ESS1: Assessment and Management of Environmental and Social Risks and Impacts

Environmental and Social Impact Assessment (ESIA)
and
Environmental and Social Management Plan (ESMP)

May 24, 2022

CEPF Grant #112652

Caribbean Coastal Area Management Foundation

"Participatory preparation and implementation of the Portland Bight Protected Area Management Plan, Jamaica"

Contents

Grant Summary

1. Grantee organization: Caribbean Coastal Area Management Foundation
2. Grant title: "Participatory preparation and implementation of the Portland Bight Protected Area Management Plan, Jamaica"
3. Grant number: #112652
4. Grant amount (US dollars): $388,483.53
5. Proposed dates of grant: 1 July 2022 to June, 2025
6. Countries or territories where project will be undertaken: Jamaica
7. Date of preparation of this document: May 24, 2022

8. Summary of the project:
This project will greatly increase the capacity of the Caribbean Coastal Area Management Foundation (C-CAM) and its partners to implement effective management of the Portland Bight Protected Area (PBPA), which supports 14 CEPF trigger species including 6 CR and 2 EN species. It was developed through consultations with stakeholders, including discussions at the last multi-agency Operations Planning meeting in October 2021, as well as one-on-one discussions with NEPA, National Fisheries Authority, and Forestry Department in 2021 and 2022, a review of the 2018 METT assessment, and Vulnerability Risk Assessment (VRA) workshops. Letters of endorsement have been received from National Environment and Planning (NEPA) and Forestry Department and the National Fisheries Authority (NFA) and have been uploaded in Conservation Grants. The conceptual diagram for the project has also been uploaded.

The project will be implemented through seven mutually supporting components that will address major threats to the EN and CR species of the PBPA including habitat loss and degradation, invasive alien species, and climate change and will directly or indirectly support the conservation of all the trigger species and provide C-CAM with the institutional capacity to implement the project according to CEPF's requirements.

1. Preparation of PBPA Management and Zoning Plan (2023-2028), which will form the basis for a formally agreed framework for management of the PBPA and will address both general and specific threats to biodiversity and livelihoods.
2. Reduction of threats of human disturbance and unsustainable use of biodiversity in the PBPA, through action planning and experimental cultivation for selected EN and CR species.
3. Reduction of the threat of invasive alien species (IAS) to dry forest trigger species and their habitats through actions focused mainly on the impacts of Cuban Tree Frog *Osteopilus septrionalis* on Portland Bight Frog *Eleutherodactylus cavernicola* CR.
4. Participatory monitoring of the PBPA to support management and implement CEPF monitoring requirements
5. Engagement of stakeholders in conservation of the important biodiversity (including triggers species) and making them aware of the need and options for conservation and climate change adaptation. The outreach will prepare communities, decision-makers and local and national government agencies for informed participation in the management planning and zoning processes for the PBPA. It will support mainstreaming of biodiversity into national and local policies and plans and raise awareness on what our national and local government partners, corporate bodies, NGOs. CBOs, communities and individuals can do implement the management plan and species action plans and to comply with laws and zoning and thereby to reduce direct and indirect threats to the CR and EN species of the PBPA and their habitats.

6. Institutional strengthening and capacity building of C-CAM, including the hiring of project staff and consultants to support implementation. Overall coordination will be provided by a project coordinator consultant, while the planning, education and monitoring aspects will be overseen by the lead consultant.
7. Ensure efficient project management and compliance with CEPF policies.

Support from CEPF for this project will build on approximately $350,000 being provided by European Union and BIOPAMA for two projects currently being implemented by C-CAM.

All these actions which will result in threat reduction are dependent on an aware and supportive cadre of staff among C-CAM, management agencies, partners, decision-makers, and the general public and a supportive network of citizen scientists. Therefore development and implementation of a comprehensive stakeholder outreach programme to support the management planning and zoning initiative, as well as mainstreaming climate change and biodiversity into policies and plans is fundamentally important to the success of these strategies.

9. Legal and regulatory framework:
There are several national environmental and planning laws and regulations in Jamaica that apply to the project.

Table 9.1: Relevant environmental and social regulations

Act	Description
Natural Resources Conservation Authority (NRCA) Act (1991)	The Act establishes the Natural Resources Conservation Authority and sets out its functions, which includes the management, conservation and protection of the island's natural resources by way of the effective management of the physical environment and the promotion of public awareness of the ecological systems of Jamaica. The Act includes provisions for delegation of management authority to NGOs or private sector in support of shared or collaborative management arrangements.
The Public Health Act (1996)	An act to make provision for promoting the public health and for preventing the spread of communicable and epidemic diseases.
The Disaster Preparedness and Emergency Management Act (1993)	An Act to ensure the development and implementation of policies and programmes to achieve and maintain an appropriate state of national and sectoral preparedness for coping with all emergency situations which may affect Jamaica.
The Wild Life Protection Act (1991)	An act to make provision for the protection of certain wild animals, birds and fish and for other matters relating thereto and connected therewith.
The Endangered Species (Protection, Conservation and Regulation of Trade) Act (2015)	The Endangered Species (Protection, Conservation and Regulation of Trade) Act was created in 2000 in order to ensure the codification of Jamaica's obligations under the Convention for the International Trade in Endangered Species of Wild Fauna and Flora. This Act governs international and domestic trade in endangered species in and from Jamaica. Under this act, the functions of NEPA include the grant of permits and certificates for the purpose of

