FINAL

REPORT ON THE STATUS OF LAWS AND INSTITUTIONS TO PROTECT ENVIRONMENTALLY SENSITIVE AREAS IN MAURITIUS

Prepared for:

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EXECUTIVE SUMMARY

This *Report on the Status of Laws and Institutions to Protect Environmentally Sensitive Areas in Mauritius* has been prepared as part of a project of the Mauritius Ministry of Environment and National Development Unit entitled **Environmentally Sensitive Areas in Mauritius and Rodrigues**. The project identifies a number of Environmentally Sensitive Areas (ESAs) based on an ecosystem approach, which consists of identifying the ecosystem services that are a priority to the Mauritian people and the major ecosystems that provide those services. As such, ESAs, such as wetlands, coral reefs, rivers and streams, forests, and mangroves, were selected because they are areas of high biological diversity or provide important ecological services (flood protection, for example) or economic value (coral reefs for tourism, for example). For each ESA type, specific locations have been placed into three categories:

- **Category 1 ESAs**—those ESAs that possess high ecosystem services value for which the principal objective will be to protect that value.

- **Category 2 ESAs**—those ESAs that possess moderate ecosystem services value, but which may, due to a variety of factors, permit some degradation as long as sites are maintained in a healthy state.

- **Category 3 ESAs**—those ESAs that possess low ecosystem services value that will be managed to allow their sustainable use, such as fishing, without causing significant degradation.

This report assesses the laws and institutions of Mauritius to identify its strengths and weaknesses for protecting and managing ESAs. This report, together with a complementary report on policies for protecting and managing ESAs—*Policy Paper: Environmentally Sensitive Areas*—serve as the basis for making recommendations for conserving and managing ESAs.

SUMMARY CONCLUSIONS ON EXISTING LEGISLATION

The report concludes that the laws and institutions of Mauritius are, in many respects, effective for accomplishing the goals of sector-specific laws (e.g., nature reserves, water pollution, etc.). Many aspects of Mauritian law are well tailored to protect and manage ESAs, and in many cases the laws of Mauritius are quite progressive. For example, the establishment of river and stream reserves has no doubt protected rivers and streams from sedimentation, pollution from fertilizers and other agricultural inputs, and other harms. An outright ban on sand removal in lagoons also demonstrates a commitment to protecting one of the more valuable resources in Mauritius.

Taken as a whole, however, the laws of Mauritius are inadequate to protect ESAs. There are several reasons.

1. **Gaps in Legal Protection.** Some ESA types receive inadequate legal protection. Wetlands provide a good example. Although filling or draining of a wetland requires an Environmental Impact Assessment (EIA) licence, no law prevents or regulates the filling or draining of a wetland or otherwise determines the type of information that a developer should provide prior to developing a wetland. In addition, because EIA law only applies to new undertakings, the EIA provisions of the Environment Protection Act 2002 do not apply to ongoing activities that may harm wetlands. Similarly, no specific laws are designed to protect caves.

2. **Lack of Thresholds for Ministerial Decisions/Too Much Discretion.** For a number of laws that could afford protection to a variety of ESA types, the laws establish no environmental threshold for decisionmaking. For example, the Fisheries and Marine Resources Act 2007 does not include a duty to ensure that fish quotas are set at a sustainable level or at maximum sustainable yield. The Central Water Authority Act 1971 does not prohibit water use beyond the capacity of a river or stream. The Pas Géométriques Act 1982 does not establish a limit for development within the Pas Géométriques.

   As a consequence, the laws leave too much discretion to a Minister or a regulatory board. With no basis for determining whether or not an activity is permissible or a permit should be issued, the Minister, regulatory board, or other entity has vast discretion to make decisions. The relevant Minister or regulatory board could use that discretion to protect ESAs and the environment generally. In many cases, however, the relevant body has not done so. For example, the Fisheries Service could adopt catch quotas that are based on maximum sustainable yield, but fishing in the lagoon remains unsustainable. The discretionary nature of many obligations also allows development and political pressure to erode attempts to prevent environmentally harmful projects.

3. **Inadequate Environmental Impact Assessment.** The provisions on EIA of the Environment Protection Act 2002 apply to a large number of undertakings that may affect ESAs. Nonetheless, they do not require any specific substantive outcome. Provided that the project proponent adequately analyzes the impacts of the project, suggests alternatives, and proposes mitigation measures, nothing prevents the Minister of Environment from approving a project that will significantly harm an ESA. Moreover, the EIA provisions do not require the implementation of measures to mitigate harm caused by an undertaking.

4. **Inadequate Environmental Planning.** A wide range of stakeholders believe that the consideration of ESAs and other environmental issues comes too late in the development process. The EIA process includes an early warning system that requires project proponents to provide information to the Director

of Environment concerning the proposed undertaking prior to seeking an EIA licence. Nonetheless, many governmental and private sector stakeholders commented that the EIA process, the most significant mechanism for protecting ESAs and ecosystem services values, is triggered only after all the design work for a project has been completed. As a consequence, project proponents have already committed substantial financial resources to their project, only to be told near the end of the process that design changes must be made. There was fairly universal agreement among stakeholders that, despite the existing early warning system, project proponents must be made aware of ESAs much earlier in the development process. Moreover, it appears that some types of projects, such as Integrated Resort Schemes, may be subject to expedited approval processes that make implementation of EIA impossible.

5. **Inadequate Enforcement.** Enforcement remains inadequate due, in many instances, to a lack of political will to enforce the law. Various stakeholders from the governmental, private, and nongovernmental sectors all provided examples indicating a lack of political will. In some cases, for example, the government initiated an enforcement action and, when confronted with political pressure, stopped the enforcement action. In other cases where more than one ministry has enforcement authority, neither ministry would take enforcement action because it believed that the other should. In yet other cases, it appears that authorities have turned a blind eye to obvious violations of law. Blue Bay, for example, is littered with jetties despite the prohibition against the construction of such physical structures. Moreover, despite having the authority to establish a prosecutorial unit within the Ministry of Environment, the Ministry has not done so. As a consequence, it must rely on the State Law Office for bringing its cases. The State Law Office, however, is charged with bringing a large number of cases and an environmental case becomes just one of many on its docket.

   Inadequate enforcement also results from a lack of capacity. Thus, even where the political will exists, ministries are under-staffed and under-resourced. For example, a staff of four people is charged with conducting post-monitoring of PERs and EIAs, an almost insignificant staff to review implementation of more than 1000 EIAs prepared since EIA became a requirement.

SUMMARY RECOMMENDATIONS FOR LEGISLATIVE CHANGE

To overcome these problems, this report makes a number of recommendations for improving the conservation and management of ESAs. The recommendations begin by designing an overarching legal framework for protecting ESAs deriving from the three-tiered categorization of ESAs described above. Those categories provide the basis for determining the types of activities that may or may not be permitted in an ESA. Consistent with the relative value of an ESA, as well as the goal of Mauritius to balance

environmental protection with development, these recommendations do not attempt to prohibit all development in all ESAs or prohibit all harm to all ESAs. Rather, these recommendations propose the following framework in which increasingly strict standards for development apply as the ecosystem services value of an ESA increases:

- **Category 1 ESAs—**

    - All development in or on an ESA is prohibited. This standard is very clear and rigorous enough to be enforceable. It also recognizes that some ESAs are simply too valuable to degrade. The rigidity of this rule is offset by the more flexible rules for development affecting Category 2 and 3 ESAs. To the extent that this rule is viewed as too rigid, the following proposal provides an alternative threshold: All development in or on an ESA that may adversely affect the ESA is prohibited.

    - Development outside an ESA that will adversely affect the ESA is prohibited; development may proceed provided that mitigation measures will prevent adverse effects.

- C**ategory 2 ESAs—**Any development that may adversely affect an ESA must be offset by projects that provide environmental benefits on the same property. For example, if development of an industrial facility will result in degradation of a wetland, then other wetlands must be restored or built or a stream reserve expanded on the same property.

- **Category 3 ESAs**—Any development that causes *significant* adverse effects is prohibited. Development is permitted and may degrade the ESA provided that mitigation measures prevent significant impacts.

This report suggests numerous ways to integrate these legal standards into the environmental laws and regulations of Mauritius. For future activities, that challenge is met by including these standards into the EIA process of the Environment Protection Act 2002. This report also seeks ways to include these standards into sector-specific laws, such as the Forests and Reserves Act 1983 and Ground Water Act 1969, to ensure that existing activities are managed effectively to safeguard ESAs from adverse impacts. Section 5 of this report suggests immediate, short-term, and long-term strategies for making these laws better able to protect and manage ESAs.

Perhaps the most challenging component of this project is finding ways to protect and manage ESAs from the adverse effects of existing activities on private lands. Because private landowners have certain rights to develop their property, those rights, in general, cannot be taken away without compensation. To overcome this financial barrier, this report explores the use of conservation easements—legally binding, voluntary agreements between a landowner and the government or other eligible organization that restricts the type or amount of development on the landowner's property. Landowners are sometimes willing to enter into such agreements because they receive a tax credit

that lowers the amount of tax they must pay. While governments still pay for these easements through lost tax revenue, the impact is generally less than direct cash payments to buy development rights outright or to compensate landowners the fair market value of the land as part of a condemnation/eminent domain action. The report also proposes other incentives in which the government provides funding for the conservation of ESAs on private land.

The incorporation of incentives into conservation planning reaches across different laws and resources. That is, conservation easements and other incentives are valuable tools not only for conserving wetlands but also for conserving streams, forests, and other ESAs. To implement and enforce easements across a variety of resources, it would be valuable to have new legislation that adopts uniform standards for their use. For that reason, the Draft Environmentally Sensitive Areas Conservation and Management Act (2009) (hereinafter Draft ESA Act) submitted as part of this project proposes a number of uniform rules for the valuation of lands, enforcement of easements, and the development of other types of incentives for conserving and managing ESAs. Sections 5.4–5.5 discuss these options in more detail.

A central component of these recommendations is, of course, identifying ESAs and ensuring that a proper development framework exists to conserve and manage them. As a result, this report recommends that two critical proposals be adopted on a priority basis. First, the **ESA Map** that accompanies this project is absolutely essential for planning purposes. The ESA Map not only identifies ESAs by type, but also categorizes them as Category 1, 2, or 3 ESAs. The ESA Map thus provides the fundamental basis for planning where development may occur consistent with the three-tiered development framework outlined above. Section 5.1.1 recommends that the Minister of Environment & NDU promulgate a regulation that makes the ESA Map a binding feature of EIA.

Second, recognizing that the early warning system embodied in the Environment Protect Act 2002 has failed to provide sufficient notice to developers of the requirements of environmental law, this report recommends the adoption of an **ESA Clearance**. The ESA Clearance will inform the project proponent as to whether the proposed project may harm an ESA. Project proponents will also be told which laws and other planning requirements apply to development at the proposed site. To ensure that project proponents do not invest significant resources before learning that the presence of an ESA may impose certain development and design requirements, project proponents must obtain the ESA Clearance *before* receiving any development permits. The process for obtaining an ESA Clearance is described in Section 5.1.3 and in the Draft ESA Act.

SUMMARY RECOMMENDATIONS FOR IMPLEMENTING LEGISLATIVE CHANGE

This report provides options for implementing the recommendations for legislative change. As described more fully in Section 4, many of these recommendations could be implemented through regulations, because most ministers have substantial authority to promulgate a wide range of regulations. Because not all of the proposed changes could be adopted by regulation, the report also proposes a hybrid

regulations-amendments approach through which most changes would be made by regulation but others would be adopted through amendments to existing law. A third option proposes the adoption of the Draft ESA Act, which would provide the general framework for protecting ESAs and establish incentives for the protection of ESAs on private lands, including the use of conservation easements and payments for environmental services.

This report concludes in Section 4 that over the long term adoption of an ESA Act is the better choice, because it would provide a unified and coherent structure and binding legal obligations that could not be reversed through the adoption of regulations. Moreover, because the hybrid regulations-amendments approach requires significant amendments to existing laws—and thus Parliamentary approval—it would be worthwhile to pursue the full range of legislative changes needed to provide a unified, coherent legislative framework for protecting and managing ESAs.

Nonetheless, if Parliamentary approval of an ESA Act is expected to take even a moderate amount of time, the Minister of Environment & NDU should take immediate action to adopt regulations to implement EIA as proposed in Section 5.1, as well as adopt additional regulations, also included in Section 5.1, to make the ESA Map and ESA Clearance legally binding tools for EIA and other law use planning.

SUMMARY RECOMMENDATIONS FOR INSTITUTIONAL CHANGE

The findings of this report concerning the appropriate institutional arrangements for protection and management of ESAs are more ambiguous. In many respects, Mauritius has found a way to overcome a lack of integration among agencies with environmental responsibilities—a problem that plagues many countries—through meetings of inter-ministerial boards and committees. Given the heavy reliance on this mechanism, this report suggests that a review be done to ascertain whether there is *too much* coordination which perhaps has allowed a kind of "integration fatigue" to set in for some ministry officials who may need to attend meetings of two or more committees.

It also suggests that Mauritius review the placement of the Forestry Service and the National Parks and Conservation Service (NPCS) in the Ministry of Agro Industry, Food Production and Security. The Forestry Service, because it has both conservation and exploitation mandates, has an inherent conflict as it tries to juggle these two different mandates. The NPCS may also be tainted by its institutional association with the Ministry of Agro Industry and Forestry Services. As such, it may be more appropriate to put the conservation duties of these departments in the Ministry of Environment, an action that could raise the profile of the Ministry of Environment by giving it a substantive mandate beyond its current coordination role. Regardless of any transfer of duties to the Ministry of Environment, it may be useful to concentrate resources and expertise for management of nature reserves and other protected areas within the NPCS.

Lastly, concerns have been raised relating to monitoring and enforcement. The overlapping authority of the Ministry of Environment and the "enforcing agencies"—those agencies with a mandate to implement laws concerning specific resources—appears to be causing significant breakdowns in enforcement, with both the Ministry of Environment and the enforcing agencies claiming that the other ministry should be undertaking an enforcement action. This report suggests that this issue be reviewed to determine whether all enforcement authority be placed within the Ministry of Environment & NDU or delegate that responsibility to the relevant enforcing agency only.

1 INTRODUCTION

1.1 Background to Planning Process

Since the early 1990s, the Republic of Mauritius has undertaken a comprehensive review of development and environmental priorities,[1] culminating in the Review of the National Development Strategy (NDS)[2] and the National Environmental Policy of 2007 (NEP).[3] The NDS establishes a number of development priorities within the context of sustainable development. The NDS sets out a general framework for economic growth in a way that protects the best quality agricultural land and environmentally sensitive areas (ESAs)—generally defined as those areas providing valuable ecological services and/or of economic importance.[4] The NEP focuses on integrating growth, poverty alleviation, environmental management, gender, and governance issues to develop sustainable programs and policies. Concerning environmental management, Mauritius seeks to protect and conserve critical ecological systems and resources, ensure equitable access to environmental resources for both present and future generations, adopt sustainable production and consumption patterns, and promote public participation, among other things.[5] Because Mauritius has embarked on "an ambitious strategy to find new drivers for economic growth,"[6] successfully integrating these elements in a country with a total land area of just 2,040 km^2 but with 1.2 million people is extremely important. The protection of ESAs will be critical for achieving economic growth while also ensuring the protection of environmental services upon which economic growth depends. Integrating these objectives requires adequate legislation and proper institutional arrangements.

1.2 Scope of This Report

To ensure the protection of ESAs, the Mauritius Ministry of Environment and National Development Unit (hereinafter Ministry of Environment) has initiated the project, **Environmentally Sensitive Areas in Mauritius and Rodrigues**. The project is part of Mauritius' National Development Strategy and National Biodiversity Strategy and

[1] *See e.g.* National Environment Policy (1991); National Environmental Strategies (1999); National Forest Policy (2006), as well as the National Biodiversity Strategy and Action Plan (2006).
[2] GOVERNMENT OF MAURITIUS, MINISTRY OF HOUSING AND LANDS, REVIEW OF THE NATIONAL PHYSICAL DEVELOPMENT PLAN (NPDP): MAURITIUS (April 2003) (hereinafter "NDS"); GOVERNMENT OF MAURITIUS, MINISTRY OF HOUSING AND LANDS, REVIEW OF THE NATIONAL PHYSICAL DEVELOPMENT PLAN (NPDP): FINAL REPORT: RODRIGUES (April 2003).
[3] For more on the history of the development of environmental policy, see DRAFT POLICY PAPER: ENVIRONMENTALLY SENSITIVE AREAS (Mar. 16, 2009).
[4] NDS, para. 1.4.1. As early as 1985, Mauritius set out to "maintain essential ecological processes and life support systems on which human survival depend." NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 8 (2006) (referring to the 1985 national Conservation Strategy).
[5] NEP, at para. 4.3. It also embraces the relevant recommendations of the 1992 Rio Earth Summit, the 2000 Millennium Development Summit, the 2002 Johannesburg World Summit and the 2005 Mauritius International Meeting on SIDS. NEP, at paras. 2.1–2.2.
[6] MAURITIUS, NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 2 (2006).

Action Plan and is intended to assist in the protection and management of key natural areas and features in Mauritius and Rodrigues.

The designation of ESAs to protect important habitats and high ecosystem services values could be especially useful in a country such as Mauritius, which is relatively small and where most land is privately owned. In this context, designating terrestrial ESAs as National Parks or other typical protected areas would be inappropriate, ineffective, or unnecessary in many cases. For example, it is unnecessary and highly impractical to designate all freshwater streams as a national park with government management. In the alternative, narrow bands of streams reserves in which development is not permitted may be sufficient to protect streams from adverse environmental impacts such as soil erosion, even on private property.[7]

The designation of an area as an ESA does not necessarily mean that no economic development may affect that ESA. In some cases, the direct or indirect use of an ESA may be possible without adversely affecting its high ecosystem services values. For example, despite the importance of streams for drinking water and swimming, it may be possible to use that same water for irrigation and for receiving some pollutants, provided that other precautions are taken. The designation of a stream as an ESA will not necessarily prevent those uses. In other cases, an ESA may have only moderate or low ecosystem services values. As described more fully in the sections of this report that follow, the categorization of an ESA as a Category 1 ESA (high ecosystem services value), Category 2 (moderate ecosystem services value), or Category 3 (low ecosystem services value) will determine the level of development that is permitted.

On the other hand, it may be preferable to prohibit any adverse modification of an ESA, particularly in Category 1 ESAs. For example, the coral reefs that surround Mauritius are of obvious economic importance to tourism as well as a buffer to mitigate storm surges. They are of immense biological value. As such, the maintenance of the reefs without modification would seem of critical importance. Overall, ESAs should be protected and managed to "support the range of infrastructural and economic development necessary to improve living conditions and pursue greater sustainability and … allow allocation of resources towards meaningful management actions."[8]

It is against this background that this report and the complementary draft report on policies for protecting and managing ESAs—*Policy Paper: Environmentally Sensitive Areas*—identify strategies for the protection and management of these ESAs. This report specifically has the following two objectives:

1. To review existing legal and institutional mechanisms for protection and management of ESAs in Mauritius, including Rodrigues, and

[7] It is worth noting that no freshwater streams in Mauritius are protected or managed for biodiversity purposes. NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN 42, 47 (2006).
[8] NWFS CONSULTANCY & STEM CONSULTING LTD., ESA SITE AND LOCATION MAPS WITH ESA TYPE PROFILES: REPUBLIC OF MAURITIUS 2–3 (Draft: Oct. 21, 2008) (prepared for the Mauritius Ministry of the Environment and NDU) [hereinafter "ESA SITE AND LOCATION MAPS").

2. To formulate recommendations on legal and institutional changes required to cost-effectively protect and manage ESAs.

1.3 Methodology and Structure of This Report

The preparation of this report has combined stakeholder consultation, including a stakeholder workshop in February 2009, with an extensive review and analysis of the laws of Mauritius that affect protection and management of ESAs. This legal review and analysis has included laws typically thought of as "environmental," such as the Environment Protection Act 2002, Wildlife and National Parks Act 1993, and Fisheries and Marine Resources Act 2007, as well as planning laws, such as the Planning and Development Act 2004 and the Town and Country Planning Act 1954. It has also included a review of regulations to the extent that those regulations could be found.

This report is structured as follows:

- **Section 2** reviews previous work to identify ESAs as well as threats to ESAs.

- **Section 3** analyzes environmental and planning laws and regulations and identifies strengths and weaknesses of these laws for protection and management of ESAs.

- **Section 4** assesses a number of critical questions to consider when designing a framework for protecting and managing ESA. These questions include how to protect ESAs from both future and ongoing activities. It also evaluates whether new regulations might be sufficient to protect ESAs or whether a new "ESA Act" would provide better protection for ESAs.

- **Section 5** proposes a series of options for strengthening the legal regime through new regulations and amendments to existing laws.

- **Section 6** analyzes the strengths and weaknesses of the current institutional arrangements for protection and management of ESAs and proposes some options for strengthening institutional arrangements.

A Draft Environmentally Sensitive Areas Conservation and Management Act (2009) accompanies this report.

2 ENVIRONMENTALLY SENSITIVE AREAS

An understanding of ESAs and the threats to them provides important context to whether the laws and institutions of Mauritius are adequate to protect and manage ESAs. This section briefly summarizes the methodology for designating ESAs and then briefly reviews the threats to them. For more detailed information on this methodology, see *Environmentally Sensitive Areas: Classification Report*, which was prepared as part of this project.

2.1 Defining ESAs

To fulfill the goal of protecting ESAs, the NDS calls on Mauritius to identify and map ESAs to ensure their effective management and protection.[9] An ESA is "a common zonal designation that aims to identify and delimit specific landscape features that require more stringent assessment of allowable use."[10] Under this general definition, ESAs may take various forms, including the following:[11]

- Areas that provide important ecosystem services that are of national importance. These services are delivered, often passively, through an ESA's geographic location, physical features, socio-cultural significance and/or biological attributes.

- Areas where the hazard attached to general development is elevated due to site conditions that can lead to loss of invested capital or where the risk of ecosystem service loss or degradation in the face of development is elevated beyond acceptable limits.

