea borbonica</i>	Endemic to Mascarenes
Rubiaceae	<i>Bertiera zaluzania</i>	Endemic to Mauritius
Rubiaceae	<i>Bremeria arcuate</i>	Native
Rubiaceae	<i>Bremeria landia</i> var. <i>holoserica</i>	Endemic to Mascarenes
Rubiaceae	<i>Bremeria landia</i> var. <i>landia</i>	Endemic to Mascarenes

Rubiaceae	<i>Chassalia capitata</i>	Endemic to Mauritius
Rubiaceae	<i>Chassalia coriacea</i> var. <i>coriacea</i>	Endemic to Mauritius
Rubiaceae	<i>Chassalia coriacea</i> var. <i>johnstonii</i>	Endemic to Mauritius
Rubiaceae	<i>Chassalia grandifolia</i>	Endemic to Mauritius
Rubiaceae	<i>Chassalia lanceolata</i> ssp. <i>Lanceolata</i>	Endemic to Mauritius
Rubiaceae	<i>Chassalia lanceolata</i> ssp. <i>Latifolia</i>	Endemic to Mauritius
Rubiaceae	<i>Chassalia petrinensis</i>	Endemic to Mauritius
Rubiaceae	<i>Coffea macrocarpa</i>	Endemic to Mauritius
Rubiaceae	<i>Coffea mauritiana</i>	Endemic to Mascarenes
Rubiaceae	<i>Coffea myrtifolia</i>	Endemic to Mauritius
Rubiaceae	<i>Coptosperma borbonica</i>	Endemic to Mascarenes
Rubiaceae	<i>Coptosperma cymosa</i>	Endemic to Mauritius
Rubiaceae	<i>Danais fragrans</i>	Native
Rubiaceae	<i>Danais sulcate</i>	Endemic to Mauritius
Rubiaceae	<i>Fernelia buxifolia</i>	Endemic to Mascarenes
Rubiaceae	<i>Fernelia decipiens</i>	Endemic to Mauritius
Rubiaceae	<i>Fernelia obovate</i>	Endemic to Mauritius
Rubiaceae	<i>Gaertnera calycina</i>	Endemic to Mauritius
Rubiaceae	<i>Gaertnera cuneifolia</i>	Endemic to Mauritius
Rubiaceae	<i>Gaertnera edentate</i>	Endemic to Mauritius
Rubiaceae	<i>Gaertnera hirtiflora</i>	Endemic to Mauritius
Rubiaceae	<i>Gaertnera longifolia</i>	Endemic to Mauritius
Rubiaceae	<i>Gaertnera pendula</i>	Endemic to Mauritius
Rubiaceae	<i>Gaertnera psychotrioides</i>	Endemic to Mauritius
Rubiaceae	<i>Gaertnera rotundifolia</i>	Endemic to Mauritius
Rubiaceae	<i>Ixora borboniae</i> var. <i>obovate</i>	Endemic to Mascarenes
Rubiaceae	<i>Ixora nitens</i>	Endemic to Mauritius
Rubiaceae	<i>Ixora parviflora</i> var. <i>ovata</i>	Endemic to Mauritius
Rubiaceae	<i>Ixora parviflora</i> var. <i>violacea</i>	Endemic to Mauritius
Rubiaceae	<i>Ixora vaughanii</i>	Endemic to Mauritius
Rubiaceae	<i>Psathura borbonica</i>	Endemic to Mauritius
Rubiaceae	<i>Psathura borbonica</i> var. <i>grandiflora</i>	Endemic to Mauritius
Rubiaceae	<i>Psathura myrtifolia</i>	Endemic to Mauritius
Rubiaceae	<i>Psathura terniflora</i>	Endemic to Mauritius
Rubiaceae	<i>Pyrostria cordifolia</i> var. <i>cordifolia</i>	Endemic to Mauritius
Rubiaceae	<i>Pyrostria cordifolia</i> var. <i>polymorpha</i>	Endemic to Mauritius
Rubiaceae	<i>Pyrostria fasciculata</i>	Endemic to Mauritius
Rubiaceae	<i>Pyrostria macrophylla</i> var. <i>macrophylla</i>	Endemic to Mauritius
Rubiaceae	<i>Pyrostria viburnoides</i>	Endemic to Mauritius
Rutaceae	<i>Melicope chapelieri</i> var. <i>chapelieri</i>	Endemic to Mauritius
Rutaceae	<i>Melicope chapelieri</i> var. <i>sessilis</i>	Endemic to Mauritius
Rutaceae	<i>Melicope obtusifolia</i> subsp. <i>gigas</i> var. <i>brachypoda</i>	Endemic to Mauritius
Rutaceae	<i>Melicope obtusifolia</i> subsp. <i>gigas</i> var. <i>cuneifolia</i>	Endemic to Mauritius
Rutaceae	<i>Melicope obtusifolia</i> subsp. <i>gigas</i> var. <i>gigas</i>	Endemic to Mauritius
Rutaceae	<i>Melicope obtusifolia</i> subsp. <i>obtusifolia</i> var. <i>obtusifolia</i>	Endemic to Mauritius
Rutaceae	<i>Toddalia asiatica</i>	Native
Rutaceae	<i>Vepris lanceolate</i>	Native
Rutaceae	<i>Zanthoxylum heterophyllum</i>	Endemic to Mascarenes
Salicaceae	<i>Homalium integrifolium</i>	Endemic to Mauritius
Salicaceae	<i>Homalium paniculatum</i>	Endemic to Mascarenes
Salicaceae	<i>Ludia mauritiana</i>	Native
Salicaceae	<i>Casearia coriacea</i>	Endemic to Mascarenes
Salicaceae	<i>Casearia mauritiana</i>	Endemic to Mauritius
Salicaceae	<i>Scolopia heterophylla</i>	Endemic to Mascarenes
Santalaceae	<i>Viscum triflorum</i>	Native
Sapindaceae	<i>Allophylus borbonicus</i>	Endemic to Mascarenes
Sapindaceae	<i>Cossinia pinnata</i>	Endemic to Mascarenes
Sapindaceae	<i>Dodonaea viscosa</i>	Native
Sapindaceae	<i>Doratoxylon apetalum</i> var. <i>apetalum</i>	Endemic to Mascarenes