Act	Description
	international trade, the determination of national quotas and the monitoring of the trade in endangered species.
The Forest Act (1996)	This Act sets out the role and function of the Forestry Department and the Conservator of Forests. The Act vests responsibility in the Conservator of Forests for developing and maintaining an inventory of forests and lands suitable for the development of forests. Sections 12 and 13 of the Act make provisions for the appointment of local forest management committees with responsibility for supporting monitoring of the forest, engaging communities and advising the Conservator on matters relating to the development of the forest management plan and the making of regulations.
The Watershed Protection Act (1963)	Governs the activities operating within the watersheds, as well as, protects these areas.
The Draft Occupational Safety & Health Act (2017)	Oversees the prevention of injury and illness resulting from conditions at the workplace, the protection of the safety and health of workers and the promotion of safe and healthy workplaces.
The Fishing Industry (Special Fishery Conservation Area) Regulation (2012)	Declare areas specified in the Schedules to these Regulations to be special fishery conservation areas. No person shall fish in a special fishery conservation area except in accordance with - (a) a license issued by the Licensing Authority under the provisions of the Act; and (b) the provisions of the directions issued by the Minister under these Regulations.
The Factories Act (Operational August 1, 1943 and last amended January 1, 2009.)	The main objective of the Act is not only to ensure adequate safety measures but also to promote the health and safety of workers in workplaces.
The Jamaica National Heritage Trust Act (1985)	The Act makes provisions for the protection of national monuments and protected national heritage and the establishment of the Jamaica National Heritage Trust for this purpose.

10. Status of the area to be impacted:

The Portland Bight Protected Area (PBPA), at 724 square miles (or 187,615 hectares) is by far the largest protected area in Jamaica. It was designed to integrate conservation of marine, coastal and terrestrial ecosystems with compatible human activities. Its land area (200.4 square miles) is 4.7% of the island of Jamaica, and its marine area (523.7 square miles) is a significant part of Jamaica's shallow shelf. The PBPA includes most of the southern parts of the parishes of St. Catherine and Clarendon and the sea to the edge of the coastal shelf (Figure 1).