Both the NDS and NEP recognize the importance of protecting ESAs, but neither provides a specific definition of an ESA. Rather than define ESA, the NDS proposed a number of ESAs based largely on a zonal designation rather than identified biological or ecological characteristics:

- State Lands, including the Black River Gorges National Park, Nature Reserves, State Forest Lands, Pas Géométriques, and privately-owned Mountain Reserves;

- Habitat for Endemic Flora and Fauna—which have strong links to the above reserves and include Port Louis and Calebasses Mountain Range, Bambous Mountains, and the Black River Gorges, Corps de Gardes, and Savanne Mountains;

[9] NEP, *supra* note 1, at paras. 7.1, 7.2.
[10] ESA SITE AND LOCATION MAPS, at 2.
[11] ESA SITE AND LOCATION MAPS, at 2.

- Mountain Slopes and Range Peaks—for moderately steep to steep/very steep hillsides and mountain slopes;

- Coastal Features—including parts of the coastline and coastal wetlands;

- Water Resources—major aquifers, surface water catchment areas, existing, proposed and identified reservoirs and boreholes, existing weirs and designations for River Reserves; and

- Geological Features—the location of lava tubes which are associated with cave networks.[12]

This project subsequently identified and mapped 15 discrete ESA types:[13]

1. seagrass beds;
2. coral reefs;
3. mangroves;
4. mudflats;
5. offshore islets;
6. coastal freshwater marshlands;
7. upland marshlands;
8. forests with native content;
9. steep slopes;
10. freshwater wells;
11. rivers and streams;
12. lakes and reservoirs;
13. sand beach and dunes;
14. caves; and
15. endemic fauna habitat.[14]

Considering past policy approaches and future regulation, the discrete systems have been grouped into five broader ESA types: wetland systems, shore systems, offshore systems, forest systems, and staple supply systems.[15] The environmental threats to ESAs differ for each of the five ESA types: wetland systems (all types), shore systems (and beach and dunes), offshore systems (seagrass and algal beds), forest systems (high native content and native fauna habitat) and stable supply systems (boreholes and steep slopes).[16]

[12] NDS, para. 10.3.
[13] ENVIRONMENTALLY SENSITIVE AREAS: CLASSIFICATION REPORT 10–11 (Draft: Apr. 3 2009).
[14] The fifteenth ESA type, Endemic Fauna Habitat, lacks the data necessary to provide a coverage, and thus designation into three categories. An Action Plan describing activities to acquire this data has been developed for this type.
[15] ESA SITE AND LOCATION MAPS, at 4–5.
[16] ESA SITE AND LOCATION MAPS, at 4–5.

2.2 Threats to Specific ESA Types

Mauritius, like many small islands, faces a number of threats to biodiversity generally. These threats have been discussed in detail in various documents, including the Mauritius Biodiversity Strategy and Action Plan. In addition, the *Policy Paper: Environmentally Sensitive Areas*, which accompanies this report, provides a much more detailed discussion of threats to ESAs.

2.2.1 Threats to Wetland System ESAs

Wetland system ESAs include coastal marshlands, upland marshlands, lakes and reservoirs, rivers and streams, mangroves, and intertidal mudflats.[17] Freshwater wetland system ESAs face a significant threat from invasive species. The western mosquito fish (*Gambusia affinis*), Nile perch (*Tilapia* sp) and golden apple snail (*Pomacea bridgesi*) are each present in Mauritius and threaten aquatic ecosystem balance.[18] Additionally, freshwater wetland system ESAs face threats from development in aquifer recharge zones, pollution from agriculture and waste water, degradation of watersheds, eutrophication from increased nutrient levels due to agricultural runoff, and the development of large dams.[19]

Like the freshwater wetland system ESAs, saltwater wetland system ESAs face threats from invasive species.[20] Marine invasive species are often introduced from ballast water and little research has been conducted to determine their impact in Mauritius.[21] Other threats to saltwater wetland system ESAs include pollution, sea level rise, intense pressure for human development and recreation,[22] and unsustainable fishing levels.[23] Filling of wetlands for development, agriculture, and other purposes appears widespread and has already led to increased flooding in coastal areas such as Grand Baie and Flic en Flac.[24] Inadequate wastewater treatment is degrading water quality with raw sewage entering the lagoon.[25]

While no one disputes the importance of agriculture to any country, it is also true that in Mauritius cultivation for agriculture consumes 46% of available land.[26] This reduces the value of the land for native species. Much of this land is devoted to sugar

[17] ESA SITE AND LOCATION MAPS, at 4.
[18] MAURITIUS, NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN 47 (2006).
[19] MINISTRY OF ENVIRONMENT & NDV, NATIONAL ENVIRONMENT AND POLICY (NEP) 2007, 9 (2007).
[20] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 45, 47.
[21] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 45, 47.
[22] MINISTRY OF ENVIRONMENT & NDV, at 11.
[23] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 45, 47.
[24] MAURITIUS NATIONAL DEVELOPMENT POLICY, 150 (2003)
[25] MAURITIUS NATIONAL DEVELOPMENT POLICY, 150.
[26] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 57.

cane production, which relies on integrated pest management, but also requires intensive use of fertilizers—about 500–700 kg per hectare, or 61,000 tonnes annually.[27]

2.2.2 Threats to Shore System ESAs

Shore system ESAs include sand beaches and sand dunes.[28] As with saltwater wetland system ESAs, shore system ESAs face a major threat from human development and recreation and from sea level rise.[29] In addition, shore system ESAs face threats from erosion caused by jetties.[30] As Mauritius pursues its goals of increasing tourism, including the development of golf courses in or near the coastal zone, these ESAs may be significantly impacted.

2.2.3 Threats to Offshore System ESAs

Offshore system ESAs include seagrass and algal beds, coral reefs, and islets.[31] The effects of climate change pose a significant threat to all offshore system ESAs.[32] Coral reef bleaching has already been observed in Mauritius, affecting between 18 and 85% percent of live coral in various study sites.[33] Sea level rise threatens to inundate low-profile islets.[34] In addition to climate change, pollution from sewage systems, illegal extraction of shells and corals, and artificially high nutrient levels from agricultural runoff threaten both coral reefs and seagrass and algal beds.[35] Invasive marine species introduced from ballast water also threaten offshore system ESAs.[36] As with shore system ESAs, offshore ESAs are particularly at risk due to threats arising from tourism-related development.

2.2.4 Threats to Forest System ESAs

Forest system ESAs include forests with high native species content and forests that provide habitat for native birds, reptiles, and bats.[37] Forest clearance in Mauritius began with colonization in 1638.[38] Today, less than two percent of the island retains native forest cover.[39] Forest system ESAs continue to face the threat of habitat loss and

[27] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 64 (citing statistics from the Central Statistical Office, 2004).
[28] ESA SITE AND LOCATION MAPS, at 4.
[29] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 47.
[30] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 46.
[31] ESA SITE AND LOCATION MAPS, at 4–5.
[32] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 47.
[33] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN
[34] NEP, at 11.
[35] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 47.
[36] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 47.
[37] ESA SITE AND LOCATION MAPS, at 5.
[38] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 24.
[39] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 25.

fragmentation for agriculture and grazing.[40] A lack of planning for residential development and agriculture has lead to human encroachment on ESAs.[41]

Invasive species pose another threat, which often take hold in disturbed areas[42] but which also pose a threat in their own right, particularly on small islands such as Mauritius. Invasive species currently pose the most significant threat to forest system ESAs.[43] Exotic animals, such as rusa deer (*C. timorensis*) and feral pigs (*Sus scrofa*), eat native plants, spread invasive seeds, and disturb soil. Rats (*Rattus rattus*) and Javanese macaques (*Maccaca fascicicularis*) eat native birds' eggs and chicks.[44] Exotic plants outcompete native species for nutrients, light, and space and currently threaten all remaining native forests on the island.[45]

Threats to forest system ESAs from direct exploitation of resources through hunting and harvesting are far less significant today than in the past.[46] Examples of current exploitation that could affect ESAs include the gathering of native plants for crafts and medicine, the harvesting of native hardwoods and the collection of native reptiles for the pet trade.[47] A far less studied and understood threat is that from pests and diseases. A native bird species, the pink pigeon (*Columba mayeri*), is threatened by three pathogens: *Trichomonas, Leucocytozoon marchouxi*, and avian pox.[48] Another native bird species, the echo parakeet, is threatened by Psittacine beak and feather disease.[49]

2.2.5 Threats to Staple System ESAs

Staple system ESAs include boreholes and steep slopes.[50] Threats to boreholes from climate change include drought and sea level rise entering the water table.[51] Other threats to boreholes include salt water intrusion in groundwater and groundwater pollution from agriculture and wastewater.[52]

[40] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 24.
[41] NEP, at 9.
[42] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 26.
[43] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 26.
[44] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 26
[45] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 26
[46] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 26–27.
[47] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 27.
[48] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 27.
[49] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 27.
[50] ESA SITE AND LOCATION MAPS, at 4.
[51] NEP, at 9.
[52] NEP, at 9.

3 REVIEW AND ANALYSIS OF LAWS AFFECTING ESAS

Mauritius has a well-developed body of laws concerning planning for development as well as management of water quality, quantity and allocation; habitat conservation through the establishment of reserves and national parks; and conservation of plants and animals. No single law is designed to fully protect an ESA type. For example, the Forests and Reserves Act 1983, which establishes stream reserves, does not protect rivers from pollution. This is not unusual. In fact, most environmental laws of the world tend to either regulate pollution or protect habitat and wildlife.

As such, this review analyzes Mauritian laws in the context of what that law seeks to accomplish. If a law is designed to protect rivers from pollution, it analyzes the strengths and weaknesses of that law for protecting ESAs from pollution; it does not criticize that law for failing to protect habitat. Similarly, it analyzes the strengths and weaknesses of a habitat protection law on its ability to protect the habitat of relevant ESA types; it does not criticize the law for failing to control pollution. Nonetheless, the recommendations of this review for protecting ESAs take into account the overall effectiveness of all laws.

Other analyses have outlined the general requirements, strengths, and weaknesses of Mauritian environmental law, such as the Update of the Second National Environmental Strategy.[53] This report, while covering some of the same ground, looks specifically at the range of environmental laws and their ability to protect and manage ESAs. As a result, this analysis is more detailed than previous analyses and includes specific recommendations for improving the laws for the specific purpose of protecting and managing ESAs. As the analysis makes clear, while many aspects of Mauritian environmental law are strong, Mauritian environmental law remains inadequate to protect ESAs.

3.1 Environment Protection Act 2002

The Environment Protection Act 2002 establishes some of the key institutions for Mauritius and the general framework for the administration of environmental law. Generally speaking, the Ministry of Environment has overall responsibility for coordinating environmental policy and establishing standards for environmental protection. It also has authority to enforce environmental laws. The other ministries have primary responsibility for implementing specific environmental laws. For example, the Ministry of Agro Industry, Food Production and Security, through its National Parks and Conservation Service, implements the Wildlife and National Parks Act 1993. These ministries, known as enforcing agencies for environmental law purposes, also have authority to enforce the laws within their jurisdiction. For example, the Environment

[53] UPDATING OF THE NATIONAL ENVIRONMENTAL STRATEGIES AND REVIEW OF THE IMPLEMENTATION OF THE SECOND NATIONAL ENVIRONMENTAL ACTION PLAN: FINAL REPORT, Vol. 1, pp. 60–73 (Nov. 2007).

Protection Act 2002 gives the Minister of Environment the authority to establish and enforce standards for water pollution. Meanwhile, the Central Water Authority and the Waste Water Management Authority are responsible for implementing and enforcing discharges of various pollutants.

As described more fully in the analysis below, the Environment Protection Act 2002 gives the Ministry adequate authority to protect and manage ESAs from various sources of pollution. On the other hand, the rules for Environmental Impact Assessment—the principal mechanism for adequately safeguarding the environment from the adverse impacts of new activities—are inadequate to protect and manage ESAs.

3.1.1 Preliminary Environmental Report and Environmental Impact Assessment

The Environment Protection Act 2002 establishes two types of reports for assessing the impacts of projects on the environment: a Preliminary Environmental Report (PER) for projects that are not likely to have significant environmental impacts and the more rigorous Environmental Impact Assessment (EIA) for projects that will. The PER applies to "proposed new undertakings" included in Part A of the Fifth Schedule, such as coral crushing and processing, land reclamation and backfilling, and ready mix concrete plants.[54] A PER may also be required where the Minister determines, based on the "nature, scope, scale and sensitive location of an undertaking, that the impacts of such an undertaking warrant the preparation of a PER.[55] For these projects, the proponent must prepare a PER that describes the effects of the project on the "environment, people and society" and propose mitigation measures "to avoid, reduce, and, where possible, remedy any significant effect that the undertaking is likely to have on the environment."[56] The Director of the Department of the Environment reviews the PER and refers it to the PER Committee.[57] The PER Committee then submits its review and recommendations to the Minister, who has authority to approve the PER with any conditions he deems appropriate, reject the report, or request preparation of the more rigorous EIA.[58]

The provisions for EIA apply to "undertakings" listed in Part B of the Fifth Schedule. Many of these undertakings will clearly impact ESAs negatively if they are built in or near ESAs. For example, the construction of marinas and dykes, golf courses, housing projects of more than 50 units, landfills, harbour dredging and development, and other undertakings are very likely to have significant environmental impacts on ESAs. In

[54] Environment Protection (Amendment of Schedule) Regulations 2006, GN No. 142 of 2006. Fifth Schedule, Part A.
[55] Environment Protection Act 2002, Section 17(1).
[56] Environment Protection Act 2002, Section 16(2)(d)–(e).
[57] Environment Protection Act 2002, Section 16(5)(a). The PER Committee is composed of representatives from the Department of Environment, as well as the Ministries of Agro Industry, Food Production and Security, Health and quality of Life, and Renewable energy and Public Utilities.
[58] Environment Protection Act 2002, Section 16(5)(b).

addition, the Minister may determine, based on the "nature, scope, scale and sensitive location" of an undertaking, that an EIA should be prepared.[59]

Item 24 of Part B of the Fifth Schedule also requires an EIA for:

> "land clearing and development, including installation of high tension lines in environmentally sensitive areas …"

The paragraph appears intended to require an EIA for all undertakings that involve land clearing and development that may affect ESAs. However, the failure to include a comma after the phrase "high tension lines" makes an EIA in an ESA a requirement only for high tension lines. By placing a comma after "high tension lines," it will be clear that an EIA is required for all land clearing and development in ESAs. Presumably, this is a typographical mistake, but it is a mistake that must be corrected.

In addition, Item 24 only covers land clearing and development *in* an ESA. Thus, an undertaking adjacent to an ESA or that may affect an ESA through soil erosion or other adverse impact will not require an EIA unless the undertaking is otherwise included in Part B of the Fifth Schedule.

For undertakings included in Part B of the Fifth Schedule, the proponent must prepare an EIA report that describes:

- the direct or indirect effects that the undertaking is likely to have on the environment;
- the social, economic, and cultural effects that the undertaking is likely to have;
- actions to mitigate the likely effects of the undertaking; and
- alternatives to the proposed undertaking that would result in less environmental harm.[60]

The EIA process has some additional steps compared to a PER. Section 15(3) of the Environment Protection Act 2002 expressly requires a proponent of an undertaking (except those applying through the Board of Investment) to submit an outline of the proposed undertaking to the Director of the Environment three months before submitting an application for an EIA licence. Based on that outline, the Director may impose terms of reference for the EIA report and the fields of study that are required to be covered, among other things.

Once the EIA is completed, it is submitted to the Director and is open for public inspection.[61] The Director must provide notice for public inspection in the government gazette and two dailies. One copy of the EIA report is made available in the Resource Centre of the Ministry of Environment and one copy at the Municipality/District Council. A soft copy of the EIA report is posted on the Ministry's website. The EIA review takes

[59] Environment Protection Act 2002, Section 17(1).
[60] Environment Protection Act 2002, Section 18(2).
[61] Environment Protection Act 2002, Sections 18(1), 20(1).

into consideration the views obtained from the various stakeholder Ministries/Authorities as well as any public comments.[62]

The Director submits the review of the EIA to the EIA Committee, which comprises the Permanent Secretaries or their representatives from several Ministries. The EIA Committee examines EIA applications referred to it after review by the Director and makes such recommendations to the Minister as it thinks fit. The Minister may approve the issuance of an EIA licence with or without conditions, or reject the application.[63]

The Minister of Environment may exempt from an EIA licence a governmental undertaking that "is urgently needed in the national interest or for the economic development of Mauritius."[64] Nonetheless, such an undertaking is not exempt in the traditional sense. Indeed, the undertaking is still subject to an EIA, public notice and review, scrutiny by the Director and the EIA Committee, and finally, any conditions the Minister may impose. The primary benefit of declaring an undertaking exempt is to allow an expedited review of such projects. Despite the similarities in the processes, some stakeholders hold the view that governmental undertakings are not subject to the EIA process or conditions. The Ministry may wish to educate the public about the scope of an exempt undertaking.

The Act also establishes an EIA/PER Monitoring Committee to monitor compliance with the conditions imposed by the EIA licence and to determine appropriate enforcement actions, where necessary. Where the recipient of an EIA licence is contravening one of the conditions of the licence, the Minister has the authority to revoke the licence.[65] Stakeholders believe that the EIA/PER Monitoring Committee is a valuable mechanism for ensuring compliance with the EIA/PER provisions and providing relevant ministries and departments with a process for commenting on projects within their regulatory authority.

Overall, however, the EIA process is inadequate to protect and manage ESAs for the following reasons:

1. **Under-inclusive List of Undertakings.** While the list of undertakings that require an EIA includes many different undertakings that may affect ESAs, it still leaves out many projects. Item 24 of Part B of the Fifth Schedule is too limited, even if corrected for the apparent typographical error mentioned above, because it only covers projects *in* an ESA. That paragraph does not cover those undertakings that *may affect* an ESA. Given the relatively small size and steep terrain of Mauritius, it seems likely that projects not in an ESA could nonetheless affect an ESA. For example, a housing complex of 10 units could have significant adverse impacts on an ESA if built adjacent to an ESA. Similarly, a logging operation or

[62] Environment Protection Act 2002, Section 20.
[63] Environment Protection Act 2002, Sections 22, 23.
[64] Environment Protection Act 2002, Section 28(1).
[65] Environment Protection Act 2002, Section 28A(2).

other undertaking upstream from a coastal marshland could significantly affect that downstream marshland.[66]

2. **No Substantive Mandate.** While the provisions on PER and EIA give the Minister authority to mandate any conditions necessary to ensure that any undertaking does not harm the environment, these provisions do not require the inclusion of conditions to avoid any particular environmental impacts. In other words, the PER/EIA provisions are procedural; they do not require any specific environmental outcome. So long as a PER or EIA is completed, and the appropriate licence granted, the undertaking may proceed even though the project will have significant environmental impacts. Thus, the Ministry of Environment could approve a project that destroys all seagrass beds, so long as the PER or EIA adequately describes the effects of the undertaking on seagrass beds.[67] Given the extensive consultation with relevant stakeholders required by the Environment Protection Act 2002, this outcome is unlikely. Nonetheless, the Act provides no substantive threshold to determine whether an agency or Ministry decision is acceptable. Instead, the law relies on the appropriate use of discretion by agency officials to ensure an appropriate environmental outcome.

3. **"Effects."** Neither the provisions for PER or EIA require a complete discussion of the full range of effects that may harm an ESA (or the environment generally). An EIA must discuss "direct and indirect effects" as well as "social, economic, and cultural effects." A PER need only identify and assess "effects," which presumably entails something less than what is required for an EIA. In both cases, no discussion is required of "cumulative effects"—the incremental impact of an undertaking when added to other past, present, and reasonably foreseeable future actions. A discussion of cumulative impacts is important, because significant impacts to ESAs and other areas may result from individually minor but collectively significant actions taking place over a period of time. For example, a small timber harvest may not cause significant harm to an ESA, but many timber harvests in the same area may have significant impacts on an ESA through soil erosion and loss of forest canopy and habitat. Similarly, filling a wetland may not have significant environmental impacts on a seagrass bed ESA, but filling a wetland for one purpose and later building a small marina may cumulatively have

[66] Although not directly related to protection of ESAs, given the presumed scope of Item 24 of Part B of the Fifth Schedule, the list of undertakings for which a PER is required is under-inclusive. Although the Minister has the discretion to require a PER for undertakings that could affect "sensitive locations," the authority is discretionary. No stakeholder consulted during this process could cite a case in which this discretion had been used to require a PER. Since a sensitive location may not necessarily include an ESA, Item 24 of Part B will not save the inadequacies of the PER provisions.

[67] A procedure-only EIA law has major consequences for the effectiveness of the law in conserving resources and protecting environmental values. For example, when reviewing the EIA law of the United States, the National Environmental Policy Act, the United States Supreme Court remarked that "In this case … it would not have violated NEPA if the Forest Service, after complying with the Act's procedural prerequisites, had decided that the benefits to be derived from downhill skiing at Sandy Butte justified the issuance of a special use permit, notwithstanding the loss of 15 percent, 50 percent or even 100 percent of the mule deer herd." *See* Robertson v. Methow Valley Citizens' Council, 109 S. Ct. 1835, 1846 (1989) (Stevens, J.)

significant impacts on the seagrass bed. By analyzing the effects of both projects, even if the two projects happen at different times, policymakers will be provided with a different, more complete set of environmental impacts upon which to base their decisions.