Sapindaceae	<i>Doratoxylon apetalum</i> var. <i>diphyllum</i>	Endemic to Mascarenes
Sapindaceae	<i>Hornea mauritiana</i>	Endemic to Mauritius
Sapindaceae	<i>Molinaea alternifolia</i>	Endemic to Mascarenes
Sapindaceae	<i>Molinaea laevis</i>	Endemic to Mauritius
Sapindaceae	<i>Molinaea macrantha</i>	Endemic to Mauritius
Sapindaceae	<i>Stadmania oppositifolia</i> subsp. <i>Oppositifolia</i>	Native
Sapotaceae	<i>Labourdonnaisia calophylloides</i>	Endemic to Mascarenes
Sapotaceae	<i>Labourdonnaisia glauca</i>	Endemic to Mauritius
Sapotaceae	<i>Labourdonnaisia revolute</i>	Endemic to Mauritius
Sapotaceae	<i>Mimusops erythroxyton</i>	Endemic to Mauritius
Sapotaceae	<i>Mimusops maxima</i>	Endemic to Mascarenes
Sapotaceae	<i>Mimusops petiolaris</i>	Endemic to Mauritius
Sapotaceae	<i>Sideroxylon boutonianum</i>	Endemic to Mauritius
Sapotaceae	<i>Sideroxylon cinereum</i>	Endemic to Mauritius
Sapotaceae	<i>Sideroxylon grandiflorum</i>	Endemic to Mauritius
Sapotaceae	<i>Sideroxylon puberulum</i>	Endemic to Mauritius
Sapotaceae	<i>Sideroxylon sessiliflorum</i>	Endemic to Mauritius
Smilacaceae	<i>Smilax anceps</i>	Native
<u>Stilbaceae</u>	<i>Nuxia verticillata</i>	Endemic to Mascarenes
Urticaceae	<i>Elatostema fagifolium</i>	Endemic to Mascarenes
Urticaceae	<i>Pilea atroviridis</i>	Endemic to Mauritius
Urticaceae	<i>Pilea cocottei</i>	Endemic to Mauritius
Urticaceae	<i>Pilea cuneiformis</i>	Endemic to Mauritius
Urticaceae	<i>Pilea laevicaulis</i>	Endemic to Mauritius
Urticaceae	<i>Pilea lucens</i> ssp. <i>lucens</i> .	Endemic to Mauritius
Urticaceae	<i>Pilea pollicaris</i>	Endemic to Mauritius
Urticaceae	<i>Pilea verbascifolia</i>	Endemic to Mauritius
Urticaceae	<i>Pouzolzia laevigata</i>	Endemic to Mascarenes
Urticaceae	<i>Procris pedunculata</i> var. <i>pedunculata</i>	Native
Urticaceae	<i>Urera acuminata</i>	Endemic to Mauritius
Verbenaceae	<i>Clerodendron heterophyllum</i>	Endemic to Mascarenes
Verbenaceae	<i>Premna serratifolia</i>	Native
Vitaceae	<i>Cyphostemma mappia</i>	Endemic to Mauritius
Xanthorrhoeaceae	<i>Aloe purpurea</i>	Endemic to Mauritius
Zingiberaceae	<i>Aframomum angustifolium</i>	Native

Please note that this list is not exhaustive and an inventory of all the species present would be a continuous process and as part of the implementation of the Management Plan.

Studies would be required to be carried out for lesser known classes such as invertebrates, freshwater biodiversity in particular.

Annex VI: Native Faunal Vertebrates (source BRGNP Management Plan)

Scientific Name	Common Name
Reptiles	
<i>Gonglyomorphus fontenayi</i>	Macchabé skink
<i>Phelsuma cepediana</i>	Blue-tailed day gecko
<i>Phelsuma guimbeaui</i>	Lowland forest day gecko
<i>Phelsuma ornata</i>	Ornate day gecko
<i>Phelsuma rosoegularis</i>	Upland forest day gecko
Land Birds	
<i>Coracina typica</i>	Mauritius cuckoo shrike
<i>Falco punctatus</i>	Mauritius kestrel
<i>Foudia rubra</i>	Mauritius fody
<i>Hypsipetes olivaceus</i>	Mauritius black bulbul
<i>Nesoenas mayeri</i>	Pink pigeon
<i>Psittacula eques</i>	Mauritius parakeet
<i>Terpsiphone desolata</i>	Mauritius paradise fly catcher
<i>Zosterops chloronothos</i>	Mauritius olive white-eye
<i>Zosterops borbonicus mauritanus</i>	Mauritius grey white-eye
Mammals	
<i>Pteropus niger</i>	Mauritius fruit bat
<i>Taphozous acetabulosus</i>	Mauritius Tomb bat
<i>Mormopterus acetabulosus</i>	Natal Free-tailed bat

Annex VII

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