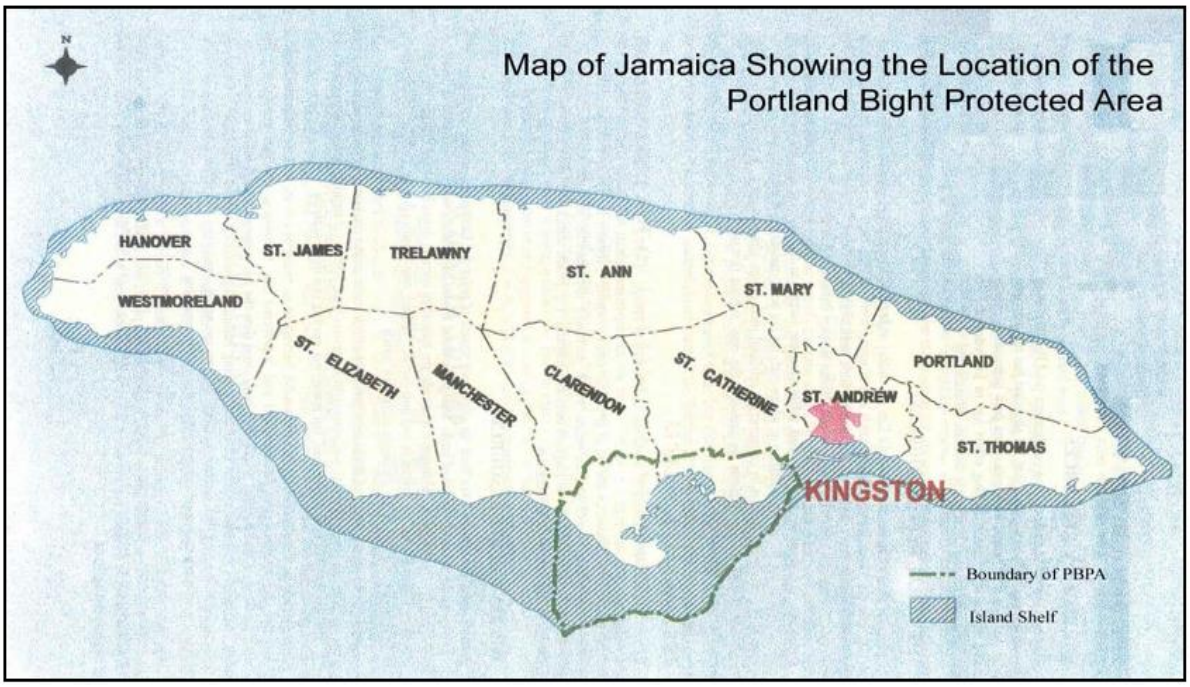

Figure 1: Location of the PBPA

The PBPA was declared under the NRCA Act in 1998, and the Portland Bight Wetlands and Cays Ramsar site in 2004. The PBPA also contains 4 Game Sanctuaries, 3 Special Fisheries Management Areas, two Forest Reserves and several National Heritage sites. The PBPA it is the largest protected area in Jamaica, and stretches out to the edge of the island shelf, which is at its widest in this area. The protected area was designed to integrate biodiversity conservation with measures to improve the quality of life of the residents. This is why the boundaries were drawn to include many of the users of the natural resources of the area, in the expectation that this would encourage them to acknowledge their ownership and responsibility for the area. The PBPA is managed on behalf of the National Environment and Planning Agency (NEPA) by Caribbean Coastal Area Management Foundation (C-CAM) based on the PBPA Management Plan (2013-18). This plan established the vision that "the PBPA is sustainably and collaboratively managed to conserve its biodiversity and preserve its cultural heritage while providing an improved quality of life for all."

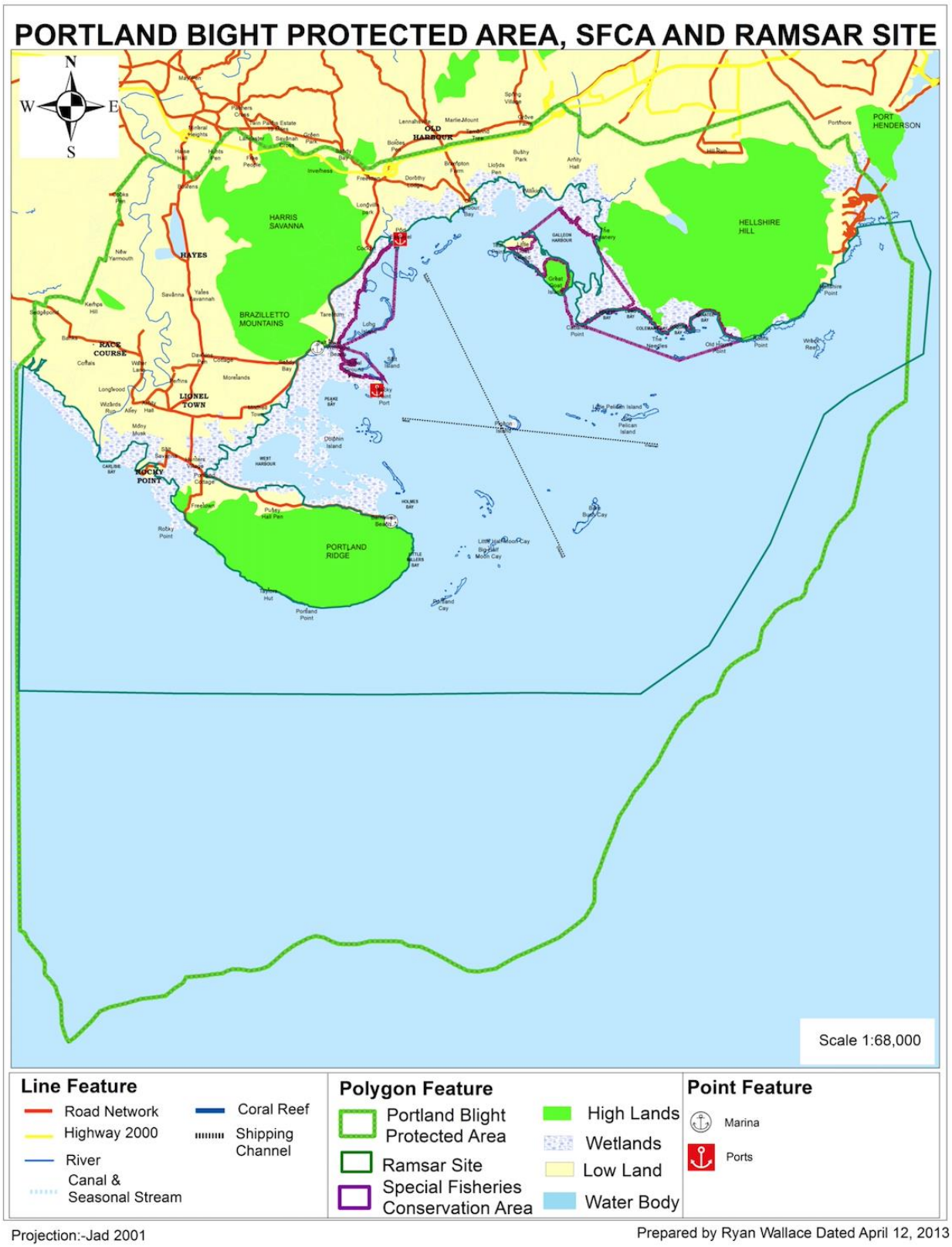

Figure 2: Boundaries of the PBPA showing Ramsar site and Special Fishery Conservation Areas