4. **"Segmentation."** The EIA provisions do not prevent projects from being "segmented" into smaller projects. In "segmentation," project proponents attempt to split up aspects of a project so that they will not be evaluated in a single EIA. In that way, they hope to avoid close scrutiny of the full impacts of the entire project. For example, project proponents often try to have a small section of road evaluated in an EIA when it is clear that the real project involves a much larger road. In the United States, when an agency decided to include only the first 11 miles of a highway in an EIA, and not the final 4.1 miles, the court ruled this segmentation improper; the agency needed to include the final 4.1 miles in the EIA.[68] In the Mauritian context, an Integrated Resource Scheme (IRS) project may involve villas, recreational facilities, and a golf course. However, project proponents could try to have the golf course considered separately from the villa and recreational facilities. Because these are interdependent parts of a larger project, they should be analyzed together. In fact, the need to avoid segmentation has been identified in the "MAAS" report. That report concluded that, "Projects on conversion of sugar cane lands to IRS, residential zones and golf courses in the co[a]stal areas should be allowed to proceed after completion of environmental assessment undertaken for the entire plan (i.e. preventing "salami slicing" approach) and involving in-depth site specific investigations of the quality of the receiving water bodies and analyze cumulative impacts of the proposed land-use options."[69] While the MAAS report focused only on the sugar industry and sugar estates in Mauritius, its conclusion about segmentation (i.e., "salami-slicing") provides valuable insight into how the EIA process should work generally. Despite this policy, the Environment Department reports that "most," but apparently not all, IRS projects avoid "salami-slicing."[70]

5. **Mitigation.** The rules for PER and EIA do not require the adoption of measures to mitigate ("mitigation measures") the environmental impacts of a proposed undertaking. Section 18(2)(h) requires the proponent to propose mitigation measures and Section 24(1) requires the Minister to take into account mitigation measures (as well as alternatives). Moreover, the Environmental Assessment Division reports that mitigation measures are "normally" included in an EIA licence.[71] Nonetheless, these provisions fall short of a requirement to adopt

[68] Patterson v. Exon, 415 F. Supp. 1276, 1283 (D. Neb. 1976).
[69] IMPLEMENTATION OF THE MULTI-ANNUAL ADAPTATION STRATEGY FOR THE MAURITIAN SUGARCANE CLUSTER (2006-2015) STRATEGIC ENVIRONMENTAL ASSESSMENT: FINAL REPORT 8 (June 2007).
[70] Department of Environment, Comments from EA Division, "Study on Environmentally Sensitive Areas" (Mar. 11, 2009) (stating, "In most EIA for IRS projects, the policy of the MAAS to avoid "salami-slicing" is being adopted.).
[71] Department of Environment, Comments from EA Division, "Study on Environmentally Sensitive Areas" (Mar. 11, 2009) (stating, "One condition normally imposed in EIA licences is as follows: *The development*

mitigation measures that ensure certain types of environmental impacts (e.g., "significant" environmental impacts) are avoided. The failure to require the implementation of mitigation measures "short-circuits" the EIA process, because projects may proceed without actually implementing those mitigation measures.[72] While mitigation measures may take any number of forms, one particularly relevant mitigation measure may be the development of "buffer zones"—areas adjacent to the ESA that act as a buffer against adverse impacts.

6. **Alternatives.** A discussion of alternatives is the "heart" of an EIA process, because it allows decisionmakers to evaluate the impacts of a proposed project against alternatives. While Section 18(2) requires the inclusion of alternatives in the EIA, it does not require an assessment of environmental impacts of those alternatives. Consequently, decisionmakers will not be able to evaluate the relative strengths and weaknesses of the proposal and alternatives. In addition, alternatives do not need to be included in a PER at all. A discussion of alternatives and their impacts is no less valuable for smaller projects than larger ones since even small projects may produce fewer environmental impacts if properly designed.

The need to address the issues summarized in the numbered paragraphs above become evident when assessing individual Outline Planning Schemes. For example, the Outline Planning Scheme for the Black River District Council Area provides:

> In support of Policy SD 1 [development in settlement boundaries] where a proposed development other than a bad neighbour development is located on land identified as being of Agricultural Suitability or *in or adjoining an Area of Landscape Significance or Environmental Sensitivity, there should be a general presumption in favour of development* subject to statutory clearances being obtained from the relevant authorities.[73]

Because development will be presumed to be acceptable, the effective management and protection of ESAs is left entirely within the discretion of various authorities to attach conditions on such development. Efforts should be made to constrain that discretion to ensure appropriate conditions are placed on undertakings that will adversely affect ESAs.

While presumptions against development located in an ESA would provide useful protection to ESAs, it may be more useful to establish a substantive threshold that prevents harm to the ecological characteristics of an ESA. Such a substantive mandate is not intended to be a bar to development. Rather, it is meant to be a check to ensure, for

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shall be undertaken as per the mitigating measures stated in the EIA report and additional information submitted unless as otherwise advised herein.) (emphasis in original).

[72] Peter J. Eglick & Henryk J. Hiller, *The Myth of Mitigation under NEPA and SEPA*, 20 ENVTL. L. 773, 787 (1990). *See also* Thomas O. McGarity, *Judicial Enforcement of NEPA-Inspired Promises*, 20 ENVTL. L. 569 (1990) (calling for amendments to NEPA to allow the enforcement of mitigation measures).

[73] Ministry of Housing and Lands, Planning Division, Outline Planning Scheme for the Black River District Council Area, p. 23 (2006) (emphasis added). For development on lands outside settlement areas, there is a general presumption against development in ESAs. *Id*. at p. 27.

example, that impacts on ESAs are appropriately evaluated and that mitigation measures prevent the project from adversely affecting the ESA beyond some defined limit.

In fact, the Outline Planning Scheme for the Black River District Council Area includes a threshold for development that provides a useful basis for determining when to prepare an EIA and how to judge whether an EIA licence should be approved. That Outline Planning Scheme provides that "[a]ny development proposed to adjoin ESAs (or within ESAs as specified above) will be required to first obtain an Environmental Impact Assessment licence … prior to seeking a development permit." That is, it does not rely on the list of undertakings provided in the Fifth Schedule of the Environment Protection Act 2002. Rather, any project in or adjoining an ESA must be subject to an EIA.

In addition, the Black River Outline Planning Scheme provides that "the natural functions, biodiversity, habitat and amenity of ESAs should be protected from adverse effects of development." Raising these standards to the level of a legal obligation—that is, as a condition of approval of an EIA licence—would substantially improve the provisions on EIA in the Environment Protection Act 2002.

Conclusion: The provisions of the Environment Protection Act 2002 relating to assessment of environmental effects are inadequate to protect ESAs.

3.1.2 EIA and Planning Laws

Section 15(3) of the Environment Protection Act 2002 requires a proponent of an undertaking to submit an outline of the undertaking to the Director three months before submitting an EIA application. Section 15(3) is thus intended to provide the project proponent with knowledge of environmental laws and possible obstacles to development early in the design process. Section 15(3), however, does not apply to undertakings submitted through the Board of Investment. This exception appears rooted in the desire to give certain types of projects less scrutiny.

While Section 15(3) of the Environmental Protection Act does not preclude preparation of an EIA, it does, when considered in combination with planning laws, appear to preclude the adequate consideration of potential impacts under an EIA for certain types of projects, such as Integrated Resort Schemes (IRS) and Real Estate Schemes (RES). Article 18 of the Investment Promotion Act 2000, which establishes the Board of Investment, requires the Board to issue an IRS or RES certificate within 30 days of the date of receipt of the application under Section 16, provided certain other requirements are met.[74] If an applicant for an IRS or RES certificate is not required to first obtain an EIA, then it will be impossible for the project proponent to prepare a meaningful EIA within 30 days. It will also be impossible for the Ministry of Environment to analyze any EIA meaningfully.

Similarly, the Business Facilitation Act 2006 may include provisions that make preparation and analysis of an EIA inadequate. The Business Facilitation Act 2006 amends Section 98(6) of the Local Government Act 2003 to require the issuance of a

[74] Investment Promotion Act 2000 (consolidated version, 2007), Sections 16, 18.

Building and Land Use Permit within two weeks of receiving an application. Likewise, it amends Section 98(7) of the Local Government Act 2003 to require issuance of a Building and Land Use permit for a small enterprise or handicraft enterprise within three working days of receiving the application. In both cases, the Permits and Business Monitoring Committee, which issues such permits, must be satisfied that a PER or EIA has been approved.

Many stakeholders noted that neither two weeks nor three days provides sufficient time to prepare a PER or EIA. They are absolutely right. If an applicant for a Building and Land Use Permit is required to obtain a PER or EIA approval only after receiving the permit, then there is no way that the Ministry of Environment can meaningfully analyze the adequacy of the PER or EIA. However, nothing in the Business Facilitation Act prevents the approval of a PER or EIA before an application is made for a Building and Land Use Permit.

Conclusion: To the extent that the Investment Promotion Act 2002 and the Business Facilitation Act 2006 mandate the approval of EIAs within the short timeframes included in those laws, then the two laws are completely inadequate for the protection of ESAs. Preparation and evaluation of an EIA in three to thirty days is entirely inadequate, especially for large IRS and RES projects.

3.1.3 Spill and Environmental Emergency

The Environment Protection Act 2002 requires the "owner of a pollutant" to notify and inform the Director of any spill and to do everything practicable to prevent, eliminate, and reduce the adverse effects of the spill, including restoration of the environment.[75] The Act presumes that the owner of a pollutant is liable for "any damage" caused by a spill.[76] The Director may initiate any action and take any measures necessary to prevent, eliminate, or reduce the adverse effects from a spill on the environment and to restore the environment.[77] At the same time, the Minister has authority to prescribe procedures for clean-up and removal operations in the event of a spill.[78]

The provisions concerning spills of pollutants may be inadequate to protect ESAs for the following reasons:

1. Section 30(2) gives the Director discretion to direct the owner to prevent, eliminate or reduce the adverse environmental effects of the spill, restore as far as practicable the environment to its previous state, and dispose of the pollutant in a reasonable way. These obligations should be mandatory, not discretionary.

[75] Environment Protection Act 2002, Section 29.
[76] Environment Protection Act 2002, Section 32.
[77] Environment Protection Act 2002, Section 30.
[78] Environment Protection Act 2002, Section 31.

2. Section 32 and the definition of "owner of a pollutant" of Section 3 do not appear to account for the possible bankruptcy of a company responsible for a spill or change in ownership of a property on which a spill occurred. While Section 32 makes the owner of a pollutant responsible for a pollutant regardless of whether he sells the property on which the spill occurred, that person may be bankrupt and unable to pay for the clean up of the pollutant and restoration of the environment. The "owner of a pollutant" is limited to "the owner or the person having the charge, management or control of a pollutant which is spilled." To guard against bankruptcy of the person who spilled the pollutant, the laws of some countries make any subsequent owner of a property liable for any pre-existing pollution on the property that they purchase.[79] In this way, even if the "owner of the pollutant" is bankrupt, the State can recover from the subsequent owner of the property on which the pollutant was spilled.

3. Section 33 allows the Director to recover from the owner of a pollutant the costs of clean up, disposal, and removal of a pollutant. However, it does not appear to allow recovery of costs and expenses for restoration of the environment. The explicit reference to restoration in Sections 29 and 30 indicates that the omission of restoration costs in Section 33 concerning recovery of expenses was intentional. If this is the case, then the Director may have no means to recover costs of restoration if the State is required to undertake the clean up and restoration of a spill.

Conclusion: The provisions of the Environment Protection Act 2002 relating to spills are inadequate to protect ESAs to the extent that they do not allow recovery of restoration costs and do not extend liability to subsequent owners of the property on which pollutants were spilled.

3.1.4 National Environmental Standards

Part VI of the Environment Protection Act 2002 grants the Minister broad authority to establish *guidelines* "for the protection and management of the environment" relating to water, effluent, waste, pesticides, and the built-up environment and landscape, among other topics.[80] Sections 38 through 46 establish more specific substantive thresholds for the Minister's mandatory duty to prescribe *standards* in many of these areas and *limitations* for effluent.[81] For example, Section 38(1) requires the Minister to prescribe standards for water quality "to protect the public health, welfare and the environment, and to provide adequate safeguard for the quality of water." These

[79] For example, the U.S. Comprehensive Environmental Response, Compensation and Liability Act makes the "owner and operator" of a facility liable for all costs of removal and remedial action as well as damages for injury to natural resources and the environment. "Owner and operator" is defined as subsequent owners of a property, including those who receive a property through bankruptcy. 42 United States Code §§ 9601–9675, at § 9607, § 9601(20)(A).
[80] Environment Protection Act 2002, Section 37.
[81] The distinction between "standards" and "limitations" apparently is one of practice, not substance.

provisions grant the Minister of Environment broad authority to protect ESAs. Nonetheless, two points are worth mentioning.

1. The inclusion of specific substantive environmental thresholds for promulgating standards is very useful. Nonetheless, these thresholds could ensure the protection of ESAs more effectively if they specifically reference ESAs. For example, Section 38(1) would be clearer if it required the Minister to prescribe standards "to protect public health, welfare and the environment, *to protect the characteristics for which ESAs have been designated*, and to provide adequate safeguard for the quality of water." That would transform the Minister's discretionary duty to protect ESAs into a mandatory one. Moreover, this recommendation recognizes that ESAs may need stricter standards than required for other natural areas.

2. Section 37(2) states very clearly that the Minister of Environment has exclusive authority to issue national environmental standards, which include criteria and specifications.[82] Nonetheless, other Ministries still have authority to regulate for environmental purposes that do not involve "standards." As a result, there may be times when a "standard" frustrates the implementation of a regulation, or where a regulation frustrates the implementation of a standard. No stakeholder consulted as part of this project cited any case in which such conflict arose. Careful coordination among ministries should be maintained to ensure the compatibility of standards with other regulations.

Conclusion: The provisions of the Environment Protection Act 2002 relating to national environmental standards are adequate to protect ESAs.

3.1.5 Coastal and Maritime Zone Management

Beaches, seagrasses, coral reefs, and the lagoon are among the most environmentally and economically important habitats in Mauritius. These habitats are also ESAs. As a consequence, the Environment Protection Act 2002 establishes an Integrated Coastal Zone Management (ICZM) Committee, which includes representatives from more than twenty ministries, departments, and institutions.[83] The ICZM Committee is charged with developing an integrated management plan and taking other actions to assist with the protection of the coastal zone—an area situated within one kilometer from the high water mark, extending both seaward and landward.[84]

The definition of "coastal zone," which is limited to 1 kilometer landward (and seaward) from the high water mark, may be too narrow. For example, only part of a river may be included within the "coastal zone" even though the entire river influences an estuary, reef, or other resource in the coastal zone. However, on an island the size of

[82] Environment Protection Act 2002, Section 3.
[83] Environment Protection Act 2002, Section 50 & Seventh Schedule.
[84] Environment Protection Act 2002, Section 49.

Mauritius, the entire island may be considered within the "coastal zone," as is the case of the island state of Hawaii in the United States. Nonetheless, no stakeholder suggested that the current definition of coastal zone was causing any management problems.

Within the "zone"—the area comprising both the "coastal zone" and the "maritime zone," which includes internal waters extending to the outermost extent of the Exclusive Economic Zone (EEZ)[85]—the Minister "may" develop regulations for the management, protection and enhancement of the environment, and preventing, reducing, and controlling pollution from ships, land-based sources, and other sources.[86]

Regardless of such regulations, Section 52 prohibits the "release" into the zone of any pollutant, waste, or other noxious substance "from or through, the atmosphere, or by dumping." This provision is somewhat difficult to understand. It appears to apply to releases of pollutants, waste, or other noxious substances (1) from or through the atmosphere and (2) by dumping. It is possible that the prohibition is intended to be limited to these two activities, because discharges into maritime zones or into a river, lake, pond, canal, stream, tributary, or wetland of "poisonous substances," which include "any substance likely to … damage or pollute aquatic systems," are controlled by the Ministry of Agro Industry, Food Production and Security (presumably through the Fisheries Division).[87]

In any event, neither "release" nor "dumping" is defined. Presumably, however, these terms mean something different from "discharge," which "includes deposit, emission and leakage."[88] These terms should be clearly defined and distinguished.

Section 52, however, allows a defence for releases and dumping in the "zone" consistent with the "level, amount, or nature permissible under an international agreement or convention to which the State of Mauritius is a party." At least with respect to the territorial sea, the defence may unnecessarily limit the Ministry's efforts to prevent adverse modification of ESAs. The United Nations Convention on the Law of the Sea (UNCLOS) expressly allows coastal States to adopt measures stricter than those provided by international law with respect to dumping and vessel discharges in the territorial sea, as well as in inland waters. Article 211(4) of UNCLOS provides:

> Coastal States may, in the exercise of their sovereignty within their territorial sea, adopt laws and regulations for the prevention, reduction and control of marine pollution from foreign vessels, including vessels exercising the right of innocent passage.

In the EEZ, UNCLOS generally requires coastal States to regulate discharges and dumping in accordance with generally accepted rules and standards of competent

[85] Environment Protection Act 2002, Section 49.
[86] Environment Protection Act 2002, Section 51.
[87] Fisheries and Marine Resources Act 2007, Section 69(1) (2007).
[88] Environment Protection Act 2002, Section 3.

international organizations.[89] Nonetheless, where those standards are "inadequate to meet special circumstances" and a coastal State has "reasonable grounds" for believing that ecological or other conditions warrant a rule stricter than the international rule, the coastal State may adopt a stricter rule provided that it consults with other affected States through the competent international organization.[90] While the need to adopt special rules to protect ESAs from discharges and dumping may not be necessary, it seems unnecessary to allow a defence to discharges and dumping in territorial seas, inland waters, beaches, and other terrestrial areas of the "zone."

Conclusion: The provisions of the Environment Protection Act 2002 relating to the coastal zone are adequate to protect ESAs, although it may be useful to reconsider the defence for pollution consistent with international standards.

3.1.6 Enforcement

The Environment Protection Act 2002 establishes broad enforcement powers. First, Section 24(3)(ii) authorizes the Minister—at any time— to revoke an EIA licence, or amend the conditions of an EIA licence, where he has reason to believe that the proponent is contravening the conditions attached to his licence.

Second, it authorizes the Police de l'Environnment, a unit of the Mauritius Police Force, to provide the Director of Environment with "such assistance as is required to enforce an environmental law."[91] Third, Section 70 establishes a process allowing the Director to enter consultations with a person suspected of violating any environmental law and direct the polluter to implement measures to cease contravention of any environmental law. If the person fails to comply with the measures specified in Section 70, then Section 71 allows the Director to issue an "enforcement notice" that specifies that certain actions must be taken by a specific date. If the person does not comply with the enforcement notice, then Section 72 authorizes the Director to issue a "prohibition notice," provided that the activity involves "serious pollution or an imminent risk of serious pollution of the environment." Finally, Section 73 authorizes the Director to issue a "stop order" that prohibits the development or the activity. Section 84 also authorizes the Director to arrange for monitoring of environmental quality as necessary to ensure compliance with an environmental law. Violators of environmental law are subject to various fines and imprisonment, depending on the nature of the violation.[92]

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[89] UNCLOS provides:

> Coastal States, for the purpose of enforcement as provided for in section 6, may in respect of their exclusive economic zones adopt laws and regulations for the prevention, reduction and control of pollution from vessels conforming to and giving effect to generally accepted international rules and standards established through the competent international organization or general diplomatic conference.

UNCLOS, art. 211(5).

[90] UNCLOS, art. 211(6)–(7).

[91] Environment Protection Act 2002, Section 9.

[92] Environment Protection Act 2002, Section 85.

Fourth, the Act makes failure to comply with "any requirement, notice, order or direction issued, or condition imposed, under an environmental law" an offence punishable by a fine not to exceed 50,000 rupees and imprisonment of up to two years.[93] Because the Environment Protection Act 2002 itself is considered an "environmental law," as well as a large number of other provisions of various laws, as listed in regulations promulgated by the Minister,[94] it appears that violations of any aspect of law thought of as "environmental" are subject to civil and criminal penalties.

In this regard, it is worth highlighting that several stakeholders were of the view that violations of conditions imposed in EIA licences were not considered offences. However, Section 85 of the Environment Protection Act 2002, as amended in 2008, states that failure to comply with any "condition" of an environmental law is an offence. Section 24 of the Act also states that provisions included in an EIA licence are "conditions." Section 16(10) for PER and Section 23(9) for EIA clearly state that any person who fails to comply with a term or condition attached to an approved PER or EIA licence "shall commit an offence." Thus, this report concludes that violations of an EIA condition are directly enforceable without needing to first issue an enforcement notice. Moreover, this report concludes that the Minister does not need to seek an enforcement order or any other order prior to revoking a licence pursuant to Section 24(3).

Several stakeholders also noted that the Ministry has failed to hire its own prosecutors to prosecute violators of environmental laws. As a result, the Ministry is reliant on the State Law Office to bring cases to court. Similarly, the Environment Protection Act 2002 requires the Ministry of Environment to rely on the Police de l'Environnment, a unit of the Mauritius Police Force, for enforcement support. Thus, the entire apparatus for enforcing environmental law resides outside the Ministry. This is a highly inefficient way to enforce law, because it depends on the priorities of two other agencies.

Conclusion: The provisions of the Environment Protection Act 2002 provide substantial authority for enforcing EIA conditions. Nonetheless, lines of authority for enforcement must be streamlined with enforcement and prosecution authority brought directly into the Ministry of Environment. In addition, it may be that legislative and regulatory changes to protect and manage ESAs will require additional technical expertise and knowledge for adequate enforcement.

[93] Environment Protection Act 2002, Section 85(1).
[94] Regulations Made by the Minister under Section 96 of the Environment Protection Act 2002, Government Notice No. 57 of 2005. *See also* Regulations Made by the Minister under Section 96 of the Environment Protection Act 2002, Government Notice No. 17 of 2009 (updating the list of "environmental laws," among other things).

3.2 Laws Affecting the Coastal and Marine Environment

Mauritius has several laws regulating aspects of the coastal zone. These laws affect several ESA types, particularly beaches, coastal wetlands, mudflats, mangroves, and coral reefs. Some laws included in this section, such as the Removal of Sand Act 1982 and the Pas Géométriques Act 1982, apply beyond the coastal zone and affect other ESA types. The Removal of Sand Act 1982, for example, applies to rivers and streams, as well as beaches. Nonetheless, because of the importance of the coastal zone for the development of tourism, a primary goal of Mauritius, these laws are discussed in this section.

3.2.1 Removal of Sand Act 1982

The Removal of Sand Act 1982 regulates the removal of sand from any place, including beaches, rivers, and marine areas, in Mauritius. As of October 2001, Mauritius has prohibited any person from removing sand from the lagoon.

Despite the ban, the Removal of Sand Act 1982 has not been repealed. Thus, in case the regulation is rescinded to allow sand removal in the future, this report analyzes the provisions of the Act, which otherwise prohibits anyone from removing or transporting sand unless properly authorized.[95] Moreover, it prohibits the removal of sand from a river or the sea except at a designated "sand landing place."[96] It further prohibits dealing in sand unless licensed.[97]

The Removal of Sand Act 1982 provides broad authority to enforce its provisions. Police officers may arrest or detain people suspected of violating the Act. Authorized officers, those designated by the Minister of Housing and Lands, may revoke licences of approved dealers if convicted of an offence under this Act. The Act further establishes fines and terms of imprisonment for violators. The Minister may also promulgate regulations to implement the Act.[98]

The Removal of Sand Act 1982 does not establish any threshold findings for issuance of licences. While Section 9 requires the applicant to state the quantity of sand to be removed and the purpose for which the sand is required, the Act does not prohibit removals that may adversely affect the environment. As such, it may be possible to remove sand in ways that harm ESAs.