The PBPA's terrestrial area includes the dry forests of Hellshire Hills, Brazilletto Mountains, Kemps Hill and Portland Ridge, the lower reaches of the Rio Minho (one of the largest rivers in Jamaica) as well as the surrounding agricultural lands (mostly sugar cane), settlements and towns that surround them. Dry limestone forests cover 41% of the land area of Hellshire, Portland Ridge, and Braziletto Mountains. This unique forest is rated as the largest relatively intact forests of that type left in Central America and the Caribbean (81 sq. miles, 210 sq. km). Its freshwater ecosystems include the lower reaches of the Rio Minho – one of the largest rivers in Jamaica and many other streams, gullies and irrigation canals. Another 16% of the land area (32 sq. miles, 82 sq. km) is wetlands, the largest almost continuous mangrove stands remaining in Jamaica (about 48 km long), as well as 2 ports and several fishing communities. There are also extensive coral reefs, seagrass beds and mud and sand benthic communities. Extensive seagrass beds and coral reefs. The Caribbean Ecosystem Profile noted 14 trigger species and identified the PBPA as one of the most important sites for biodiversity in the region. At least 4 species of reptiles and amphibians are endemic to Portland Bight, including the Jamaican Iguana *Cyclura collei* – one of the hundred rarest species in the world.

The PBPA is home to Rocky Point and Old Harbour beaches, which are two of the largest fish landing sites in Jamaica; however, the negative impacts of climate change as experienced through prolonged droughts and flooding, and storm surges as well as the exacerbating effects of COVID19 have worsened the poor socio-economic situation of most of the persons within the PBPA. It has been said the Jamaica is one of the most overfished areas in the Caribbean and fisherfolks have reported declining catch as well as some little or no sightings of some types of fish.

The area was largely dependent on sugar cane production and processing which is no longer operational except in small pockets. The community members are dependent on artisanal fishing (boat owners, fishermen, net menders, pot makers, boat repair men, vendors, and scalers), charcoal burning, small-scale agriculture (crops and animals), and micro-business (hairdressers, bars, shopkeepers, barbers, etc.). The area is also home to aquaculture farmers (e.g., Hill Run, St. Catherine and, Longville, Clarendon) where tilapia farming is done.

In the PBPA are large operations which employ persons from within and outside the area such as bauxite operations and ports (Jamalco and Windalco), Jamaica Energy Partners power plant, as well as large scale animal feed, chicken and pig producers (Caribbean Broilers and Jamaica Broilers).

The literacy and academic levels of people in the PBPA are among the lowest in the country and as such the opportunities for employment are few. There is dependency on remittances from family and friends overseas to offset gaps in earnings of many residents in Jamaica and in the PBPA specifically.

11. Approach:

The project will address threats of human disturbance, invasive alien species, and climate change and support the conservation of trigger species by updating and implementing the PBPA Management Plan 2013-18 using a participatory approach. As part of this project a zoning plan will be developed, however, it is not anticipated to be implemented under this project and there will be no restriction of access to resources. Where the zoning plan makes recommendations for restriction of access, it will clearly identify users of the resources who may be impacted by the restriction and measures to address these claims and mitigate the social impact. The process of developing the plan will consider the interests of non-residents who also use the resources. It will engage developers and government agencies in addressing threats resulting from illegal and unsustainable human activities through

improved development control supported by zoning. It will also include expanding existing monitoring programmes (with an increased emphasis on citizen science), and increasing awareness, education and outreach programmes designed to increase compliance and support among all stakeholders (particularly in relation to climate change and biodiversity). The project will provide the necessary technical support, human and financial resources, equipment and vehicles to support the implementation of the old and updated management plans.

Under the PBPA Management Plan 2013-2018, nine conservation targets[1] were identified through participatory processes (Table 11.1). The assumption was that by focusing on these targets it would be possible to develop approaches that would conserve the full range of biodiversity of the PBPA. Each conservation target included a range of nested targets and a justification for the selection of each target.

Table 11.1: Conservation targets in the PBPA

Conservation Target	**Nested Target**	**Target Justification**
Dry forests	Forest ecosystem sub-types Endemic plants Threatened species Birds (including gamebirds and migratory birds) Endemic reptiles (including 4 site endemics) Amphibians (including 1 site endemic) Native mammals (Jamaican Coney *Geocapromys browneii* and bats)	Dry forests provide habitat for endemic and threatened species and provide important ecological services such as watershed protection
Caves	Caves with bats Underwater caves Threatened cave species	Caves support several of the most endangered species in the PBPA. They support bat populations, which are important for pollination and seed dispersal. Many important Taino sites are located in the PBPA caves.
Jamaican Iguana	Jamaican Hutia	The Jamaican Land Iguana is the most threatened lizard in the world. It occurs only in the core of Hellshire.
American Crocodile	Marine and freshwater ecosystems and their species	American Crocodiles are a threatened species, ecologically and potentially economically important but highly threatened by killing and habitat loss.