Conclusion: As long as the ban on sand removal is in place, the Removal of Sand Act 1982 is adequate to protect ESAs, such as beaches and other ESAs that may be affected by erosion or other impacts arising from the removal of sand. If the ban is

[95] Removal of Sand Act 1982, Section 7(1).
[96] Removal of Sand Act 1982, Section 4(3).
[97] Removal of Sand Act 1982, Section 5(1).
[98] Removal of Sand Act 1982, Sections 15–18.

rescinded, then the Act is inadequate for protecting ESAs from the impacts of sand removal.

3.2.2 Beach Authority Act 2002

The Beach Authority Act 2002 establishes a Beach Authority to regulate activities on, and ensure the security and safety of, *public beaches*—those beaches designated by the Minister of Housing and Lands. The Beach Authority also has the dual mission to set standards and guidelines for beach management so that users may derive "maximum enjoyment" from public beaches while safeguarding the environment.[99] It further implements projects relating to the conservation and protection of the environment on public beaches, sets standards and guidelines for beach management, and advises the Minister of Local Government, Rodrigues and Outer Islands on all matters relating to the management and development of public beaches.[100]

The Beach Authority is managed by a Board, which is composed of representatives from the ministries responsible for local government, tourism, environment, fisheries, housing and lands, and youth and sports, as well as representatives from other entities. The Authority has all the powers necessary for the administration of the Beach Authority Act 2002.[101] At the same time, the Minister of Local Government, Rodrigues and Outer Islands, after consulting with the Board, may make such regulations as he thinks necessary, including those relating to the "issue, duration, cancellation and renewal of licences."[102] The requirement to consult with the Board may eliminate any possible conflict between the Board and the Minister. Nonetheless, the Minister is not required to heed the advice of the Board. As such, the Act creates two lines of authority to regulate conduct on public beaches.

Two primary issues arise with respect to these duties and functions. First, the Beach Authority Act 2002 may create institutional challenges for its implementation. The Beach Authority Act 2002 grants the Beach Authority the authority to implement projects for the conservation and protection of the environment of public beaches and enhance the quality of sea water. It also has authority to "set standards and establish guidelines for beach management so as to enable users of public beaches to derive maximum enjoyment from clean, safe and well equipped beaches whiles safeguarding the environment." At the same time, Article 51 of the Environment Protection Act 2002 gives the Minister of Environment broad authority to make regulations concerning the management, protection, and enhancement of the environment in the coastal zone. Thus, both the Beach Authority and the Minister of Environment appear to have authority to manage public beaches for environmental purposes. Nonetheless, the ICZM Committee and the Environmental Law Division have stated that:

[99] Beach Authority Act, Section 5(d).
[100] Beach Authority Act, Sections 3 and 5.
[101] Beach Authority Act, Section 6(1).
[102] Beach Authority Act, Section 22(1)–(2).

> "[t]he Beach Authority is mainly responsible for looking at amenities on public beaches only whereas the Ministry of Environment look[s] at coastal erosion and other environmental problems on both public and private beaches, among others. Furthermore, the MoE is responsible for implementing/coordinating projects on adaptation measures in relation to climate change"[103]

It is easy to interpret the Ministry of Environment's authority as including these matters; Article 51 provides the Minister with very broad authority to manage activities in the coastal zone. It is much more difficult to view the Beach Authority's ability to implement projects to conserve and protect the environment of public beaches and to enhance the quality of sea water as limited to the provision of amenities. It is possible, however, that some institutional arrangement has been made to clarify these responsibilities. A similar overlap in authority may exist with respect to Beach Authority and the Minister of Local Government, Rodrigues and Outer Islands, because the Minister has authority to "make regulations, including those relating to the "issue, duration, cancellation and renewal of licences."[104]

A recent report on beach erosion could be read as indicating that this overlapping regulatory authority is actually creating a regulatory void. Although the report, commissioned by the Ministry of Environment, noted that beach erosion was occurring on public beaches,[105] stakeholders are of the view that no entity has started to regulate beach erosion. Clear jurisdictional authority of one entity could help clarify which entity must take action.

Second, the Beach Authority Act 2002 does not establish strong duties to protect the environment. For example, although the Beach Authority must safeguard the environment of public beaches, it does not prohibit harm to flora and fauna on public beaches. Dunes, and in particular vegetation on dunes, are the foundation for dune system ESAs. They are also highly sensitive to disturbance. While Section 16(1)(a) of the regulations of the Beach Authority[106] prohibits any damage to flora, that prohibition may be better placed in the Beach Authority Act 2002 itself. Moreover, given the condition of some public beaches, the Act could be strengthened by requiring the Board or the Minister to restore native vegetation on public beaches.

Conclusion: The Beach Authority Act 2002, unlike some other laws, creates a conservation threshold: it requires the Beach Authority to safeguard the environment of public beaches. Nonetheless, the Beach Authority Act 2002 does not

[103] Department of Environment, Environmental Law Division, Compilation of Comments from Stakeholders As of May 28, 2009.
[104] Beach Authority Act, Section 22(1)–(2).
[105] The "Baird" Report states that "There are initial and alarming indications supported by hard evidence from this study that irreversible erosion is occurring and has the potential to become widespread along the sandy beaches of Mauritius." W.F. BAIRD & ASSOCIATES COASTAL ENGINEERS LTD., STUDY ON COASTAL EROSION IN MAURITIUS: FINAL TECHNICAL REPORT, ENV/RM/5/1/1, vi (prepared for the Ministry of Environment, August 2003).
[106] Beach Authority (Use of Public Beach) Regulations, GN No. 90 (2004).

establish clear jurisdictional authority for beach management. It also imposes a second standard—to provide maximum pleasure to users of public beaches—that makes it difficult to implement the environmental standard. As such, while the Beach Authority Act 2002 provides adequate guidance to the Authority to protect ESAs in public beach areas, the lack of clear jurisdictional authority and the somewhat conflicting mandate make implementation challenging. The Beach Authority Act 2002 would benefit from a clearer conservation threshold, such as the one found in Section 16(1) of the regulation.

3.2.3 Pas Géométriques Act 1982

The Pas Géométriques Act 1982 declares certain lands and waters as the "domaine public" (public domain). Section 3 declares those lands measured from the high water mark at spring tide extending no less than 81 metres and 21 centimeters landward as part of the public domain. The public domain also includes "annexes of Pas Géométriques"—adjacent salt and fresh waters as well as islets.[107] However, lands within the limits of the District of Port Louis or any village included in the Schedule are excluded from the Pas Géométriques.[108]

Although these lands are in the public domain, the Minister of Housing and Lands may lease the Pas Géométriques or its annexes for periods not exceeding 30 years (but with the possibility for two renewals of 15 years each) in exchange for rent and other consideration approved by the Minister.[109] The lessee is then responsible for ensuring that the conditions of the Act and the lease are implemented, including the prohibition against cutting trees unless authorized.

The Pas Géométriques Act 1982 includes some provisions that may not necessarily be in the best interest of protecting ESAs. For example, Section 8 requires the lessee to plant trees on the leased land until all of the leased land has been planted. First, by mandating the planting of trees, the Act does not recognize that other types of vegetation may be more appropriate. Second, the Act does not mandate the use of native trees or vegetation. Third, Section 10 does not require planting of any vegetation for those leasing "small portions" of the Pas Géométriques for campement sites or "for any other purpose." Because these 20-year leases may be renewed for two additional periods of 20 years, it is possible for a lessee to avoid planting any vegetation for a period of 60

[107] Section 4(1) of the Pas Géométriques Act 1982 provides in full:

> The ponds of sea water, salt water marshes, lakes, bogs and basins situate wholly or partly upon the 'Pas Géométriques', the islets adjacent to the shore and which can be reached on foot at low tide, the creeks at the mouths of rivers, and the mouths of rivers, shall be deemed annexes of the 'Pas Géométriques', shall form part of the 'domaine public' and shall be inalienable and imprescriptible.

[108] Pas Géométriques Act 1982, Section 18.

[109] Pas Géométriques Act 1982, Section 7(1). In certain circumstances concerning the Cyclone Housing Scheme, the Minister may enter leases of Pas Géométriques for periods between 30 and 99 years. Pas Géométriques Act 1982, Section 7(1)(b).

years. Given the importance of the Pas Géométriques, additional incentives or requirements for planting trees or other native vegetation should be established..

The major problem with the Pas Géométriques Act 1982, however, concerns the construction of various barriers by those leasing campements in the coastal zone. The Pas Géométriques Act 1982 prohibits any dumping of sand, earth, stones, wood, or any other object" or building jetties or other structures on any part of the Pas Géométriques.[110] In fact, the government has leased large tracts of the Pas Géométriques along the beach to individuals who have built houses, as well as walls, groins, and other structures, often below the high water mark. While most, if not all, walls blocking public access to the "wet sand area"—the area between the low and high water marks—have been destroyed or lowered, many of these walls still act as groins that block the natural flow of water and sand. The campements at Blue Bay, where lessees built walls both facing and perpendicular to the ocean, illustrate this problem well. The Ministry of Housing and Lands does not appear to be taking action to remove or destroy these structures, despite having authority to require their removal.[111]

Other than the prohibitions against dumping and building structures in the Pas Géométriques, the Pas Géométriques Act 1982 does not describe any limitations relating to safeguarding the Pas Géométriques for environmental purposes. While the Act includes extensive provisions relating to cutting and removing trees, it does not establish any rules relating to marshes, lakes, bogs and other elements of the Pas Géométriques. As a consequence, it is possible that such land could be leased and degraded. Moreover, the Pas Géométriques Act 1982 does not limit the eligible uses of the Pas Géométriques.

The Pas Géométriques Act 1982 does not describe any relationship between the Minister and other institutions having responsibility for various aspects of coastal zone management, including the Beach Authority, the Minister of Environment, and the ICZM Committee. The various roles of these entities should be carefully reviewed with a view to rationalizing management of beaches and the coastal zone.

Conclusion: The Pas Géométriques Act 1982 is inadequate to protect ESAs, because it fails to establish a threshold for development in the Pas Géométriques. In addition, the Ministry of Housing and Lands is not adequately enforcing provisions of the Act meant to protect beaches, an important ESA type.

3.2.4 Maritime Zones Act 2005

The Maritime Zones Act 2005 gives the U.N. Convention on the Law of the Sea the force of law in Mauritius.[112] It authorizes the Prime Minister to make regulations concerning sea lanes and air routes, as well as the passage of ships carrying hazardous waste, nuclear materials, or radioactive materials.[113] In addition, the Prime Minister may

[110] Pas Géométriques Act 1982, Sections 23, 24A.
[111] Pas Géométriques Act 1982, Section 24A(2).
[112] Maritime Zones Act 2005, Section 3 (2005).
[113] Maritime Zones Act 2005, Section 10.

make regulations that provide for the "authorisation of persons to explore for natural resources" in the EEZ and continental shelf,"[114] a responsibility that may overlap with the Minister of Agro Industry, Food Production and Security, who has authority to manage fisheries in Mauritius waters.

Conclusion: The Maritime Zones Act 2005 does not affect conservation and management of ESAs, except through the inclusion of the definitions applicable to territorial seas, exclusive economic zones, and other jurisdictional waters.

3.2.5 Tourism Authority Act 2006

The Tourism Authority Act 2006 (as amended in 2008) relates to ESAs by granting the Minister of Tourism, Leisure and External Communications the authority to regulate tourist activities and pleasure craft.[115] In particular, the Minister has broad authority to regulate tourist activities that may affect ESAs, such as coral reefs, seagrass beds, and coastal marshes. For example, the Minister may prohibit tourist activities, such as jet skis and water skiing, and the use of pleasure craft in specific areas.[116] The Minister may also regulate the speed of pleasure crafts within any area other than a public beach and designate and regulate mooring places and embarkation points.[117]

This authority is vital for the protection of coral reefs, which may easily suffer damage from tourist activities. The Minister has already used this authority to regulate the speed of boats in certain areas, establish ski lanes, prohibit the use of certain watercraft in certain areas, and establish mooring points.[118]

Conclusion: The Tourism Authority Act 2006 provides sufficient discretion to protect and manage ESAs adequately. As with other laws analyzed in this report, the question is whether the Minister will use that authority or use it appropriately.

3.3 Biodiversity-related Legislation

Biodiversity-related legislation may affect several ESA types, including forests, wetlands, and coral reefs. For example, the Forests and Reserves Act affects not only the management of forests generally, but also management of forests on steep slopes and water quality in rivers and streams. In addition, specific ESA types that are defined by their legal classification, such as nature reserves, are governed by the law that establishes those ESA types.

[114] Maritime Zones Act 2005, Sections 17, 21.
[115] Tourism Authority Act 2006, Section 129 (2006, as amended in 2008).
[116] Tourism Authority Act 2006, Section 129(f), (h).
[117] Tourism Authority Act 2006, Section 129(j), (l).
[118] For a list of these regulations, see Ministry of Tourism, Leisure, and External Communications, Regulations for Tourism, *at*:
http://www.gov.mu/portal/site/tourist/menuitem.f9d5598cfdfd2b44c5e7931000b521ca.

3.3.1 Forests and Reserves Act 1983

The Forests and Reserves Act 1983 governs the designation and use of "forest land" on both State-owned and privately-owned land.[119] The Minister of Agro Industry, Food Production and Security is charged with implementing the Act, including making any regulations he thinks necessary; these regulations may be limited, however, to establishing fees and amending the schedules.[120] The Act establishes a Nature Reserves Board to advise the Minister.[121]

The Act governs a range of forest-related issues. For example, the Minister may declare any State land to be a national forest, an area that "shall not be devoted to any use other than as forest land."[122] It further guides identification of mountain, river, and nature reserves.[123] The various reserves are identified in the Schedules. There are 20 mountain reserves. The list of 16 nature reserves includes 7 on the island of Mauritius and 2 on Rodrigues. The remaining 7 are islets. Private land constitutes a substantial amount of land designated as mountain, river, or nature reserves (6,553 hectares) under this Act, almost as much as all state land designated as national park, nature reserve, or reserve (7,979 hectares) under this Act or the Wildlife and National Parks Act 1993.[124]

The Act authorizes the cutting of trees in a mountain, river, or road reserve, but only with permission from the authorized officer and for limited purposes.[125] Moreover, no person may destroy a tree on forest land where such land is State land or adjacent to State land or a mountain reserve. The authorized officer may impose conditions on the cutting of trees "as he thinks fit."[126] The authorized officer may also require planting or replanting of a mountain or river reserve,[127] a power that could help protect and/or restore ESAs. This should give the authorized officer broad authority to protect ESAs, although as in other statutes the authority is discretionary; there is no mandatory duty to protect forest system ESAs even when designated a mountain or river reserve. For example, the authorized officer could, in theory, require the owner of a forest or river reserve to plant non-native species, a decision at odds with the proper management of ESAs. This report takes note that the Forestry Policy establishes a goal of balancing development and conservation but that restoration and planting with native vegetation are strategies for fulfilling that goal.[128]

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[119] Section 2 of the Forests and Reserves Act defines "forest land" to include "a national forest and all land which is not under cultivation and which is covered by trees."
[120] Forests and Reserves Act, Section 17.
[121] Forests and Reserves Act, Section 3. The board comprises the Permanent Secretary of the Ministry Agro Industries, Food Production and Security and between 5 and 8 others that the Minister appoints.
[122] Forests and Reserves Act 1983, Section 4 (1983).
[123] Forests and Reserves Act 1983, Sections 2, 5.
[124] MAURITIUS, NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 17, Table 2.2.
[125] Forests and Reserves Act 1983, Sections 8(1), 10.
[126] Forests and Reserves Act 1983, Section 8(2).
[127] Forests and Reserves Act 1983, Section 9.
[128] Forestry Service, National Forestry Policy (Apr. 14, 2006).

Section 14 also articulates a long list of mandatory prohibitions. For example, no person may plant a mountain or river reserve with anything other than fruit trees, forest trees or crops approved by the authorized officer and without permission from the authorized officer. With respect to State land, forest land, or a mountain, river, or nature reserve, no person may (1) introduce any article or thing injurious to plant life, (2) depasture any animal, (3) damage, destroy, dig or remove any forest product, or (4) act negligently or maliciously so as to cause or likely cause erosion. Moreover, no person may introduce any plant or animal into a nature reserve or damage or interfere with a protected plant on any State land or reserve. The Act establishes civil and criminal penalties for violations of these provisions.[129]

In general, it is difficult to assess whether financial penalties are adequate to deter conduct. However, in the case of the Forests and Reserves Act 1983, which sets financial penalties at 5,000 rupees or less (about US$170), it is clear that the penalties are inadequate to deter violations on private land. The government of Mauritius agrees that the Forests and Reserves Act 1983 is inadequate to deter biodiversity loss on private land, because "penalties are too weak to be an adequate deterrent."[130] However, Article 15 also allows a court to impose additional penalties, including a fine of five times the value of the forest produce involved in the offence and confiscation of articles used to commit the offence. These are useful penalty provisions that should be imposed as a matter of course, not only as a matter within the discretion of the court.

Moreover, it is unclear whether the Forestry Service has the capacity to manage these lands. Despite a staff of 1,037 and a budget of 157 million rupees for 2005–2006, the Forestry Service is only actively managing 4.4 hectares of the 200 hectares of nature reserve within its jurisdiction.[131]

Conclusion: The Forests and Reserves Act 1983 has the potential to protect ESAs in designated reserves. Whether it does so, however, is entirely within the discretion of the Minister and the Forestry Service, because the law includes no substantial thresholds for management. In addition, the penalty provisions available to the Forestry Service are inadequate to deter violations; the more substantial penalties within the court's discretion should be made a part of the standard penalty for any offence.

3.3.2 Wildlife and National Parks Act 1993

The Wildlife and National Parks Act 1993 has two distinct objectives: to authorize the establishment and management of national parks and to protect wildlife throughout Mauritius. The Minister of Agro Industries, Food Production and Security is charged with overall implementation of both objectives.[132] The Director of the National Parks and Conservation Service (NPCS) maintains administrative control over national

[129] Forests and Reserves Act 1983, Section 15.
[130] MAURITIUS, NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 34.
[131] MAURITIUS, NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 37.
[132] Wildlife and National Parks Act 1993, Sections 9, 30 (1993).

parks,[133] with the Wildlife and National Parks Advisory Council providing advice to the Minister on any matter related to wildlife, national parks and other reserved land, and conservation generally.[134] The Wildlife and National Parks Act 1993 will affect the protection and management of several types of ESAs, including forests and streams within the Black River Gorges National Park and those islets within the Islets National Park.

3.3.2.1 National Parks

The President of Mauritius may declare any State land, nature reserve, Pas Géométriques, or other land to be a national park or other reserve (collectively referred to as "reserved land") where that land has "natural, scenic, scientific, educational, recreational or other importance or value to the State" or the preservation of the land is necessary to protect, manage, permit access to, or allow public enjoyment of such land.[135] The Minister may designate adjacent lands as "buffer zones" which may be used for various activities provided that they do not negatively affect, either directly or indirectly, the reserved land.[136]

The Director of NPCS is responsible for promoting conservation and management in relation to the use of or development of land generally, but he may carry out actual management operations only on reserved lands and conservation programs for wildlife only in national parks and other areas entrusted to him by the Minister.[137] The term "conservation," however, is not defined.

With respect to each reserved area, the Director must prepare a management plan, which may include "no use" zones.[138] The Director may allow, with the approval of the Minister, the lease of reserved land for concessions or other uses, provided that such uses "are not inconsistent with the purposes for which the land has been reserved."[139]

3.3.2.2 Protection of Fauna and Flora

The provisions relating to the protection of fauna and flora establish a number of different prohibitions, depending on the schedule in which a species is included. For example, it is illegal to hunt, rear, have in possession, purchase, sell or export any "protected wildlife," any wildlife other than those species included in the Second Schedule, or the products of any protected wildlife. It apparently is permissible to kill or capture wildlife, however.[140] Those bird species included in the Third Schedule may be captured for rearing, while others may be taken or destroyed if included in the Second

[133] Wildlife and National Parks Act 1993, Section 9.
[134] Wildlife and National Parks Act 1993, Section 4.
[135] Wildlife and National Parks Act 1993, Section 11.
[136] Wildlife and National Parks Act 1993, Section 12.
[137] Wildlife and National Parks Act 1993, Section 10(1).
[138] Wildlife and National Parks Act 1993, Sections 13(3), 13(6).
[139] Wildlife and National Parks Act 1993, Sections 14(1), 14(5).
[140] Wildlife and National Parks Act 1993, Sections 15.

Schedule.[141] Section 17 also prohibits hunting, obtaining, possession, buying, selling, export, and import of "prescribed species," although neither the Act nor the regulations identify what a "prescribed species" is. Nonetheless, hunting of game is permissible with a game licence.[142] Other provisions prohibit any person from introducing into Mauritius any living animal without a permit issued by the authorized officer[143] and establish special rules for camaron and shrimp.[144]

The Act does not establish any specific provisions for plants. Instead, it includes plant species within the definition of "wildlife," provided that the plants are "prescribed." To date, it does not appear that any plants have been prescribed (although the Forests and Reserves Act 1983 includes a Schedule of Protected Plants, it includes no provisions that apply to them).

3.3.2.3 Enforcement

The Act grants an "officer"—an officer of the NPCS, a police officer, forest officer, or fisheries officer[145]—the authority to enforce the Act.[146] Such officers have the power to search premises and vehicles, seize wildlife, and take other actions necessary to enforce the Act.[147] The Act also establishes substantial penalties for violations of the Act (50,000 rupees), particularly those relating to species included in the Fourth Schedule (up to 100,000 rupees), which includes many native and endemic species.[148]

The exact scope of the Director's enforcement authority under the Wildlife and National Parks Act 1993 is questionable. While the authority to carry out management programs is limited to reserved lands, the Act is silent as to the authority to regulate the provisions concerning wildlife on private land. This must be clarified. [Note: the proposed amendments to the Wildlife and National Parks Act 1993 will grant explicit authority to the NPCS to regulate wildlife on private lands].

3.3.2.4 Capacity

Despite adequate substantive and penalty provisions, it is not clear that the NPCS has the staff and budget to fulfill its mandate. In 2006–2006, the NPCS had just 87 staff and a budget of 16.3 million rupees.[149]

Conclusion: The substantive and penalty provisions of the Wildlife and National Parks Act 1993 are adequate to protect ESAs within reserved lands. However, it

[141] Wildlife and National Parks Act 1993, Sections 15(2), 16(1).
[142] Wildlife and National Parks Act 1993, Section 19(1).
[143] Wildlife and National Parks Act 1993, Section 23.
[144] Wildlife and National Parks Act 1993, Section 24.
[145] Wildlife and National Parks Act 1993, Section 2.
[146] Wildlife and National Parks Act 1993, Section 27–28.
[147] Wildlife and National Parks Act 1993, Section 28(2).
[148] Wildlife and National Parks Act 1993, Section 26.
[149] MAURITIUS, NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 36.

appears likely that staffing and budget levels are inadequate to protect ESAs within national parks and other reserves within the jurisdiction of the NPCS. Moreover, the NPCS's authority to regulate wildlife on private land must be clarified.

3.3.3 Plant Protection Act 2006

The Plant Protection Act 2006 is designed to prevent and control the introduction and spread of plant pests and to establish phytosanitary measures in conformity with international standards. It is also designed to protect endangered areas and designate, maintain, and survey pest free areas and areas of low pest prevalence.[150] As such, it has relevance to ESA types, such as forests and marshlands. The National Plant Protection Office (NPPO) within the Ministry of Agro Industries, Food Production and Security is charged with administering the Act.

The Act requires every property owner to immediately notify the NPPO of the presence of a pest on his or her property.[151] "Pest" is defined to include many lower organisms, such as slugs and mites, plants, viruses, and any infectious agents capable of causing damage to any plant or plant product.[152] The definition does not include, however, organisms such as mammals that may damage plants (which potentially could be regulated here or under the Wildlife and National Parks Act 1993). More generally, the definition could exclude a range of possible organisms that could be defined as a pest. While the definition includes "any insect" and "any infectious agent," the definition is otherwise restrictive and does not include many arachnids and other potential pest species. It may be more appropriate to define "pest" as non-restrictively as possible, and then make exclusions for certain species that might otherwise fall within the definition.

Designated officers may quarantine a property with a pest and take any measures necessary under the circumstances.[153] These measures may include quarantine and destruction of the pest or plants infested with the pest.[154] Where pests are not present, the NPPO may adopt phytosanitary measures to keep the area pest free.[155] Similarly, the NPPO may adopt measures to keep pests at low levels in low-pest areas[156] or to protect areas where there is an "imminent risk of a pest infestation.[157]

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[150] Plant Protection Act 2006, Section 5(1) (2006).
[151] Plant Protection Act 2006, Section 9.
[152] The complete definition of "pest" is:

> any living stage of any insect, mite, nematode, slug, snail, protozoa, bacterium, fungus, plant or any reproductive part thereof, virus, phytoplasma, or any infectious agent capable of causing damage to any plant, planting material or plant product

Plant Protection Act 2006, Section 2.
[153] Plant Protection Act 2006, Sections 10, 12.
[154] Plant Protection Act 2006, Section 16(1).
[155] Plant Protection Act 2006, Section 13.
[156] Plant Protection Act 2006, Section 14.
[157] Plant Protection Act 2006, Section 17.

The Act further establishes rules for the importation of plants and plant products. For example, the NPPO must issue a permit prior to any importation of a plant, plant product, or other regulated article.[158] The NPPO also has authority to establish phytosanitary standards for imports[159] and allows the inspection of any imported plant, plant product, or other regulated article imported into Mauritius.[160] Where an officer determines that the imported product fails to comply with requirements of this Act or "otherwise presents any risk for the introduction or spread of pests," he may take a number of actions, including destroying the product.[161]

The Act establishes broad enforcement powers to ensure that pests are detected. For example, officers may enter and search any place and make any investigation or inspection deemed necessary to ensure compliance with the Act.[162] They may, among many other things, also seize any thing that an officer believes is a pest, infested with a pest, or relevant to establishing an offence, and helps provide evidence of an offence.[163]

Conclusion: The Plant Protection Act 2006 is far reaching and provides officers with sufficient discretion to protect ESAs from "pests." To the extent that the Plant Protection Act 2006 is inadequate, it is that it focuses on a relatively narrow range of "pests" that could negatively affect ESAs. In the context of ESAs, it could be strengthened by giving priority attention to ESAs to ensure they remain pest free or areas of low pest prevalence.

3.3.4 Fisheries and Marine Resources Act 2007

Under the Fisheries and Marine Resources Act 2007, the Minister of Agro Industry, Food Production and Security is responsible for fisheries through its Fisheries Division. Under this Act, the Minister is responsible for managing fisheries as well as establishing marine protected areas[164] (and managing national parks, as described above.) The Minister is also charged with promulgating any regulations to implement any aspect of the Act.[165] The Fisheries and Marine Resources Act 2007 has relevance for several ESA types, including coral reefs, mangroves, seagrass beds, and coastal marshlands.

3.3.4.1 Fishing

The Fisheries and Marine Resources Act 2007 requires any person "who wishes" to be registered as a fisherman to obtain a licence from the Permanent Secretary.[166] It also establishes a set of prohibited fishing methods, such as fishing with explosives, drift nets,

[158] Plant Protection Act 2006, Section 19(1).
[159] Plant Protection Act 2006, Section 18(1).
[160] Plant Protection Act 2006, Section 20.
[161] Plant Protection Act 2006, Section 20(4).
[162] Plant Protection Act 2006, Section 26(1).
[163] Plant Protection Act 2006, Section 26(1)(f).
[164] The Fisheries and Marine Resources Act 2007 2007, Act No. 27 of 2007, Section 4 (2007).
[165] The Fisheries and Marine Resources Act 2007 2007, Section 74.
[166] The Fisheries and Marine Resources Act 2007, Section 11(1).

and poisons. It further prohibits landing, selling, or possessing fish caught using a prohibited fishing method.[167] The Act also establishes closed seasons for certain species[168] and, unless a licence is obtained, prohibits the use of fish aggregating devices and other gear.[169]

It also prohibits any person from fishing for undersized fish, crabs and lobsters in the berried state, and any marine turtle, marine turtle egg, or marine mammal.[170] The Act establishes a number of exceptions to these prohibitions. The Permanent Secretary may allow an exemption to these prohibitions as follows:

(a) any undersized fish or marine turtle eggs for scientific reproductive, any other purpose beneficial to the community,
(b) undersized fish by the operator of a fish farm for stocking the fish farm, and
(c) undersized fish specified in the Schedule for use as bait.

The Act establishes no environmental or other criteria to limit these exceptions. As such, a determination of whether the exceptions are detrimental to ESAs is entirely within the discretion of the Permanent Secretary. In any event, where a fishery control officer "is satisfied" that these prohibitions have been violated, he shall order the fish to be seized.[171]

Moreover, the Act establishes no threshold, such as maximum sustainable yield, to limit catch quotas. It is possible that the Maritime Zones Act 2005, which gives the U.N. Convention on the Law of the Sea (UNCLOS) the force of law in Mauritius,[172] incorporates the obligations of Article 61 of UNLOS to ensure living resources in the exclusive economic zone are not endangered by over-exploitation and to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield. However, because Article 61 allows maximum sustained yields to be exceeded due to "economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States," Article 61 is largely useless for preventing over-fishing. Moreover, the provisions of UNCLOS concerning fisheries do not apply in the territorial seas, which include the lagoon, seagrass beds, and coral reefs of Mauritius. Thus, there do not appear to be any thresholds for determining catch limits in the territorial sea of Mauritius.

In any event, declining fish catches and declining sizes of fish caught indicate that fishing is at unsustainable levels both in the lagoon and beyond the reef.[173] It should be

[167] The Fisheries and Marine Resources Act 2007, Section 12(1).
[168] Fisheries and Marine Resources Act 2007, Section 14.
[169] Fisheries and Marine Resources Act 2007, Section 15.
[170] Fisheries and Marine Resources Act 2007, Section 16. The exceptions to the prohibitions are limited to (a) scientific reproductive, any other purpose beneficial to the community
[171] Fisheries and Marine Resources Act 2007, Section 17(4).
[172] Maritime Zones Act 2005, Section 3 (2005).
[173] MAURITIUS, NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 45 (stating that "Lagoon fishing currently exceeds sustainable levels of exploitation with the size of fish and the total catch decreasing

noted that the Fisheries Division has introduced a number of protective measures to move fisheries towards sustainability. For example, fishermen have been encouraged to move out of the lagoon and certain fishing techniques have been banned, such as spear fishing. The Fisheries Division also has established a closed season for net fishing and restrictions on catching undersized fish.[174]

The Act further prohibits the importation of live fish intended for release, aquaculture, or for ornamental purposes, except under a permit issued by the Permanent Secretary.[175] Unlike other aspects of this Act, criteria are established for limiting the discretion of the Permanent Secretary to issue or deny permits. Here, the law requires the Permanent Secretary to keep any fish under observation and control for such period as he thinks fit, and that an EIS be prepared. The importer must submit a report to the Permanent Secretary that the release of live fish "shall not be detrimental to the environment."[176]

The environmental threshold for issuing a permit for the release of live fish is the right one. However, the source of the finding is wrong. The permit applicant has an obvious conflict of interest. As a consequence, the applicant's determination of "no environmental detriment" should be viewed with great skepticism.

A better approach would be to require an independent evaluation by government officials based on a report it commissions (at the applicant's expense). A process that eliminates all traces of an applicant's bias is warranted here. First, the value of coastal ESAs, including coral reefs and seagrass beds, in Mauritius is immense—and indeed the basis for national planning efforts. Second, the problems with invasive species are readily apparent in Mauritius. As such, a very cautious approach to live release of additional non-native species should be taken.

The Act also includes a number of provisions relating to the landing of fish, the import, export, and manufacturing of fish, which do not affect ESAs.

Sections 28 to 33 establish provisions for the licensing, use, and disposal of gear, as well as the non-transferability of gear licences. These provisions appear to adequately cover the life history of gear, but they appear to make two omissions. First, they do not require a fisherman to provide information to the Permanent Secretary about where he will fish. This seems relevant because one gear type may be destructive in certain areas, but benign in others. Second, one gear type does not appear to be included: bottom trawl gear. It is possible that bottom trawl gear is included in the definition of a "pocket net" or another type of net, but that is not apparent. In the alternative, perhaps bottom trawl gear simply is not used in Mauritian waters. Nonetheless, given the destructive force of a bottom trawl net, particular for coral reefs and seagrass beds, it may be valuable to

despite increased effort."). The Update of the NES2 also shows declining catches of tuna and other EEZ fish.

[174] Comments of Department of Environment, ICZM Division, para. B(k) (undated).

[175] Fisheries and Marine Resources Act 2007, Section 23(1).

[176] Fisheries and Marine Resources Act 2007, Section 23(3).

specifically define this type of net and either regulate it or ban it. Section 37 grants the Minister the authority to impose conditions on the type and method of fishing that a vessel may undertake; ensuring that bottom trawl gear is regulated would help the Minister verify which fishermen and which vessels possess this gear type.

Conclusion: The Fisheries and Marine Resources Act 2007 is inadequate to protect ESAs, because it does not establish a threshold for fish catch or an environmental threshold for fishing or use of fishing gear.

3.3.4.2 Fish Farming

Fish farming may create economic benefits as well as cause adverse environmental impacts. Fish farming around the world is particularly known for its harmful impacts on mangroves and other near-shore ecosystems.[177] As a consequence, the Fisheries and Marine Resources Act 2007 requires any person wishing to operate a fish farm to obtain a licence from the Permanent Secretary.[178] In addition, fish farming in the sea requires an EIA licence pursuant to the Environment Protection Act 2002; Section 8B of the Fisheries and Marine Resources Act 2007 prohibits any fish farming in the absence of an EIA licence. In some circumstances, the applicant must publish a notice in the *Gazette* and daily newspapers notifying the public of the application.[179] The Permanent Secretary may refuse the application or grant the application with conditions. The Act, including the 2008 amendments under the Finance Act (2008), is silent, however, on the information that an applicant must provide to the Permanent Secretary and the criteria upon which the Permanent Secretary must base his decision. As such, it is not clear that these provisions are adequate, as a matter of law, to protect an ESA.

Once a fish farm is operational, a fish farm operator must notify the Permanent Secretary within 24 hours of any disease in the fish farm. The Permanent Secretary may direct the fish farm operator to take measures necessary to control the disease and prevent it from spreading. These measures may include removing or destroying fish affected by the disease and disinfecting the fish farm.[180]

The Act does not establish any environmental thresholds for refusing to grant an application. Whether the Permanent Secretary refuses an application is entirely within his discretion. On the other hand, the 2008 amendments to the Fisheries and Marine Resources Act 2007 establish a threshold for cancelling a fish farm. Where a fish farm constitutes a nuisance or causes detriment to, or is a source of pollution of, the natural

[177] *See*, *e.g.*, United Kingdom, Fisheries Research Services, *Environmental Impact of Fish Farms* (2008), *available at*: http://www.marlab.ac.uk/Delivery/standaloneCM.aspx?contentid=522; Environmental Defense Fund, *The Promise and Peril of Fish Farming* (updated October 30, 2007), *available at*: http://www.edf.org/page.cfm?tagID=16150.
[178] Fisheries and Marine Resources Act 2007, Section 8(1), 8B(1).
[179] The notice requirement does not apply to farming fish in a pond, tank, barachois, or fish hatchery. The Fisheries and Marine Resources Act 2007, Sections 8(2), 8(7).
[180] Fisheries and Marine Resources Act 2007, Section 10.

resources and the environment, the Prime Minister may cancel or suspend the fish farm concession.[181]

Conclusion: The Fisheries and Marine Resources Act 2007 does not prohibit fish farming in sensitive areas or even establish an environmental threshold for regulating fish farming. As such, its provisions on fish farming are inadequate to protect ESAs. While the Act establishes a threshold for suspending or cancelling a fish farm concession, the power to do so is left with the Prime Minister, rather than the Fisheries Division.

3.3.4.3 Marine Protected Areas

Marine protected areas may be established for conservation, fishing, or other purposes.[182] Marine protected areas may contribute substantially to the protection of marine ESAs, such as coral reefs and seagrass beds. The Act, however, provides no criteria for establishing a marine protected area or rules that apply to particular types of marine protected areas. The Act does not, for example, state that a Marine Reserve will be governed by the rules applicable for nature reserves or national parks, although perhaps this is being done at the time marine protected areas are proclaimed. Presumably given the ecological distinctions between Marine Reserves and Nature Reserves, different rules should be established. In addition, the Act suggests that a Marine Park is different from a "National Park," and thus not governed by the Wildlife and National Parks Act 1993.

The two marine parks at Blue Bay and Balaclava were first proclaimed as national parks and later designated as marine parks under the Fisheries and Marine Resources Act (1998). Management of Blue Bay appears to be succeeding, with the government assisting fishermen—who were using explosives to fish on the reef—to convert their fishing vessels to glass-bottomed boats for tourism. These fishermen appear to be informally policing speed limits and other management measures for the area. Balaclava Marine Park, however, still has no management regime, more than 11 years after being designated a National Park.

Conclusion: The Fisheries and Marine Resources Act 2007 provisions concerning marine protected areas are inadequate to protect ESAs because they lack clarity.

3.3.4.4 Offences: Pollution and Mangroves

The Fisheries and Marine Resources Act 2007 also includes important prohibitions to protect and manage ESAs. The Act prohibits any person from throwing or discharging any "poisonous substance" into any maritime zone or into a river, lake, pond,

[181] Fisheries and Marine Resources Act 2007, Section 8E(b).
[182] Fisheries and Marine Resources Act 2007, Section 4(2).

canal, stream, tributary or wetland.[183] A poisonous substance means "any substance likely to kill, stun or injure any fish or damage or pollute aquatic ecosystems."[184]

In addition, the Act prohibits any person from cutting, taking, or removing a mangrove plant, except with the written approval of the Permanent Secretary; it further prohibits damage to a mangrove plant.[185] Moreover, no person may place, construct or cause to be placed or constructed any structure within the territorial sea or internal waters, except with the written authorisation of, and consistent with conditions imposed by, the Permanent Secretary.[186]

Conclusion: The Fisheries and Marine Resources Act 2007 provisions on pollution and mangrove protection are adequate. Indeed, the provisions on mangroves are far reaching. However, the provisions on discharges of "poisonous substances" appear to overlap with the provisions for discharges of pollution under the Central Water Authority Act 1971 (*see* Section 3.4.1 below). This should be clarified.

3.3.4.5 Enforcement

The Act gives the Permanent Secretary and a fishery control officer considerable authority to enforce the requirements of the Act. Search warrants may be issued to search a boat, vessel, or any premise except a dwelling house where there is reasonable grounds to believe an offence has occurred.[187] Where obtaining a warrant would be impracticable, a fishery control officer may stop, board, and inspect a boat or vessel without a warrant.[188] The Act also nicely adopts aspects of the U.N. Fish Stocks Agreement by extending the enforcement authority of a fishery control officer to the high seas to enforce fisheries management agreements to which Mauritius is a party.[189] It also establishes provisions for the seizure of fish, gear, boats, vessels, and other items used to violate the Act.[190] In addition to forfeiture of any items used in the violation of the Act, the Act also establishes financial and criminal penalties for violating the Act.[191]

[183] Fisheries and Marine Resources Act 2007, Section 69(1).
[184] Fisheries and Marine Resources Act 2007, Section 2.
[185] Fisheries and Marine Resources Act 2007, Section 69(2).
[186] Fisheries and Marine Resources Act 2007, Section 69(3).
[187] Fisheries and Marine Resources Act 2007, Section 55.
[188] Fisheries and Marine Resources Act 2007, Section 58(1).
[189] Fisheries and Marine Resources Act 2007, Section 58(3).
[190] Fisheries and Marine Resources Act 2007, Sections 58–66.
[191] Fisheries and Marine Resources Act 2007, Section 69–71.

3.4 Water and Water Pollution

3.4.1 Central Water Authority Act 1971

The Central Water Authority Act 1971 establishes the institutional and legal framework for the control, development, and conservation of water resources.[192] Within the institutional framework, the Minister of Renewable Energy and Public Utilities may make necessary directions to the Authority to implement the Central Water Authority Act 1971.[193] The Central Water Authority, however, is responsible for the control, development, and conservation of water resources[194] and is "the sole undertaker for the supply of water" throughout Mauritius.[195] The Authority is administered by a Board, consisting of representatives from various Ministries and others,[196] but hired staff manage the day-to-day operations of the Authority.[197] It is the Board that is authorized to make regulations to implement this Act.[198]

The Authority is charged with implementing a number of duties in order to control, develop, and conserve water resources.[199] For example, it must investigate water resources, develop policy for the control and use of water resources, prepare plans for the conservation and use of water, and ensure that water supply conforms to relevant standards.[200] It also grants rights for the use of water and issues permits, licences and concessions for this purpose.[201] It may also construct dams, reservoirs, power structures and other structures, and it possesses other "special powers."[202] The Authority may allow the construction of irrigation works.

Moreover, it must develop policy, in relation to the control and use of water resources, for the disposal of industrial waste and the abatement and prevention of pollution to water.[203] It must also ensure that the water supply conforms to any applicable standards.[204]

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[192] Central Water Authority Act 1971, Section 3 (1971).
[193] Central Water Authority Act 1971, Section 6.
[194] Central Water Authority Act 1971, Section 4.
[195] Central Water Authority Act 1971, Section 20.
[196] Central Water Authority Act 1971, Sections 3–5.
[197] Central Water Authority Act 1971, Sections 14–19.
[198] Central Water Authority Act 1971, Section 49.
[199] Article 20(1) establishes provisions for the Grantor to enter into a concession agreement with the Authority. The Grantor, as defined by the Concession Projects Act, may enter into a concession agreement for the supply of water, after consulting with the Authority. The concession may include any functions of the Authority under this Act.
[200] Central Water Authority Act 1971, Section 20(2).
[201] Central Water Authority Act 1971, Section 20(2)(k).
[202] Central Water Authority Act 1971, Section 21.
[203] Central Water Authority Act 1971, Section 20(2)(c)(iii)–(iv).
[204] Central Water Authority Act 1971, Section 20(2)(j).

The Act prohibits any person from "discharg[ing] polluted water underground or into any canal, river, stream, lake, reservoir or lagoon."[205] "Polluted water" is defined as "water, the composition or quality of which has been so altered by any physical, chemical or biological means or process as to be likely to cause injury to any person, animal or plant using such water."[206]

The prohibition appears intended to cover all discharges of polluted water into waterbodies where the pollution is likely to cause injury to any person, animal or plant. The environmental threshold of "injury" appears adequate to protect ESAs. However, the prohibition is incomplete, because it establishes a restrictive list of waterbodies. As a consequence, the prohibition does not apply to discharges into wetlands. It may be possible to claim that discharges into estuaries are also permissible—although it is possible that estuaries, as salt water bodies, are not intended to be covered by the Act. To be complete, it may be appropriate to prohibit discharges into "any [fresh] waters of Mauritius." Regardless of the scope of the prohibition, the duty of the Central Water Authority overlaps with that of the Fisheries Service to control discharges of "poisonous substances" into waterbodies.

In addition, while the prohibition applies only to pollution "likely to cause injury to any person, animal or plant," it does not discriminate among sources of pollution. Thus, household and industrial waste might meet the definition of "polluted water," especially since only about 20% of sewage in Mauritius is treated. This appears to be how the institutions have interpreted the Act, with the Central Water Authority taking responsibility of pollution of waste water into surface waters and the Wastewater Authority having responsibility for wastewater discharges into the sewer system.

Moreover, the prohibition does not define "discharge." As a result, the applicability of the prohibition to run off from agricultural fields is uncertain. Agricultural practices often produce substantial pollution due to the addition of pesticides, herbicides, and fertilizers on crops. When it rains, these pollutants will mix with water to create "polluted water."

The definition of "polluted water" is also ambiguous or incomplete, because it requires the pollution to be conveyed by water. It is unclear why the pollution must be part of a water-based solution. Pollutants could be added to waterbodies without a water-based solution as the conveyance. This type of pollution would apparently be permissible.