[1] A conservation target is the biological attribute or value of the land that is the focus of a conservation project. It may be a species, biological community, ecological process, or socio-ecological value such as open space. In this sense, "targets" should not be interpreted as objectives that can be met or not met.

Conservation Target	Nested Target	Target Justification
Mangrove wetlands	Mangrove ecosystems West Indian Whistling Duck Birds (including shorebirds and migratory warblers) Land crabs Fish nurseries	Portland Bight has the longest remaining mangrove coastline in Jamaica. Mangroves are essential for coastal protection and fish nurseries.
Freshwater ecosystems and biodiversity	Freshwater ecosystems Threatened freshwater species Migratory freshwater species	Portland Bight is influenced by two major river systems (Rio Cobre and Rio Minho). Freshwater ecosystems are among the most threatened in Jamaica.
Coral Reefs	Marine breeding grounds Acroporid corals	Prior to the late 1980's Portland Bight had some of the most extensive coral reef systems in Jamaica but the reefs are severely stressed by pollution, overfishing and bad fishing practices such as dynamiting.
Sea grass beds and West Indian Manatee	Sea horses Sea turtles Juvenile fish, lobster and conch	Portland Bight supports extensive seagrass beds, which are important as fish nurseries and stabilize the shoreline. Manatees are globally threatened. Once common in Portland Bight they were almost extirpated but are starting to recover.
Sandy beaches and cays	Sea turtles Seabirds	Important for nesting sea turtles, crocodiles, lizards and seabirds.

12. Baseline data:

According to the 2013-2018 PBPA management plan and biodiversity plans for Hellshire Hills and Portland Ridge (carried out under previous CEPF projects), human-related disturbance (e.g., residential, commercial, industrial and tourism development, mining, energy and fire) is the biggest threat to biodiversity in the PBPA. The main issues affecting the natural resources of the PBPA are summarized in Table 15.1 below, as identified in the PBPA management plan (2013-2018). Although some of these threats have been addressed, in part, by different projects and activities since 2013, they are still considered to be the main threats to the PBPA natural resources. Rapid analysis of the success of the implementation of the PBPA Management Plan (2013-2018) will be done under this project, identifying any positive and negative impacts and lessons that can guide the recommendations of the updated management plan. By way of example, a World Bank/PROFOR study in 2019 showed that some 60% of community members of Portland Cottage, one of the PBPA communities, are self-employed. Over half of these are fishermen. Pollution, overfishing and drought were key threats identified to the coastal habitat of Portland Cottage. Several studies, including a climate change risk assessment carried out for C-CAM by the Climate Studies Group of the University of the West Indies, indicated that the coastal communities of the PBPA are the most at-risk areas of Jamaica to climate change.

Table 12.1: Threats to natural resources of the PBPA (PBPA management plan 2013-18)

Category / Major Threat	Description
Resource Management	
Poor water resources management	E.g., over-pumping of aquifers, leading to salinization of springs and increased salt wedges, damming and channelization of rivers. Water demand expected to increase with new developments.
Fisheries management (poor fishing practices)	This includes use of dynamite, seine nets, bottom trawls, chemicals, small mesh nets and pots and night fishing with spear guns.
Charcoal burning and harvest of posts and sticks	Charcoal burning is a major threat to the Brazilletto Mountains and Hellshire. Extraction of lumber is widespread but less pervasive in the core of Portland Ridge. The source, dynamics and sustainability of the posts that are sold on the May Pen highway has never been assessed.
Illegal hunting and collection of natural resources	Hunting of columbids, duck, pond turtles, snakes and crocodiles, collection of orchids and thatch.
Climate Change & Natural Disasters	
Hurricanes and storms (including flash flooding)	Hurricanes Dean and Ivan did severe damage to forests, mangroves, infrastructure and housing. The area is particularly vulnerable to natural disasters. Severe hurricanes are expected to be more frequent with climate change.
Sea level rise	Sea level rise potentially reduces habitat for beach nesting species, drown coastal woodlands and mangroves, and make it harder for coral reefs and sea grass beds to recover from storm damage.
Increasing sea temperatures	Climate change is increasing sea temperatures. Coral reefs are particularly vulnerable**.**
Changes in rainfall patterns	Rainfall is expected to become more intense and less predictable, resulting in more droughts and more flooding. This could affect agriculture.
Fire	Dry forests and herbaceous wetlands are vulnerable to fire, especially after a hurricane. Cane fires can damage remnants of forests on the plains. Most fires are deliberately set.
Unsustainable Development	
Expansion of housing and urban areas to unsuitable areas	New housing is being built on flood plains, high quality agricultural lands, and in remote green field sites. A new town has been proposed for the Brazilletto Mountains.
Fish and shrimp farms	Large areas of wetlands have been converted into fish and shrimp farms, most of which have been abandoned, leaving unproductive land. Such farms are sinks for crocodiles and birds, which may be illegally shot as pests. They also contribute to water pollution.
Expansion of industrial	Western Portland Bight is one of the most vulnerable areas but has been identified as a potential industrial zone. There would be severe