The Central Water Authority Act 1971 does not include any rules to protect water resources from overuse. While Section 49 authorizes the Board to make necessary regulations, the Act itself does not include any environmental or other thresholds beyond which water cannot be overused. As water may be a vital component of an ESA, efforts should be made to ensure that water is not overused to the detriment of ESAs.

[205] Central Water Authority Act 1971, Section 46A.
[206] Central Water Authority Act 1971, Section 2.

Conclusion. The Central Water Authority Act 1971 is inadequate to protect ESAs, because it (1) allows discharges of pollution into wetlands and other waterbodies not included in Section 46A and (2) does not cover all types of pollution into waterbodies.

3.4.2 Ground Water Act 1969

The Ground Water Act 1969 regulates the use of ground water and makes the Central Water Authority responsible for implementing the Ground Water Act 1969, including promulgating any necessary regulations.[207] The Ground Water Act 1969 prohibits any person from diverting, obstructing, or using groundwater or constructing any works in or over groundwater, unless he obtains a ground water licence from the Minister of Agro Industries, Food Production and Security—provided that the person was drawing groundwater exclusively for domestic purposes after September 1, 1970.[208]

The Ground Water Act 1969 makes it an offence to alter the composition of the ground water by any physical, chemical, or biological means or process, if that alteration "is likely to cause injury to any person, animal or plant using such water."[209] Because the Act does not limit the scope of this prohibition, and because the offence may result in the suspension or revocation of a licence relating to ground water, it is likely adequate to protect ESAs. However, this conclusion is valid only to the extent that the Central Water Authority monitors and investigates potential violations and uses its discretion appropriately to ascertain whether pollution "is likely to cause injury to any person, animal or plant."

Section 6 allows any person to comment on an application for a ground water licence. The Authority, after reviewing the merits of an application, may reject or approve the application. The law, however, does not provide any grounds for approving or rejecting the application. If approved, Section 10 requires the holder of a ground water licence to pay a fee, although no fixed amount is specified. Moreover, any person who inadvertently strikes ground water must notify the Authority and undertake such measures as required by the Authority.

The Act also establishes enforcement provisions. For example, Section 12 authorizes the Authority to allow "any officer", upon 24 hours written notice, to inspect ground water or any work, conduct any investigation or experiment to ascertain the amount of groundwater under such land, or identify whether any violation has been or may be committed. Section 15 imposes fines with the possibility of imprisonment for violations of the Act and any conditions included in a ground water licence.

While the Ground Water Act 1969 establishes broad enforcement and compliance authority, it does not establish clear guidance for approving an application for a ground

[207] Ground Water Act 1969, Section 16 (1969).
[208] Ground Water Act 1969, Section 4(1).
[209] Ground Water Act 1969, Section 4(2)(a).

water licence. Thus, whether the Act is adequate to protect ESAs depends entirely on the discretion of the Authority.

Conclusion: The pollution provisions of the Ground Water Authority Act are likely adequate to protect ESAs. In addition, while authorities currently use their discretion to control the volume of water abstracted from private boreholes through conditions attached to individual Ground Water Licences, the provisions of the Act do not establish a limit on the amount of water that may be used; as such, they are inadequate.

3.4.3 Rivers and Canals Act 1863, including the Amended Act 1968

The Rivers and Canals Act 1863 establishes rules for the use of rivers, streams, and canals. It makes all rivers and streams part of the public domain.[210] As such, any person may draw water from a river or stream, although no person may enter another person's property without permission to draw water.[211] Owners of land adjacent to a river or stream may use water from that river or stream to the exclusion of others, but they may not prejudice the rights of others.[212] Except upon a decision of the Supreme Court, no person may alter the course of a river or stream or place a dam or other structure in a river or stream.[213] In addition, no house or most other buildings and facilities may be constructed within 100 feet of any stream or river, unless the Permanent Secretary of the Ministry of Health or Sanitary Authority certifies in writing that the water of the river or stream is not liable to be "defiled by any matter."[214] If the Supreme Court believes that the building will defile the river or stream, it may order the removal of the building. The Act also prohibits discharges of pollutants into rivers and streams.[215] In addition, the Forestry Service may appropriate or may authorize a landowner to destroy, remove, or clear any vegetation or impediment within a river bed to ensure the flow of a river or stream.[216] It may also appropriate or authorize a landowner to destroy, remove and appropriate any tree growing in a stream reserve to improve sanitary conditions.[217]

Conclusion: Given the size of most rivers in Mauritius, the placement of authority over different aspects of development in riparian zones in two agencies—the Ministry of Health and the Forestry Service—makes little sense. Efforts should be made to consolidate authority over development along rivers and streams.

[210] Rivers and Canals Act 1863, Section 3 (1963).
[211] Rivers and Canals Act 1863, Section 4.
[212] Rivers and Canals Act 1863, Sections 6, 11.
[213] Rivers and Canals Act 1863, Section 25.
[214] Rivers and Canals Act 1863, Section 26.
[215] Rivers and Canals Act 1863, Section 87.
[216] Rivers and Canals Act 1863, Section 98.
[217] Rivers and Canals Act 1863, Section 99.

3.4.4 Waste Water Management Authority Act 2000

The Waste Water Management Authority Act 2000 establishes the Waste Water Management Authority to manage the collection, treatment, and disposal of waste water. While the Waste Water Management Authority has overall responsibility for implementing the Act, the Minister of Renewable Energy and Public Utilities is responsible for promulgating any regulations to implement the Act.

With respect to ESAs, Section 37 prohibits any person from causing effluent to overflow along any gutter, canal, or surface. Section 38 allows the Waste Water Management Authority, where it has reason to believe that effluent is being discharged in violation of Section 37, to direct the responsible party to take appropriate steps to prevent injury or prejudice to the waste water system.

These provisions could be improved by more clearly prohibiting *any* discharge of effluent. The current language, by focusing on an "overflow" of effluent, could be construed as requiring a certain, significant volume of effluent to be discharged before Section 37 is violated.

One other problem arises with respect to the definitions of effluent and waste water. First, Section 2 of the Act defines "effluent" as "waste water, whether treated, treated partially or untreated, produced by or discharged from industrial, commercial or domestic premises or waste water works." It further defines "waste water" as "water sullied or contaminated by any matter, in solution or suspension, derived from its use in connection with domestic, industrial or other activities." These definitions overlap substantially with "polluted water" under Section 2 of the Central Water Authority Act 1971. While it is clear from the context of the Waste Water Management Authority Act 2000 that "waste water" means sewage, the definition of "waste water" does not actually say this. As such, both the Central Water Authority and the Waste Water Management Authority would have jurisdiction over the same pollution. While the two authorities have resolved any conflict concerning this issue, the problem is important to remedy, because discharges of "polluted water" are prohibited whereas discharges of "waste water" are permissible with a proper licence. Regulated entities could use this ambiguity to claim their polluted water is actually waste water.

Conclusion: Despite the agreement between the Central Water Authority and Waste Water Management Authority, the Waste Water Management Authority Act and the Central Water Authority Act should be amended to define clearly the distinction between "polluted water" and "waste water." The term "effluent" should also be revised.

3.4.5 Draft Wetland Bill

Development of wetlands is currently regulated solely through the EIA provisions of the Environment Protection Act 2002. Prior to an undertaking that may affect a wetland, the Ramsar Committee is consulted and provisions, generally including a 30-metre setback, are imposed as a condition of the EIA licence. EIA provisions, however, only regulate future undertakings.

The Draft Wetland Bill (2008) proposes a more comprehensive effort to manage and conserve wetlands. The Director of the National Parks and Conservation Service is responsible for managing and conserving wetlands.[218] It establishes the National Ramsar Advisory Committee (NRAC) to, among other things, propose national objectives for wetlands management and provide advice to the Minister of Agro Industry, Food Production and Security on matters pertaining to wetlands issues.[219]

While the Draft Wetland Bill adopts a definition of wetlands almost identical to that found in the Ramsar Convention on Wetlands of International Importance (Ramsar Convention), the provisions of the Bill do not apply to wetlands until the President of Mauritius proclaims an area as a wetland. Once a site is proclaimed, the Director must prepare a management plan for the wetland and any adjoining buffer zones.[220]

In addition, the Draft Wetland Bill establishes a number of prohibitions with respect to proclaimed wetlands. For example, no person may drain or fill the wetlands or buffer zone, use water from the wetlands except in conformity with the Central Water Authority Act 1971, discharge untreated waste water in violation of established norms, or interfere with ecological character of the wetlands and buffer zones.[221] No activity is allowed "on wetlands" without prior approval of the Director and recommendation of the NRAC.[222]

The Draft Wetlands Bill introduces a number of very useful conservation issues, such as the use of buffer zones. Much of a wetlands biodiversity is actually found on the margins of wetlands and not in the wetland itself. As such, the requirement to prepare a management plan for the wetland and any buffer zone is an important contribution to the conservation of wetlands.

Nonetheless, the Draft Wetlands Bill is inadequate to protect ESAs for a variety of reasons.

1. The Draft Wetland Bill does not manage all wetlands; it only applies to wetlands proclaimed by the President. Because all wetlands in Mauritius are

[218] Draft Wetland Bill, Section 3(ii) (2008).
[219] Draft Wetland Bill, Section 5.
[220] Draft Wetland Bill, Section 7(c)(i).
[221] Draft Wetland Bill, Section 9(1).
[222] Draft Wetland Bill, Section 9(3).

considered ESAs, some if not most wetlands will not be covered by the Bill's provisions. (One stakeholder at the February Workshop commented that the relevant agency would simply request that the President proclaim all wetlands). The policy of managing only certain wetlands is also contrary to the Ramsar Convention, which requires Parties to manage all wetlands.[223] As stated in the *Ramsar Handbook*, "It is implicit in the wise use obligation [of the Ramsar Convention] that Parties should take appropriate steps to address wetlands loss and degradation throughout national territory."[224]

2. As an essential first step, the filling or draining of any wetland should be prohibited unless a permit is obtained. As stated in the *Ramsar Handbook*, "Wetlands can only be conserved and wisely used by protecting them against drainage and infilling and maintaining the regime of their feedwaters throughout the ecological unit formed by the watershed, catchment or river basin.[225] In some countries, certain activities are excluded from the permit regime, including filling that arises from "normal" farming and forestry practices.[226] All other activities require a permit.

3. Although the Draft Wetland Bill prohibits the discharge of untreated waste water into wetlands where contrary to applicable standards, it does not prohibit discharges of pollutants into wetlands.

4. The Draft Wetland Bill does not establish any positive incentives that may make conservation and wise use of wetlands more attractive to property owners (although these may be provided in other laws). For example, property owners could enter into conservation easements that require the maintenance of wetlands in their pristine state. The easement may provide the property owner with a tax rebate or other financial benefit to make conservation of the wetlands more attractive. Programs in other countries also provide cash payments to farmers to take certain lands out of agricultural production.

5. Section 11 provides for financial penalties and imprisonment for violations of the Draft Wetland Bill. Instead of requiring restoration of a damaged site, the Draft Wetland Bill provides that "the offender *should* reinstate the wetland/buffer to its nature state" (emphasis added). This is inadequate given the importance of wetlands. The Draft Wetland Bill should *require* that the offender restore the wetlands or compensate the government in an amount equivalent to the government's restoration costs or the lost value of wetlands. Because many wetlands are on private land, such incentives would provide the government with additional tools to encourage conservation of wetlands.

[223] Convention on Wetlands of International Importance, Especially As Waterfowl Habitat, arts. 3(1), 4(1), Feb. 2, 1971, 11 I.L.M. 969 (1972) (entered into force Dec. 21, 1975) [hereinafter the Ramsar Convention].
[224] RAMSAR CONVENTION SECRETARIAT, RAMSAR HANDBOOK: LAWS AND INSTITUTIONS: REVIEWING LAWS AND INSTITUTIONS TO PROMOTE CONSERVATION AND WISE USE OF WETLANDS, p. 33 (3rd ed. 2007).
[225] RAMSAR CONVENTION SECRETARIAT, RAMSAR HANDBOOK: LAWS AND INSTITUTIONS: REVIEWING LAWS AND INSTITUTIONS TO PROMOTE CONSERVATION AND WISE USE OF WETLANDS, p. 32 (3rd ed. 2007).
[226] *See, e.g.*, U.S. Clean Water Act, 42 U.S.C. § 1344(f)(1).

6. The Draft Wetland Bill does not integrate management of activities outside of the wetlands but which will indirectly affect wetlands; the prohibitions of Section 9 only apply to activities *in or on* a wetland. Yet, activities such as upstream water withdrawals or downstream water channelization may have significant impacts on wetlands by prevent water from reaching the wetlands.

3.5 Planning Laws

In addition to the laws described above, the protection and management of ESAs will be guided by the development and planning provisions found in the Town and Country Planning Act and the Planning and Development Act. The Planning and Development Act is intended to replace the Town and Country Planning Act. However, only the following portions of the Planning and Development Act have been proclaimed:

- Part I: Section 1 to Section 4
- Part II: Section 5
- Part III: Section 12 to Section 15
- Part XI: Section 62, 63(2), 64 and 65
- Part XII: Section 67, 68, 70 and 75

Because it is not known if or when the remaining portions of the Planning and Development Act will be proclaimed, this report analyzes only those that have been proclaimed and any extant provisions of the Town and Country Planning Act. In addition, it is noted that the effects of planning laws on the EIA process are discussed in Section 3.1.2.

3.5.1 Basic Planning Requirements

The Planning and Development Act seeks to promote and coordinate the orderly and economic use of the land as well as the proper management, development and conservation of natural and man-made resources in order to promote the social and economic welfare of the community and a better environment.[227] In short, the Act seeks to promote sustainable development.[228]

To accomplish this goal, Section 11 of the Town and Country Planning Act 1954 requires the Town and Country Planning Board to prepare an Outline Planning Scheme for each declared planning area. An approved Outline Planning Scheme provides the main reference against which development permit applications are judged. Moreover, the provisions of an approved Outline Planning Scheme will be key factors when considering appeals against a refusal to grant a development permit.

[227] Planning and Development Act. Section 3.
[228] Planning and Development Act. Section 3(a)(iv).

An Outline Planning Scheme is supplemented with Planning Policy Guidance issued by the Ministry of Housing and Lands to any local authority.[229] The Planning Policy Guidance may cover a broad range of land use issues.[230]

The Outline Planning Scheme and Planning Policy Guidance provide the basic structure for the local authority to consider applications for development; it is the local authority, through its Permits and Business Monitoring Committee, that issues a Building and Land Use Permit for any construction or alteration of a building and any development of land.[231] Where an application is made to a local authority for permission to develop land, the local authority may grant permission either unconditionally or subject to such conditions as it thinks fit, or it may refuse permission.[232] The conditions often relate to those policies found in the Outline Planning Scheme and relevant Planning Policy Guidance. For example, the Planning Policy Guidance for Residential Coastal Development establishes a policy that no development should normally occur less than 30 metres from the high water mark.[233] Similarly, "it is recommended that a landscaped building setback of at least 30 metres should be provided adjacent to natural areas such as wetlands."[234]

Section 13(2) of the Planning and Development Act requires local authorities to comply with Planning Policy Guidance.[235] However, most provisions of Policy Planning Guidance are written as discretionary duties, not mandatory duties. For example, the 30 metre setback rule is qualified by stating that the setback from the high water mark "should be determined on a site by site basis but *should normally* be a minimum of 30 metres."[236] Thus, if a local authority approves a coastal development with a 15-metre set back, citizens concerned about the environmental effects of such development would almost certainly be unable to challenge successfully the local authority's decision. Similarly, while local authorities are required to comply with Planning Policy Guidance, it is difficult to see how the Ministry of Housing and Lands would be able to enforce many of these provisions against a local authority. Unless the local authority ignores the guidance in all or most cases, the local authority will likely be able to demonstrate that it *normally* applies the rule, but that circumstances of an individual case demonstrated that the guidance need not apply.

Similarly, Section 14(3) of the Town and Country Planning Act requires authorities to comply with an approved Outline Planning Scheme.[237] As with Policy Planning Guidance, Outline Planning Schemes provide discretionary duties, not

[229] Planning and Development Act, Section 13(2).
[230] Planning and Development Act, Section 13(1).
[231] Local Government Act 2003 (as amended by the Business Facilitation (Miscellaneous Provisions) Act 2006), Sections 97, 98(2).
[232] Town and Country Planning Act, Section 7(3); Local Government Act 2003, Section 98(1).
[233] Ministry of Housing and Lands, Design Sheet: Residential Coastal Development, pp. 4, 5 (Nov. 2004).
[234] Ministry of Housing and Lands, Design Sheet: Residential Coastal Development, p. 8 (Nov. 2004).
[235] Planning and Development Act, Section 13(2).
[236] Ministry of Housing and Lands, Design Sheet: Residential Coastal Development, p. 4 (Nov. 2004) (emphasis added).
[237] Town and Country Planning Act, Section 14(3)("no authority shall pass or approve any plan for building or development that contravene[s] the scheme.")..

mandatory duties. For example, the Outline Planning Scheme for Pamplemousses Rivière du Rempart District Council Area provides that "no development *should* be permitted within a 200 metre radius of a borehole or spring" or within a catchment area.[238]

It is true that local authorities must "have regard" to whether a proposed development contravenes an Outline Scheme[239] and no authority "shall pass or approve any plan for building or development that contravene[s] the [Outline Planning Scheme].[240] Nonetheless, the Mauritian legal system clearly understands the difference between mandatory duties ("shall") and discretionary duties ("should"). Indeed, the mandatory nature of those obligations contrasts with the discretionary obligations imposed by the Outline Planning Schemes and Planning Policy Guidance. A long list of provisions of Mauritian law clearly provides that certain actions are mandatory. For example, the Environment Protection Act 2002 provides that the Minister "*shall*" establish effluent limitations, but the Minister "*may*" declare certain wastes to be hazardous wastes.[241] Similarly, certain elements of Policy Planning Guidance specifically use the word "must" to describe mandatory obligations while using "should" to describe discretionary obligations.[242] The introduction of discretionary duties within the Outline Planning Schemes—and the use of "should" to qualify obligations, as described above—illustrates the move towards more "flexible" land use planning in Mauritius.[243]

As a consequence, while local authorities have the right to condition development based on these policies, it must be emphasized that they are only policies. So long as local authorities and other agency officials use their discretion to implement Outline Planning Schemes and Planning Policy Guidance consistent with the policies found in those documents, then these documents provide a sound basis for managing ESAs. Nonetheless, because of the discretionary nature of the policies, where authorities act inconsistently with those policies, third parties will likely be unable to enforce those policies and ensure that authorities act consistently with them.

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[238] Outline Planning Scheme for Pamplemousses Rivière du Rempart District Council Area, at 71 (June 2006) (emphasis added).
[239] Town and Country Planning Act, Section 7(5).
[240] Town and Country Planning Act, Section 14(3).
[241] *Compare* Sections 39 and 42 of the Environment Protection Act 2002.
[242] For example, a slaughterhouse "must" store offal below room temperature while buffer areas "should" include walls, fences, and other elements. Ministry of Housing and Lands, *Design Sheet: Industry Adjacent to Sensitive Areas* (Nov. 2004). Similarly, for certain infrastructure projects, the relevant Policy Planning Guidance states that "On-site sewage and waste water disposal systems *must* take account of soil characteristics, but that "engineering studies *should* be provided to show the effect that drainage might have on other properties." Ministry of Housing and Lands, *Design Sheet: Design for Sloping Sites* (Nov. 2004) (emphasis added).
[243] For example, the Pamplemousses Outline Planning Scheme provides:

> With increasing global competition in the tourism market and innovative responses required by the Mauritian tourism industry to maintain its well-earned competitive edge, some flexibility is also required in fostering tourism developments often in areas that are the most environmentally sensitive.

Outline Planning Scheme for Pamplemousses Rivière du Rempart District Council Area, at 13.

In addition, the Local Government Act 2003, as amended by the Business Facilitation (Miscellaneous Provisions) Act 2006, establishes unrealistic timeframes for the Permits and Building Monitoring Committee to make decisions on Building and Land Use Permits. Section 98 gives the Committee only two weeks from the receipt of an application to determine whether or not to issue the permit. Under Section 98(7), the Committee must make its decision within three days for applications relating to a small enterprise or handicraft enterprise under the Small Enterprises and Handicraft Development Authority Act 2005. Given the amount of information that these projects are likely to entail, including consideration of an EIA, these timeframes do not allow the Permits and Building Monitoring Committee adequate time to adequately consider this information and make an informed decision.

3.5.2 Enforcement

The Planning and Development Act establishes inadequate maximum fines that may be levied for violations of an Outline Planning Scheme: not more than 10,000 rupees.[244] Such fines are highly unlikely to deter violations of an Outline Planning Scheme.[245]

Conclusion: The non-binding nature of Outline Planning Schemes and Planning Policy Guidance makes the planning framework inadequate to protect ESAs. Indeed, many stakeholders commented that the general nature of the Outline Planning Schemes and the Planning Policy Guidance make them completely inadequate barriers to inappropriate development. As such, pressure to develop frequently outweighs the policies found in these documents.

3.5.3 State Lands Act (1982)

The State Lands Act (1982) is not a planning law *per* se, but because provisions give the government some options for planning where development occurs, it is discussed here. Among other things, the State Lands Act governs the sale and disposition of State lands, including the Pas Géométriques. It allows the sale or lease of State land, provided that the sale is in the public interest.[246] However, the State may not sell defence lands, Pas Géométriques, and mountain and river reserves belonging to the State.[247] While the State may not sell Pas Géométriques, it may exchange such lands and other State lands

[244] Planning and Development Act, Section 68.
[245] Once proclaimed, other provisions of the Planning and Development Act should help enforce the Planning and Development Act. Section 48 allows the permit authority to issue orders stopping activities inconsistent with a development permit and demolish buildings erected without a development permit. To deter noncompliance with a development permit, any violation of a setback or other conditions on structure size or location must require destruction of the structure. Moreover, Section 50 authorizes the permit authority to stop development that "is having such deleterious consequences on the natural or the built environment or is causing such a serious nuisance to the persons living or working in the neighbourhood that it is necessary to stop that development forthwith."
[246] State Lands Act, Sections 3–6 (1982).
[247] State Lands Act, Section 3.

for other lands by private contract.[248] Moreover, a lease may not allow uses that "constitute any nuisance or to cause any detriment to or pollution of the natural resources and the environment, including any adjoining sea, beach, lake, canal or river."[249] The State may cancel the lease if the lessee engages in uses that constitute a nuisance or other provisions of the lease are breached.