Category / Major Threat	Description
development to unsuitable areas	risks to facilities constructed in this area, and removal of mangroves would greatly increase the vulnerability of coastal communities.
Badly sited quarries, quarry zones and infrastructure	There are plans for extensive limestone quarrying. Older licenses may have been issued without respect to impacts on landscape and biodiversity or requirements to restore the landscape. Mining of sand and aggregates in the bed of the Rio Minho may be unsustainable.
Poor agricultural practices	Slash and burn agriculture in the forests and upper watersheds, use of agricultural chemicals
Shipping lanes	The shipping channels provide access for tankers and cargo vessels operating to and from the ports. Risks include groundings (with damage to reefs), oil and chemical spills, and accidental introduction of invasive alien species in bilge water. Shipping channels require regular dredging and disposal of dredge spoil, which can cause turbidity which kills reefs and reduces the health of sea grasses.
Expansion of unsustainable tourism and recreation	Proposals for hotels in unsuitable sites, mass tourism, squatting at Salt River Spa.
Pollution	
Water pollution	Freshwater: salinization of aquifers due to over pumping, eutrophication from agricultural fertilizers and sewage. Ground water pollution from bauxite plants. Seawater: Pollution from Kingston Harbour spreading along south coast with major currents, pollution from rivers and gullies, heated water and other effluents from power plants, oil spills and chemical spills. Outflows from Portmore sewage plants, lack of sewage systems in coastal settlements and towns. Freshwater upwellings and springs on the seafloor can carry pollution and sediments straight to the reefs from the central inlier.
Garbage and solid wastes	Garbage is commonly dumped in gullies, or fly-tipped in wetlands and other remote areas. The cost of transporting garbage to the sanitary landfill at Riverton is an issue. There are no local recycling facilities.
Air pollution	Smoke from power plants, cane fires and charcoal burning. Ammonium hydroxide fumes from red mud lakes and bauxite factories. Alumina dust from loading piers.
Noise pollution	Noise from pumping stations, power plants, power barges, sugar factories and railway line.
Invasive Alien Species	
Invasive alien species	Invasive alien species are invading freshwater, terrestrial and marine habitats. The most severe threat to marine ecosystems is the Lionfish (*Pterois volitans*). Mongoose, cats, dogs, rats and pigs are a

Category / Major Threat	Description
	major problem on land. Various species of plants, fish and shrimp are affecting freshwater ecosystems.

There are 14 trigger species identified for the PBPA but only the Jamaican Iguana has been studied in detail. Two other species – the Jamaican Hutia and the Portland Ridge Frog are the subjects of community-based assessments under the ongoing EU project. Apart from the manatee and the Jamaican Slider, the trigger can all be considered as nested targets for the dry forests. A plant inventory for Hellshire Hills and a botanical assessment for Portland Ridge was carried out under previous CEPF projects. A KAP study of the Hellshire Hills indicated the high levels of dependence of local communities on the natural resources of the dry forests – but none of the trigger species has direct economic importance.

13. Anticipated impacts and risks:

Below Table 13.1 outlines the potential positive and negative environmental and social impacts and risks associated with the project. There are minimal negative environmental impacts or outcomes associated with the project. There are potential negative impacts related to excluding vulnerable groups from mainstream consultations. This could include risks of sexual harassment, exploitation and abuse as well as the risk of discrimination, and labour accidents. The measures to combat or reduce those risks and impacts would include implementing the LMP, SEP, and Community and Health Safety Plan activities.

Table 13.1: Anticipated impacts and risks from the proposed project

Activity	Impact	Impact type	Impact probability	Level of Impact
Environmental				
More positive actions by a more environmentally aware populace and enhanced biodiversity conservation	Reduction of threats to the natural environment	Positive	Medium	High
Vehicle use for project activities	Increased emissions	Negative	Medium	Low
Development of demonstration plots for plant nurseries	Removal of small amounts of vegetation	Negative	Medium	Low
Prevention of spread of IAS Cuban Tree Frog	Euthanasia of individuals of the Cuban Tree Frog species[2]	Positive Negative	Medium	High

[2] The project will be implemented in partnership with relevant stakeholders (community, government, NGOs, etc.). All necessary agreements will be sought before on-the-ground actions are undertaken including those related to euthanasia of the Cuban Tree Frog.

Social				
Community monitoring, and involvement in participatory planning will result in more empowered stakeholders	Improved community engagement	Positive	High	High
Vehicle use for project activities	Risk to human safety from accidents	Negative	Medium	Low
Development of zoning plan to define and delimit land units for specific purposes	Proposed conservation and other use zones may ultimately impact landowners and their activities	Negative	Low	High
Community meetings, events and other stakeholder engagement	Transmission of communicable diseases, such as COVID-19, to local stakeholders.	Negative	High	High

14. Mitigation measures:

Below Table 14.1 outlines the identified negative impacts and proposed mitigation measures.

Table 14.1: Mitigation measures for anticipated negative impacts

Risk	Mitigation Measures	Responsibility
Emissions from vehicle use for project activities	The vehicle to be procured under the project will be new and undergo routine maintenance as recommended by the dealer. Drivers of the vehicle will be advised of good practices to reduce emissions, such as not carrying excess weight, reduced idling times, and carpooling for trips when possible.	C-CAM's Science Officer and Project Coordinator
Removal of small amounts of vegetation as a result of the nursery activities and demonstration plots	It is likely that some area(s) may need to be cleared to develop demonstration plots and activities associated with the plant nursery, however, it is also likely that there will be no loss of significant biodiversity. Due diligence will be conducted before clearing to ensure	C-CAM's Science Officer and Gardener

	that there are no biologically important species at the site.	
Euthanasia of Cuban Tree Frog individuals as part of preventing its spread	The approach to the removal of this IAS recommended in the scientific literature is to euthanize them. Although this is a negative impact to the species, the continued spread of the IAS is a greater concern. The project will develop a protocol specifically for the monitoring and removal of the Cuban Tree Frog, which will be guided by Jamaica's national action plan for control of Cuban Tree Frog. Outreach and training among communities and monitors will increase the chances of the recommended humane euthanasia procedures.	C-CAM's Science Officer, Public Education Officer, Lead Technical Consultant
Risk to human safety from accidents from vehicle use for project activities	The vehicle to be procured under the project will be new and undergo routine maintenance as recommended by the dealer. Authorized drivers of the vehicle will have the necessary license to operate the vehicle in question and third-party insurance will be applied to the vehicle. The driver will also follow the Jamaican road code, including adhering to the speed limit.	C-CAM's Science Officer and Project Coordinator
Proposed conservation zones may ultimately impact landowners and their activities as a result of the development of zoning plan	It is not expected that any existing land users will be affected e.g., by new no-build zones, as these activities affect future not current construction. However, the zoning process is a multi-stakeholder and participatory one. C-CAM will engage a comprehensive cross-section of land owners, to raise awareness on the proposed zones, and take all stakeholders' views into consideration. Stakeholders will be encouraged to identify any potential negative impacts from proposed management strategies and activities and to work with C-CAM to identify solutions before they become grievances.	Lead Technical Consultant and Public Education Officer from C-CAM
Transmission of communicable diseases, such as COVID-19, to local stakeholders during community meetings, events and other stakeholder engagement	Mitigation measures to prevent the spread of COVID-19 will be followed as guided by the Ministry of Health and Wellness. Detailed COVID-19 prevention measures are outlined in the Community Health & Safety Plan.	Assistant Administration and Finance Officer, Public Education Officer, Office Cleaner from C-CAM and all consultants charged with hosting meetings.

15. Actions to ensure health and safety:
The Community Health and Safety Plan identifies different risks to the health and safety of workers and outlines mitigation measures. These include risks of natural hazards such as hurricanes, earthquakes, and the transmission of COVID-19. C-CAM will avoid hosting sessions during the season where feasible and pay close attention to national bulletins regarding hazards such as hurricanes and flooding and implement the recommended safeguards and not jeopardize stakeholders. Communication with the RIT and CEPF will be maintained to keep them appraised of any challenges.

Regarding the transmission of COVID-19, face-to-face sessions with stakeholders will be held following the Ministry of Health and Wellness protocols. This will include meeting rooms where sufficient space to accommodate participants while observing social distancing and maximum occupancy protocols and masking. We will ensure that the necessary handwash or sanitization stations are in place. Where feasible online sessions will be held.

Waste from C-CAM's operations is containerized and taken away by the National Solid Waste Management Authority at a monthly cost based on the current agreement. Wastewater and sewage at the field station and PBDC are disposed of with a reed bed system. Wastewater and sewage at Lionel Town go into a central waste disposal system.

16. Monitoring and evaluation:
Monitoring of the PBPA, in general, is a major component of the project (see above), and specifically as per guidance from CEPF, the following monitoring tools will be utilized during the project.

Table 16.1: Monitoring and evaluation

Monitoring Tool	Frequency
Civil Society Tracking Tool (CSTT)	Yearly, starting at the first project quarter and ending in 2027
Gender Tracking Tool (GTT)	Twice during the life of the project, baseline in the first project quarter and final during project close
IBA monitoring framework	Yearly, starting at the first project quarter
Management Effectiveness Tracking Tool (METT)	Twice during the life of the project, baseline in the first project quarter and final during project close

In addition to the above, the impact of the education and awareness programmes will be assessed through KAP surveys of stakeholders at the end of the project following one to be done in 2022 under the European Union-funded project. Other activity-specific indicators and measures have been identified in the log frame.

17. Implementation schedule and cost estimates:
The below table outlines those activities that have potential environmental or social risks that need mitigating and estimated costs associated with the same. For staff with responsibility for E&S mitigation (as identified above), a percentage of their budgeted costs has been used.