More generally, the Minister of Housing and Lands may promulgate regulations to implement this Act.[250] Section 33 prohibits the removal of stones, coral, earth, turf, or grass from State lands unless consistent with regulations. It also prohibits dumping any "object" on State lands or on any beach, sea, canal, river, or lake adjoining State land.

Conclusion: The State Lands Act allows the government to exchange lands with private developers. As such, it provides an avenue for protecting and managing ESAs. Where a private landowner owns land with a valuable ESA, the government may exchange it for less valuable State land.

[248] State Lands Act, Section 31.
[249] State Lands Act, Section 6(1)(b)(ii).
[250] State Lands Act, Section 33(1).

4 OPTIONS FOR IMPROVING THE PROTECTION AND MANAGEMENT OF ESAS

4.1 An Overview of Legislative Failures

Many aspects of Mauritian law are well tailored to protect and manage ESAs, and in many cases the laws of Mauritius are quite progressive. For example, the establishment of river and stream reserves has no doubt protected rivers and streams from sedimentation, pollution from fertilizers and other agricultural inputs, and other harms. An outright ban on sand removal also demonstrates a commitment to protecting one of the more valuable resources in Mauritius.

Taken as a whole, however, the laws of Mauritius are inadequate to protect ESAs. There are several reasons.

1. **Gaps in Legal Protection.** Some ESA types receive inadequate legal protection. Wetlands provide a good example. Although filling or draining of a wetland requires an Environmental Impact Assessment (EIA) licence, no law prevents or regulates the filling or draining of wetlands or otherwise determines the type of information that a developer should provide prior to developing a wetland. In addition, because EIA law only applies to new undertakings, the EIA provisions of the Environment Protection Act 2002 do not apply to ongoing activities that may harm wetlands. Similarly, no specific laws are designed to protect caves.

2. **Lack of Thresholds for Ministerial Decisions/Too Much Discretion.** For a number of laws that could afford protection to a variety of ESA types, the laws establish no environmental threshold for decisionmaking. For example, the Fisheries and Marine Resources Act 2007 does not include a duty to ensure that fish quotas are set at a sustainable level or at maximum sustainable yield. The Central Water Authority Act 1971 does not prohibit water use beyond the capacity of a river or stream. The Pas Géométriques Act 1982 does not establish a limit for development within the Pas Géométriques.

   As a consequence, the laws leave too much discretion to a Minister or a regulatory board. With no basis for determining whether or not an activity is permissible or a permit should be issued, the Minister, regulatory board, or other entity has vast discretion to make determinations. The relevant Minister or regulatory board could use that discretion to protect ESAs and the environment generally. In many cases, however, the relevant body has not done so. For example, the Fisheries Service could adopt catch quotas that are based on maximum sustainable yield, but fishing in the lagoon remains unsustainable. The discretionary nature of many obligations also allows

development and political pressure to erode attempts to prevent environmentally harmful projects.

3. **Inadequate Environmental Impact Assessment.** The provisions on EIA of the Environment Protection Act 2002 apply to a large number of undertakings that may affect ESAs. Nonetheless, they do not require any specific substantive outcome. Provided that the project proponent adequately analyzes the impacts of the project, suggests alternatives, and proposes mitigation measures, nothing prevents the Minister of Environment from approving a project that will significantly harm an ESA. Moreover, the EIA provisions do not require the implementation of measures to mitigate harm caused by an undertaking.

4. **Inadequate Environmental Planning.** The consideration of ESAs and other environmental issues comes too late in the development process. The EIA process includes an early warning system that requires project proponents to provide information to the Director of Environment concerning the proposed undertaking at prior to seeking an EIA licence. Nonetheless, many governmental and private sector stakeholders commented that the EIA process, the most significant mechanism for protecting ESAs and ecosystem services values, is triggered only after all the design work for a project has been completed. As a consequence, project proponents have already committed substantial financial resources into their project, only to be told near the end of the process that design changes must be made. There was fairly universal agreement among stakeholders that, despite the existing early warning system, project proponents must be made aware of ESAs much earlier in the development process. Moreover, it appears that some types of projects, such as Integrated Resort Schemes, may be subject to expedited approval processes, making implementation of EIA impossible.

5. **Inadequate Enforcement.** Enforcement remains inadequate due, in many instances, to a lack of political will to enforce the law. Various stakeholders from the governmental, private, and nongovernmental sectors all provided examples indicating a lack of political will. In some cases, for example, the government initiated an enforcement action and, when confronted with political pressure, stopped the enforcement action. In other cases, where more than one ministry has enforcement authority for an issue, neither ministry would take enforcement action because each believed that the other should. In yet other cases, it appears that authorities have turned a blind eye to obvious violations of law. Blue Bay, for example, is littered with jetties despite the prohibition against the construction of such physical structures. Moreover, despite having the authority to establish a prosecutorial unit within the Ministry of Environment, the Ministry of Environment has not done so. As a consequence, it must rely on the State Law Office for bringing its cases. The State Law Office, however, is charged with bringing a large number of cases and an environmental case becomes just one of many on its docket.

> Inadequate enforcement also results from a lack of capacity. Thus, even where the political will exists, ministries are understaffed and under-resourced. For example, a staff of four people is charged with conducting post-monitoring of PERs and EIAs, an almost insignificant staff to review implementation of more than 1000 EIAs prepared since EIA became a requirement.

This ESA project provides the opportunity for Mauritius to develop specific, concrete regulations or laws for the protection of the environment generally and ESAs specifically. The next sections introduce some proposals for doing so.

4.2 Strategies for Improving Legislation

4.2.1 Establishing Clear Substantive Thresholds

Effective protection and management of a resource begins with clear, unambiguous, enforceable legal standards for making decisions. Such standards allow regulated entities to know exactly what is expected of them. Such standards provide the public with a clear understanding of the law. Lastly, such standards provide regulators—those in the ministry—with clear standards for making decisions and the ability to identify activities that require enforcement action.

As part of this project, specific ESAs have been placed into one of three categories based on the ESA's ecosystem services value and with a specific management objective:

- **Category 1 ESAs**—those ESAs that possess high ecosystem services value for which the principal objective will be to protect that value.

- **Category 2 ESAs**—those ESAs that possess moderate ecosystem services value, but which may, due to a variety of factors, permit some degradation as long as sites are maintained in a healthy state.

- **Category 3 ESAs**—those ESAs that possess low ecosystem services value that will be managed to allow their sustainable use, such as fishing, without causing significant degradation.

This report proposes the establishment of legal standards that are consistent with the relative ecosystem services value of ESAs. That is, the legal standards should not attempt to prohibit all development in all ESAs or prohibit all harm to all ESAs. Rather, the legal standards should impose increasingly strict standards for development as the ecosystem services value of the ESA increases.

- **Category 1 ESAs—**

  - All development in or on a Category 1 ESA is prohibited. This standard is very clear and rigorous enough to be enforceable. It also recognizes that some ESAs are simply too valuable to degrade. The rigidity of this rule is offset by the more flexible rules for development affecting Category 2 and 3 ESAs. To the extent that this rule is viewed as too rigid, the following proposal provides an alternative threshold: All development in or on an ESA that may adversely affect the ESA is prohibited.

  - Development outside a Category 1 ESA that will adversely affect the ESA is prohibited; development may proceed provided that mitigation measures will prevent adverse effects.

- **Category 2 ESAs—**Any development that may adversely affect a Category 2 ESA must be offset by projects on the same property that provide environmental benefits. For example, if a proposed development will adversely affect a Category 2 wetland, then additional wetlands or some other environmentally beneficial project must be developed. Tables 1 and 2 illustrate how this might occur. Where the proposed development would adversely affect a Category 2 wetland, the developer would be required to create "mitigation" wetlands either adjacent to the existing wetlands or at another location on the same site. In the alternative, the developer could undertake some other environmentally beneficial project, such as expand a river reserve. As part of an EIA licence, other conditions would be imposed, including design requirements to minimize the impacts to the wetlands.

Table 1:
Mitigation of Category 2 ESA

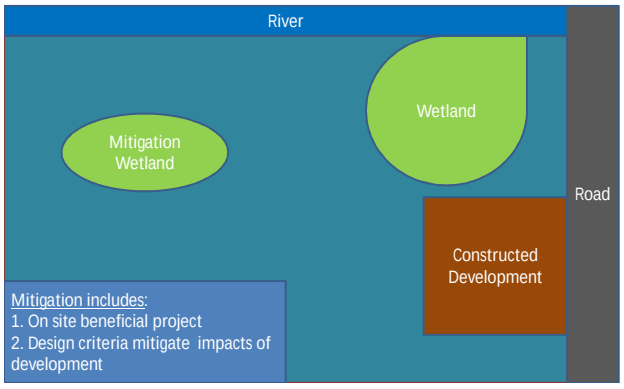
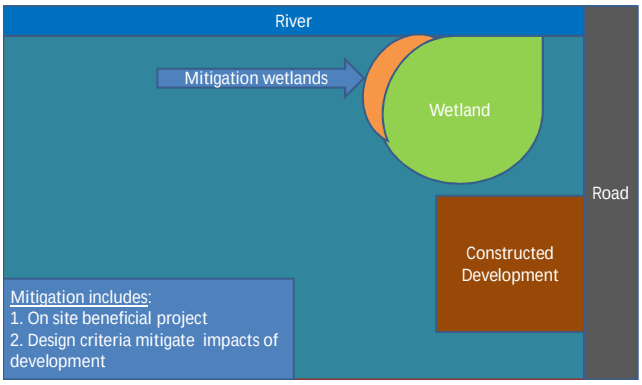


Table 2:
Mitigation of Category 2 ESA



- **Category 3 ESAs**—Any development that may cause *significant* adverse impacts to a Category 3 ESA is prohibited. Development is permitted and may degrade the ESA provided that mitigation measures prevent significant impacts.

This three-tiered structure is consistent with comments heard from many stakeholders. Importantly, many stakeholders voiced support for a "no development" option for Category 1 ESAs. They considered the political pressure for economic development to be too strong to allow discretion to form a part of the decisionmaking process for the most valuable ESAs. Many stakeholders also believed that too many concessions had been made to economic development at the expense of ESAs and that, if economic development continued in this way, the very environmental amenities that made Mauritius attractive to tourism and tourism-related development would be destroyed. This was especially true in the coastal zone where tourism facilities have degraded seagrass beds, coral reefs, and beaches. Nonetheless, stakeholders made equally clear that a "no development" option for all ESAs would not be supported, especially given that more than one-third of the country has been identified as within an ESA.

This three-tiered proposal to protect and manage ESAs is framed by two important distinctions that must be kept in mind when developing legal mechanisms to protect and manage ESAs:

- New "undertakings" versus existing and other activities; and
- Publicly-owned land versus privately-owned land.

These issues are addressed in the next two sections.

4.2.2 New "Undertakings" Versus Existing Activities

Concerning new activities on both public and private land, strengthening the EIA process and improving enforcement should help ensure effective protection and management of ESAs. The EIA process is already well developed and applies to both government and private activities, regardless of whether they occur on public or private land. With some modest, but important, changes, either through regulations or amendments to the Environment Protection Act 2002, Mauritian law should be sufficient to protect and manage ESAs effectively (provided there is adequate enforcement). In fact, the three standards described above fit naturally into the EIA framework.

EIA only relates to the construction of new undertakings. As a consequence, improvements must be made to various statutes to ensure that ESAs are protected from the operations of existing activities and activities not subject to EIA. As noted above in Section 3 and in the overview of legislative failures in Section 4.1, some laws do not limit activities to some environmentally acceptable level. The incorporation of ESA safeguards in specific substantive laws (e.g., the Forests and Reserves Act 1983 or Central Water Authority Act 1971) would provide the basis for determining whether the ongoing operations of an activity will harm an ESA. If permits must be re-issued at some specific interval (e.g., every year, every two years), then the law regulating that activity or resource would provide the standards for determining whether a permit should be re-issued. (It would also help determine the types of information that should be included in an EIA for undertakings affecting specific resources). Because of the cross-cutting nature of ESAs, a number of laws need to be modified. While some laws need only minor changes, others need more significant changes.

Moreover, a number of activities may harm ESAs but not necessarily require an EIA. For example, caves (hosting endemic swiftlets and bats), sand dunes, beaches, coastal wetlands, and wells are vulnerable due to their proximity to human populations, which may trample such areas and use them for dumping trash and other waste, among other activities. These types of activities are clearly not covered by EIA law. Lastly, once project construction is completed and the EIA licence has run its course, a separate law is needed to assess penalties for actions inconsistent with the substantive law that applies to a particular ESA type or pollution.

In sum, EIA law provides no substantive protection or means to penalize ongoing activities, activities not covered by EIA provisions, and activities that harm the environment once the requirements of the EIA licence have been fulfilled. For these reasons, separate statutes must outline applicable environmental standards and provide for remedies when the standards are violated.

4.2.3 Activities on Public Land Versus Activities on Private Land

For government activities and activities on public land, ESA-specific improvements to EIA provisions and other laws should be sufficient to protect and

manage ESAs. The government must simply find the political will to ensure that government activities or activities on public land are consistent with the revised standards.

The legal mechanisms to protect and manage ESAs on private lands are more challenging to employ, since private landowners have certain rights, although not unlimited rights, to use and develop their land. In these cases, a system of incentives may provide private landowners with the motivation to protect ESAs. Section 4.5 of this report provides several proposals for addressing these issues.

4.2.4 Implementation Options

Mauritius has a range of options for improving laws to protect and manage ESAs. These include adopting regulations, amendments, or a single ESA law. None of these options is mutually exclusive. In fact, it is not likely that all changes can be made by adopting regulations alone. In some cases, a minister may not have the authority to adopt the type of legal changes needed. Thus, amendments to certain laws may be necessary.

In addition, it might be useful to think of short-term and long-term approaches. Because many ESA types, particularly wetlands, are rapidly diminishing, a short-term approach focusing on adoption of new regulations may be required until a more comprehensive approach can be implemented.

4.2.4.1 The "Regulations" Approach

A "regulations" approach can improve existing legislation by promulgating regulations within the discretion of a particular minister. In fact, the management and protection of ESAs could be improved substantially by regulation and without any need for amendments to existing laws. For example, while the EIA provisions of the Environment Protection Act 2002 already require a discussion of mitigation measures in the EIA, they do not require those mitigation measures to be incorporated into an EIA licence. The Minister of Environment could adopt a regulation that makes the adoption of mitigation measures a condition of any EIA licence.

The primary advantage of the "regulations" approach is that it uses existing authority of a minister to adopt the necessary regulations to protect and manage ESAs. Regulations, generally speaking, may be easier and quicker to adopt because they do not need to be approved by Parliament. Given the large number of IRS and coastal hotel projects in various stages of development, the approach outlined above will likely provide protection and management to ESAs more quickly than an approach requiring legislation.

The primary disadvantage is that several ministers and ministries must act to ensure that the various regulatory changes are made. As is clear from the breadth of law that governs ESAs, a relatively large number of laws will need new regulations. Without

sufficient coordination and actual adoption of new regulations by a ministry, certain ESA types may not receive the protection they need.

4.2.4.2 The "Amendments" Approach

The "Amendments" approach focuses on adopting amendments to existing legislation. In cases where no substantive environmental threshold is established for approving or rejecting a permit, for example, laws may need to be amended to include such a threshold, because adding an environmental threshold is beyond the authority of the minister.

The primary advantage of this approach is the greater legal certainty provided by amendments: regulations, unlike amendments, could be challenged in court as beyond the authority of the minister to adopt those regulations. Another advantage of this approach is that it relies on existing laws and institutions. As such, it may be easier to adopt such amendments than an entirely new law. The primary disadvantage of this approach is that requires adoption by Parliament, a process that could take longer than adopting regulations.

4.2.4.3 The ESA Law Approach

In the alternative, an "ESA Law" could be drafted and enacted that comprehensively addresses all issues affecting ESAs. This is the model taken with a variety of environmental topics, including national parks under the Wildlife and National Parks Act 1993 and nature reserves under the Forests and Reserves Act 1983.

The advantages of such an approach are that ESAs would be protected as a unified system of areas. An ESA law could be drafted that does not attempt to cobble together existing laws. As such, it could ensure that no gaps in the law are created for certain ESA types due to the failure of certain ministers to adopt adequate regulations under the "regulations" approach. Also, the addition of substantive thresholds in specific laws would benefit not only ESAs, but other valuable resources. These benefits might be lost with an ESA-specific law. Moreover, an ESA law could help bring attention to the ecological and economic importance of ESAs in a way that a piecemeal "regulations" or "amendments" approach might not. It is difficult, for example, to generate much press and publicity for ESA conservation when regulations are adopted over a period of time. However, the adoption of an ESA law would likely generate media interest and public awareness. As with the "amendments" approach, the possible disadvantage of this approach is the time it may take for Parliament to enact the law.

5 PROPOSALS FOR LEGISLATIVE CHANGE

This report notes that, during stakeholder consultations and the February 2009 Workshop, considerable effort was spent trying to ascertain from stakeholders whether a hybrid regulations-amendments approach or an ESA Law approach would be best. From these discussions, no clear consensus emerged with supporters of both approaches providing compelling arguments.

This report concludes that, over the long term, an ESA Law is the better choice, because it would provide a unified and coherent structure and binding legal obligations that could not be reversed through the adoption of regulations. In addition, some aspects of ESA conservation, such as the use of conservation easements, are best addressed through a single law, rather than amending each "environmental law" to accommodate such positive incentives. Moreover, because the hybrid regulations-amendments approach requires significant amendments to existing laws—and thus Parliamentary approval—it would be worthwhile to pursue the full range of legislative changes needed to provide the unified, coherent legislative framework for protecting and managing ESAs.

Nonetheless, if Parliamentary approval of an ESA Law is expected to take even a moderate amount of time, the Minister of Environment should take immediate action to adopt regulations to strengthen EIA as proposed below, as well as adopt additional regulations to make the ESA Map and ESA Clearance legally binding tools for EIA and other land-use planning.

As a result of this consideration over the length of time it may take to implement regulations as opposed to amendments or an ESA Law, this report provides two alternative proposals for improving the protection and management of ESAs:

1. **Hybrid "Regulations-Amendments" Approach.** The recommendations included in this section combine the "regulations" approach with the "amendments" approach. This hybrid approach takes advantage of the ability to act quickly. Given the status of many ESAs, combined with threats to them from development, particularly IRSs and hotels in the coastal zone, this report views acting quickly as an imperative. In addition, it recognizes that a great deal can be accomplished to protect ESAs from adverse effects of future activities without the need for additional legislation and without the need for coordinating activities outside the Ministry of Environment. That is, the Ministry of Environment alone currently has the authority to adopt the necessary regulations to protect and manage ESAs from adverse effects from future activities.

   Nonetheless, it recognizes that additional work needs to be done to protect ESAs from the ongoing operations of existing projects and to protect ESAs on private land. For that reason, the hybrid approach also proposes amendments to existing law.

2. **The ESA Bill Approach**. There are limits to the capacity of existing laws to adopt all the changes needed to adequately protect and manage ESAs. In particular, some of the positive incentives for protection of ESAs do not really fit within any current law. For that reason, this review includes a Draft Environmentally Sensitive Areas Conservation and Management Act (Draft: Apr.7, 2009). In addition to including the full range of positive incentives for protecting ESAs on private land, this Draft ESA Act incorporates all the changes identified in the hybrid "regulations-amendments" approach. To the extent that some ministries act quickly to adopt regulations, those aspects of the Draft ESA Act may be deleted. To the extent that the political will exists to move quickly and adopt the vast majority of the ideas presented in this report, the Draft ESA Act includes the full extent of changes to improve conservation and management of ESAs.

5.1 Proposals for Immediate Adoption

The adoption of new regulations under the Environment Protection Act 2002 offers an opportunity to make significant and immediate improvements to protect and manage ESAs. This new protection created through improvements to EIA provisions will pertain only to future activities on public and private land. The Environment Protection Act 2002 gives the Minister of Environment the authority to act now: Section 96(2) gives the Minister the authority to make regulations to amend a schedule and for the issue, amendment, and revocation of a licence, among other things.

5.1.1 Regulations to Adopt the ESA Map

A critical first step for the ESA legal regime is the adoption of the ESA Map into law. The ESA Map is the first comprehensive map of ESAs in Mauritius and provides the basis for judging whether or not an ESA is in the area of a proposed or existing activity. If an ESA is in the area, then an EIA or other action will be triggered.

The map will also be crucial for determining whether a project proponent has degraded or destroyed an ESA prior to submitting a development application. It is well known that some project proponents have filled wetlands prior to seeking a development permit. During the preparation of this report, for example, consultants visited two such sites, including a very large site in Grand Baie. At the Grand Baie site, where the developer has previously been denied a permit due to the presence of a wetland, the developer has now filled most of the wetland, apparently with the hope that a subsequent application will be accepted and that no one will be able to prove that a wetland previously existed at the site. With the map completed and adopted as part of law, future project proponents will have difficulty proving that a wetland or other ESA did not exist on the property at issue. To the contrary, the map may trigger an enforcement action if the application discloses that an ESA has been degraded or destroyed.

Note: The numbered paragraphs that follow in this section beginning with the number 1 indicate specific proposals for regulatory or legislative change. They are numbered consecutively for reference purposes.

1. Speed is of the essence for getting the map adopted as an enforceable legal tool. The ESA Map will provide the basis for determining when an EIA is required. Because the ESA Map also categorizes each ESA as a Category 1, 2 or 3 ESA, it will also help define which EIA requirements apply. As such, this report proposes that the Minister immediately use his authority under Section 96 of the Environment Protection Act 2002 to promulgate a new regulation to adopt the map as a regulation that relates to "mak[ing] provisions for the issue, amendment and revocation of licences" or "different provisions for different classes of activities or things and for different areas."[251]

5.1.2 Regulations to Improve EIA

As noted in Section 3.1.1 above, the EIA provisions of the Environment Protection Act 2002 are inadequate to protect and manage ESAs from adverse effects from future activities, because they do not (1) define "undertaking" broadly enough to capture all projects that may adversely affect ESAs; (2) establish a substantive environmental threshold for rejecting EIA licences; (3) require the adoption of mitigation measures; (4) require an assessment of cumulative impacts; and (5) prohibit segmentation of projects. The following proposed regulations aim to remedy these deficiencies using the authority of the Minister of Environment to promulgate regulations to implement the Environment Protection Act 2002.