Table 17.1: Implementation schedule and cost estimates for the duration of the project

Action	Implementation Schedule	Responsibility/estimated level of effort (% of time allocated to sub-project)	Cost Estimate (USD)
Component 1: Update PBPA Management and Zoning Plan (2023-2028)			
Mitigation measures to prevent the spread of COVID-19	Sept 2022 – Dec 2024	1% Assistant Administration & Finance Officer 1% Public Education Officer 50% Office Cleaner 1% Technical Lead Consultant 1% Management Consultant 1% KAP consultant	$4,000
Component 2: Support Conservation Action Planning and Implementation to Conserve Three EN and CR Red Listed species			
Ensuring no biologically important species are removed during tree nursery activities	Dec 2022 – Jun 2025	1% Science Officer 1% Gardener	$150
Component 3: **Reduction of the threat of invasive alien species (IAS) to dry forest trigger species and their habitats**			
Ensuring the correct Cuban Tree Frog removal protocols are adhered to	Jan 2023 – Jun 2025	2% Science Officer 186 2% Assistant Science Officer 814 2% Project Coordinator 609 2% Lead Technical Consultant 946 2% Communications Consultant 193	$4,500
Component 4: Participatory monitoring of the PBPA to support management and CEPF monitoring requirements			
General activities of community monitors	Jan 2023- Jun 2025		$5,715
Oversight of E&S mitigation activities by staff	Jul 2022 – Jun 2025	1% Executive Director 5% Project Coordinator	$1,800
Mitigation measures to prevent the spread of COVID-19	Jul 2022 – Jun 2025		Included above
Component 5: Stakeholder outreach campaign to support management planning, threat reduction and conservation of KBA trigger species and their habitats in the PBPA			
Mitigation measures to prevent the spread of COVID-19	Jul 2022 – Jun 2025		Included above
Component 6: Institutional strengthening and capacity building of C-CAM			

Action	Implementation Schedule	Responsibility/estimated level of effort (% of time allocated to sub-project)	Cost Estimate (USD)
Mitigation measures associated with vehicle including insurance, maintenance and staff time for oversight	Aug 2022 – Jun 2025	5% Accountant 5% Assistant Administration & Finance Officer 5% Project Coordinator	$5,800
Component 7: Project management			
Monitoring tools (CSTT, GTT, METT, IBA monitoring and KBA frameworks, Biodiversity tracking tool)	Jul 2022- Jun 2025	3% Executive Director 4% Project Coordinator 7% Technical Lead Consultant,	$4,900

18. Permission of the landowner:

Where the project requires permission to enter lands owned by the government or private sector or leased to private sector groups, C-CAM will seek to get the requisite permission as needed. C-CAM has established relationships with organizations (e.g., Jackson Bay Gun club in the Portland Ridge area) who have responsibility for lands we might need to access for monitoring activities and expect the access to the premises to continue to build on the work we are currently doing and will continue and expand throughout this project.

19. Consultation:

There are several stakeholders with whom the project will engage. Table 19.1 provides some information on the stakeholder groups and the methods of consultation. A full Stakeholder Engagement Plan, complete with Grievance Redress Mechanism, has been developed and outlines the stakeholders the project will impact and the methods of consultation. See the table below highlighting stakeholder groups and methods for consultation and engagement

Table 19.1: Consultation

Stakeholder Group	Methods for consultation and engagement
National Government Agencies	Face to face, virtual and hybrid meetings Emails Letters Posting on C-CAM's webpage and social media sites Engagement in project activities Tour of the PBDC Media
Local Government Agencies	Face to face, virtual and hybrid meetings Emails Letters Posting on C-CAM's webpage and social media sites

Stakeholder Group	Methods for consultation and engagement
	Engagement in project activities Tour of the PBDC Media
Community Based Organizations (including but not limited to youth groups, women's groups, organizations representing people with disability and LGBTQ, Development Areas Committee (DAC) & Parish Development Committee (PDC), the Portland Bight Fisheries Management Council and other users of the protected area, such as local communities, farmers, fisherfolk, etc.)	Face to face, virtual and hybrid meetings Emails Telephone calls WhatsApp messages Posters Posting on C-CAM's webpage and social media sites Engagement in project activities Tour of the PBDC Media Training for participants in the Citizen Science Programme
Private sector organizations	Face to face, virtual and hybrid meetings Emails Telephone calls WhatsApp messages Posting on C-CAM's webpage and social media sites Engagement in project activities Tour of the PBDC Media
Media	Face to face, virtual and hybrid meetings Emails Telephone calls WhatsApp messages Posting on C-CAM's webpage and social media sites Study Tour of the PBDC
Academic Institutions (Universities – volunteers/Interns)	Face to face, virtual and hybrid meetings Emails Telephone calls WhatsApp messages Posters Posting on C-CAM's webpage and social media sites Engagement in project activities

20. Disclosure:

This Environmental and Social Impact Assessment and Environmental Management Plan will be disclosed publicly by posting it on C-CAM's website.