2. **Broaden "Undertakings" Subject to EIA.** To ensure that all undertakings that may adversely affect an ESA are subject to EIA, Item 24 of Part B of the Fifth Schedule should be revised by regulation by adding a comma after the phrase "high tension wires." This will make clear that any land clearing or development *in* an ESA requires the preparation of an EIA.

   Because Item 24 only relates to undertakings in an ESA, a better approach would be to amend Item 24 to read:

   "Any undertaking that may adversely affect an ESA."

   In this way, any project (not just land clearing and development) affecting an ESA would require the preparation of an EIA. In addition, an undertaking *in* or *near* an ESA would require an EIA if it may adversely affect an ESA. This standard triggers an EIA based on the potential impact of the undertaking, not the type of undertaking. However, the list of specific undertakings should be retained in the Fifth Schedule in case there is a dispute about whether a

[251] Environment Protection Act 2002, Section 96(2)(a), (c).

particular undertaking may affect an ESA. The list provides an alternate means for requiring an EIA.

3. **Establish an Environmental Threshold and Require Adoption of Mitigation Measures.** The Environment Protection Act 2002 does not include an environmental threshold—that is, it does not prohibit the approval of an EIA licence if the undertaking will have significant environmental impacts. However, this report and its accompanying policy guidance have proposed that certain ESA types or ESAs of a specific quality (e.g., Category 1 forests), should not be adversely affected. The Minister of Environment can take several steps to establish such a threshold through the promulgation of the following new regulations:

    a. Interpret Section 24 on EIA approval as follows: No EIA licence will be granted for any undertaking in or on a Category 1 ESA.

    b. Require the Director, as part of his duties under Section 21(1)(b), to submit comments to the EIA Committee that describe the mitigation measures, including the designation of buffer zones where appropriate, that must be adopted—

        i. to avoid adverse effects to the natural functions, biodiversity, habitat and amenity of any Category 1 ESA;

        ii. to ensure that any potential adverse effects to a Category 2 ESA are offset by beneficial environmental projects, such as restoration projects, on the same property; or

        iii. to avoid potential significant adverse effects to a Category 3 ESA.

    c. Require the EIA Committee, as part of its duties under Section 22(8), to submit comments to the Minister that describe the mitigation measures, including the designation of buffer zones where appropriate, that must be adopted—

        i. to avoid adverse effects to the natural functions, biodiversity, habitat and amenity of any Category 1 ESA;

        ii. to ensure that any potential adverse effects to a Category 2 ESA are offset by beneficial environmental projects, such as restoration projects, on the same property; or

        iii. to avoid potential significant adverse effects to a Category 3 ESA.

    d. Require the Minister, as part of his duties under Section 23(1)–(2) and as a clarification of the factors for considering the approval of an EIA licence

under Section 24, to approve an EIA licence only where mitigation measures, including the designation of buffer zones where appropriate, are incorporated into the EIA licence that—

i. avoid adverse effects to the natural functions, biodiversity, habitat and amenity of any Category 1 ESA;

ii. ensure that any potential adverse effects to a Category 2 ESA are offset by beneficial environmental projects, such as restoration projects, on the same property; or

iii. avoid potential significant adverse effects to a Category 3 ESA.

4. **Include Cumulative Effects.** To ensure that all effects are assessed as part of an EIA, a new regulation should be promulgated that defines "direct or indirect" effects in Section 18(2)(f) as including "cumulative" effects. The terms could be defined as follows:

   "Direct or indirect" effects include cumulative effects. More specifically:

   "Direct" effects are caused by the undertaking and occur at the same time and place.

   "Indirect" effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. Indirect effects also include "cumulative" impacts.

   "Cumulative effects " are the impacts on the environment that result from the incremental impact of the undertaking when added to other past, present, and reasonably foreseeable future undertakings regardless of which ministry (or department) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant undertakings over a period of time.

5. **Avoid Segmentation of Projects.** To avoid segmentation by project proponents, a new regulation should be promulgated to clarify the meaning of "undertaking." This clarification would require an assessment of "connected undertakings." "Connected undertakings" could be defined as follows:

   Connected undertakings are closely related undertakings that must be discussed in the same EIA. Undertakings are connected if they:

(i) Automatically trigger other actions that may require environmental impact assessments.

(ii) Cannot or will not proceed unless other undertakings are taken previously or simultaneously; or

(iii) Are interdependent parts of a larger undertaking and depend on the larger undertaking for their justification.

5.1.3 Establishment of the "ESA Clearance"

As noted in Section 4.1 above, stakeholders agreed that the identification of ESAs or other environmentally significant sites or resources comes too late in the development process. As a result, project proponents have already expended large sums of money in the design process only to be told at the end of the process—when an EIA was being evaluated—that important environmental considerations had not been considered adequately in the design process. As a consequence, project proponents apparently have felt blind-sided, and officials trying to uphold environmental laws have felt pressured to allow development to occur, perhaps with inadequate conditions. It is not exactly clear why this is happening since Section 15(3) of the Environment Protection Act 2002 expressly requires a proponent of an undertaking (except those applying through the Board of Investment) to submit an outline of the proposed undertaking to the Director of the Environment three months before submitting an application for an EIA licence.

Regardless, to overcome these problems, and most importantly, to ensure that any design plans are fully incorporated into a project at the beginning of a project, this report proposes the creation of an ESA Clearance. The ESA Clearance can be viewed as a specific mechanism for implementing Section 15(3) of the Environment Protection Act 2002.

The ESA Clearance will require a project proponent to receive an ESA Clearance that informs the project proponent of whether an ESA is on the site of the proposed project or the project may harm an ESA on or off site. Officials at the NPCS reported that this is already occurring for wetlands sites. Through informal means (i.e., without an express statutory or regulatory duty), the local authorities are forwarding all development permits to the NPCS. Staff at the NPCS then visit the location of a project to determine whether a wetland is on the site of the project. As the wetlands example indicates, such an ESA Clearance will come with some financial costs because personnel will be required to undertake site visits for all proposed projects. Nonetheless, the costs may not be as great as might be expected, provided that the ESA Map is adopted into law and is of sufficient specificity that a desk review of the map and development plans can inform staff whether an ESA might be affected by the project.

To implement the ESA Clearance, the following changes to the planning process would be valuable:

6. Using his authority under Section 7(b) of the Environment Protection Act 2002 to "issue directions to any public department or local authority for the promotion of [environmental management] programmes,"[252] the Minister of Environment should issue a direction to the local authorities to forward all applications for development permits (ie., Building and Land Use Permits) to the Chairman of the EIA Committee to determine whether an ESA is in the area of the proposed project or will be affected by the proposed project. The direction should also make clear that no EIA may be approved if an ESA Clearance has not been obtained prior to submitting an application for a development permit.

7. The EIA Committee would be responsible for determining which ministry/department would be charged with investigating whether an ESA will be affected by the proposed project. In this way, no one ministry/department would bear the full costs of implementing the ESA Clearance.

8. After conducting a site visit or careful review of the ESA Map, the relevant ministry/department, as designated by the EIA Committee in paragraph 7, would issue an ESA Clearance that verifies that (a) no ESA will be affected by the project or (b) an ESA may be affected by the project. Upon a finding that an ESA may be affected by the project, the relevant ministry/department shall inform the project proponent of relevant laws, regulations, standards, and planning policy guidance that relates to that ESA. In the case of either (a) or (b), the relevant ministry or department will forward a copy of the ESA Clearance to the EIA Committee for review. This will ensure that all ESA Clearances are reviewed by a single authority. The EIA Committee will retain a copy of the ESA Clearance and forward a copy to the local authority.

9. The "Building and Land Use Permit Guide," available from the Ministry of Local Government, Rodrigues and Outer Islands, provides a succinct guide to the requirements for obtaining a development permit and a building permit. This guide should be revised to include a section on ESAs and the ESA clearance. In this way, any new requirements would be widely publicized. If a specific mandate is needed to ensure the guide is revised, then the Minister of Environment could use his authority under Section 7(b) of the Environment Protection Act 2002 to issue a direction to another ministry.

[252] In the alternative, the Minister of Environment could use his authority under Section 96(2) to make regulations concerning licences, such as EIA licences, and direct project proponents to complete and submit a form to the Ministry of Environment that described the location of the project site.

5.2 Proposals for Short-Term Adoption

Strengthening the EIA process under the Environment Protection Act 2002 is clearly an immediate priority for protecting ESAs from the adverse effects of future development. In addition to those changes, additional changes to the Environment Protection Act 2002 and other laws are necessary to protect and manage ESAs from the adverse effects of ongoing activities and activities not covered by EIA. Adoption of these measures is not as urgent as those described in Section 5.1. Nonetheless, ministries should move quickly to adopt these necessary changes. Perhaps the most important change included in the recommendations that follow is a shift from discretionary duties to mandatory duties.

5.2.1 Protection of ESAs from Spills of Pollutants

10. Section 30(2) of the Environment Protection Act 2002 currently gives the Director of Environment the discretionary authority to direct the owner of a spilled pollutant to take action to prevent adverse environmental impacts from a spill, restore the environment, and to dispose of the pollutant. Because of the significant environmental effects that pollutants might have on ESAs, Section 30(2) should be amended to require the Director to direct any owner of the pollutant that is spilled to take such action to prevent, eliminate or reduce the adverse environmental effects of the spill, restore the environment, and dispose of the pollutant.

11. The Environment Protection Act 2002 does not define the "owner of a pollutant" to mean a subsequent owner of the property on which, or the facility from which, a pollutant was spilled. Section 3 defines "owner of a pollutant" as "the owner or the person having the charge, management or control of a pollutant which is spilled." With such a general definition, the Minister should make a new regulation that "clarifies" that the "owner of a pollutant" includes subsequent owners of the land on which the pollutant was spilled. However, because of the magnitude of the change—making a new class of property owners potentially liable for millions of rupees in removal and clean up costs—a better option is to amend Section 3 to define the "owner of a pollutant" as including any subsequent owner of a property on which, or facility from which, a spill occurred. In this way, Section 30(2) will ensure that the government can recover costs and expenses of clean up and removal of the pollutant and restoration of the environment.

12. Section 33 does not allow the Director to recover the costs of restoring the environment after a spill. As a result, the Director may be less willing to restore the environment where the owner of the pollutant refuses to take action to restore the environment after a spill. Section 33 should be amended to ensure that the Director may recover restoration costs from a polluter.

5.2.2 Improving Environmental Standards

Sections 38 through 43 of the Environment Protection Act 2002 give the Minister of Environment broad authority to promulgate standards for the "protection and management of the environment." ESAs obviously constitute a part of the environment. As such, the Minister has authority to impose standards specifically to protect and manage ESAs. Nonetheless, because some ESAs may need stricter standards than apply generally, it may be clearer if a new regulation is promulgated that expressly recognizes the Minister's duty to promulgate stricter standards for ESAs.

13. Section 3 of the Environment Protection Act 2002 defines "standards" as "include[ing] criteria and specifications." A new regulation could clarify that "standards" include "criteria and specifications, including stricter criteria and specifications to protect and manage ESAs."

Another approach could involve an amendment to the specific sections of the Environment Protection Act 2002, as the following example suggests:

14. Section 38(1) could be amended to require the Minister to "prescribe standards to protect public health, welfare and the environment, *protect the characteristics for which ESAs have been designated*, and to provide adequate safeguard for the quality of water." The addition of the italicized language would transform the Minister's discretionary duty to protect ESAs into a mandatory one.

    Alternative language would require the Minister to "prescribe standards to protect public health, welfare and the environment, *including stricter standards, where necessary, to protect and manage ESAs,* and to provide adequate safeguard for the quality of water."

5.2.3 Improving Coastal Zone Protection of ESAs

15. As noted in Section 3.1.5, a new regulation should clarify the scope of Section 52(1) of the Environment Protection Act 2002, because it is difficult to understand. It appears to apply to (1) releases of pollutants from or through the atmosphere and (2) releases of pollutants by dumping. Because discharges into maritime zones and other waters are covered by the Fisheries and Marine Resources Act 2007, it may be simplest to insert subparagraphs into Section 52(1) as follows:

    "Subject to subsection (2), no person shall release, or cause to release, into the zone any pollutant, waste or other noxious substance (a) from or through the atmosphere or (b) by dumping."

16. Because neither "release" nor "dumping" is defined, a new regulation should be promulgated that defines these terms. This is especially true since the Environment Protection Act 2002 does define the term "discharge" as "includ[ing] deposit, emission and leakage."[253] It is not clear how release differs from these terms. Presumably, the term "release" as used in Section 52 is intended to mean the same as "discharge." If this is the case, then a new regulation should define "release" as "any discharge, as defined by Section 3 of the Environment Protection Act 2002."

5.2.4 Beach Authority Act 2002

17. Due to beach erosion and destabilization of public beaches, the Ministry of Local Government, Rodrigues and Outer Islands should promulgate a new regulation that requires the restoration of public beaches through planting of native vegetation. To the extent that the Minister's authority to "make such regulations as he thinks fit for the purposes of this Act" is limited to licensing by Section 22(2), then the Beach Authority should promulgate this regulation. In the alternative, the Ministry of Environment should issue a directive directing the Ministry of Local Government, Rodrigues and Outer Islands to restore public beaches using native vegetation.

5.2.5 Pas Géométriques Act 1982

The Pas Géométriques Act 1982 does not appear to grant the Minister of Housing and Lands authority to issue regulations, other than to amend the schedule of areas not part of the Pas Géométriques. As a result, efforts to overcome any inadequacies in the Act must be achieved through amendments to a lease or through amendments to the Act.

18. The Pas Géométriques Act 1982 should be amended by adding a new Section 25 that requires any lessee of the Pas Géométriques to plant native vegetation consistent with the habitat at issue.

19. The Pas Géométriques Act 1982 should be amended to clarify which uses of the Pas Géométriques are acceptable. If the Republic of Mauritius really intends all uses to be permissible, then it should say that explicitly.

20. The Pas Géométriques Act 1982 should be amended to impose environmental safeguards on development in the Pas Géométriques. The Pas Géométriques includes perhaps the most important habitat for tourism and fisheries—beaches, mangroves, and coastal wetlands. Yet, the Pas Géométriques Act 1982 does not set out any requirements for meeting environmental standards. Section 7(1) of the Pas Géométriques Act 1982 could simply condition the acceptance of a lease on compliance with all law, not just "this Act."

[253] Environment Protection Act 2002, Section 3.

However, it may be better to include the three-tiered scheme for development in ESAs described in Section 4.2.1.

21. The Pas Géométriques Act 1982 should be amended to require any jetty, wall, fence, groin or other structure built or erected without authorisation to be destroyed and removed in its entirety by a specific date. The new legal provision should require the lessee or occupant of property in the Pas Géométriques to destroy and remove such structure. If the lessee or occupant does not do so, then the Ministry shall undertake that activity and recover costs from the lessee or occupant.

5.2.6 Fisheries and Marine Resources Act 2007

22. Section 74(1)(f) provides the Minister of Agro Industry, Food Production and Security with authority to establish schemes for setting and allocating quotas. As an immediate priority, the Minister should promulgate a new regulation requiring any quota to be set based on maximum sustainable yield. Given declining fish catches and size of fish caught, it is clear that existing quotas are already unsustainable. Thus, any new regulation should require catches to be set at maximum sustainable yield and then reduced by ecological and other factors. Moreover, where a fishery has exceeded sustainable levels, the Minister should have an obligation to restore that fishery. Because of the importance of such a rule, a longer-term objective should be to adopt that regulation as an amendment to the Fisheries and Marine Resources Act 2007. The following language could provide a model for implementing these goals:

    a. The Minister shall ensure that quotas are based on the maximum sustainable yield for the fishery, as reduced by any relevant economic, social, or ecological factors;

    b. A fishery is "overfished" when the rate of fishing mortality jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis; and

    c. In the case of an overfished fishery, the Minister shall provide for rebuilding the fishery to a level consistent with producing the maximum sustainable yield in such fishery.

23. Section 74(1)(f) provides the Minister of Agro Industry, Food Production and Security with authority to establish a large number of regulations to manage fisheries. Using this authority, the Minister should promulgate a new regulation that prohibits any fishing, including the use of certain methods of fishing or gear, that will, or is likely to cause, harm to ESAs. In particular, the Minister should prohibit the use of bottom trawl gear anywhere in the lagoon or near reefs.

24. Similarly, Section 74(1)(a) provides the Minister of Agro Industry, Food Production and Security with authority to establish regulations for fish farming. Using this authority, the Minister should promulgate a new regulation that prohibits any fish farming that will or is likely to cause adverse impacts to an ESA. The regulation could also impose a requirement on proponents of a fish farm project to demonstrate how that project will not negatively impact an ESA.

25. Section 23(3)(a) currently requires an evaluation of whether the release of an imported live fish will be detrimental to the environment, but does not specify that the evaluation must be independently produced. Using his authority under Section 74(1)(u) to establish regulations for trade in fish and fish products, the Minister of Agro Industry, Food Production and Security should promulgate a new regulation that requires that evaluation to be independently produced, at the applicant's expense. Such a requirement should help avoid any conflicts of interest.

5.2.7 Plant Protection Act 2006

26. The Plant Protection Act 2006 defines "pest" too narrowly. The definition of "pest" in Section 2 of the Plant Protection Act 2006 should be amended to capture a broader range of "pests" that might adversely affect an ESA. Two possible definitions are:

    a. "Pest" means "any injurious, noxious or troublesome insect, fungus, bacterial organism, virus, weed, rodent *or other plant or animal pest*, and includes any injurious, noxious or troublesome organic function of a plant or animal."[254] The italicized words ensure that any particular organism does not somehow escape the definition of "pest."

    b. "Plant pest" means "[A]ny living stage of any of the following that can directly or indirectly injure, cause damage to, or cause disease in any plant or plant product: (A) A protozoan. (B) A nonhuman animal. (C) A parasitic plant. (D) A bacterium. (E) A fungus. (F) A virus or viroid. (G) An infectious agent or other pathogen. (H) Any article similar to or allied with any of the articles specified in the preceding subparagraphs."[255]

5.2.8 Central Water Authority Act 1971

As an initial matter, some thought may need to be given to the manner in which Mauritius regulates water pollution. At least seven laws relate to water pollution with as many ministries or departments having authority to regulate different or the same aspects

[254] Canada, Pest Control Products Act, Section 2.
[255] United States, Plant Pest Act, 7 U.S.C. 147a note, 150aa *et seq.*

of water pollution.[256] Because of this overlap, it is not clear as a statutory matter to what extent the Central Water Authority Act 1971 is meant to regulate pollution into surface and ground water or merely prohibit discharges of pollution that will cause injury (although there is an institutional arrangement that separates pollution control matters between the Central Water Authority for freshwaters and the Fisheries Department for the lagoon). To the extent that there is confusion as to which Ministry or agency has authority to regulate pollution, this should be clarified. In any event, the following proposals are made with the intent of strengthening the Central Water Authority Act 1971.

27. Section 46A of the Central Water Authority Act 1971 prohibits discharges of polluted water underground or into any canal, river, stream, lake, reservoir or lagoon, but not into wetlands and potentially estuaries. It should be amended to cover wetlands and any other waterbody intended to be covered by this Act. The language could be amended as follows:

    "No person shall discharge polluted water into any underground or surface waters, including the lagoon, of Mauritius."

    To the extent that the Central Water Authority Act 1971 is intended to prohibit discharges of "pollutants," not just "polluted water," then the provision should read:

    "No person shall discharge a pollutant into any underground or surface waters, including the lagoon, of Mauritius."

28. The Central Water Authority Act 1971 should be amended to clarify the scope of "pollution" covered by the Act (i.e., "polluted water" or all pollution). The Central Water Authority Act 1971 covers a relatively narrow range of pollution by regulating "polluted water." The scope of the Act should be broadened to regulate "pollution." The following language provides a possible definition:

    "pollution" means any human-made or human-induced alteration of the physical, chemical, biological, or radiological integrity of water;

[256] These laws include (1) the Public Health Act (1925), which empowers the authority to remove any nuisance that pollutes a water body; (2) the Rivers and Canals Act 1863, which specifies actions, buildings and livestock activities that are prohibited within a given distance from the water body as they can cause water pollution; (3) The Maritime Zones Act 2005, which provides for the Prime Minister to make regulations for the prevention and control of marine pollution; (4) the Environment Protection Act 2002, which grants the Minister of Environment the authority to make regulations for the prevention of pollution in the coastal and maritime zones; (5) Waste Water Authority Act, which grants the Waste Water Management Authority the power to control discharges of waste water into the sewer system; (6) the Fisheries and Marine Resources Act 2007 2007, which grants the Ministry of Agro Industry (Fisheries Department), the authority to regulate discharges of "poisonous substances" into any surface water; and (7) the Central Water Authority Act 1971. In addition, the Water Resources Unit is responsible for the assessment, development, management and conservation of water resources in the Republic of Mauritius.

29. The Central Water Authority Act 1971 does not define "discharge" even though certain discharges are prohibited. A new regulation should be promulgated to define "discharge" to clarify whether the Act covers agricultural and household pollution. To best protect ESAs, the preferred option would be to include agricultural runoff in the definition of discharge as follows:

    "Discharge" means any discharge or discharge of a pollutant;

    "Discharge of polluted water/a pollutant" means any addition of any pollutant or combination of pollutants to any underground or surface waters of the State from any:

    (a) discernable, confined, or discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, container, or vessel, or

    (b) any surface runoff from agricultural practices; or

    (c) any discharges through pipes, sewers, or other conveyances that do not lead to treatment works.

    The term does not include discharges of waste water, as that term is defined by the Waste Water Authority Act, through pipes, sewers, or other conveyances leading into treatment works.

5.2.9 Ground Water Act 1969

30. The Ground Water Act 1969 does not establish any environmental criteria for approving applications to withdraw and use ground water. As such, the Central Water Authority should promulgate a new regulation under the Ground Water Act 1969 that establishes clear criteria for approving applications for a ground water licence that expressly take into account the needs of ESAs.

5.2.10 Local Government Act 2003

31. The Local Government Act 2003 should clarify that every Building and Land Use permit is subject to the provisions for PER approval or EIA licence. Thus, Section 98(3) should be amended by adding a new paragraph (d) as follows: "the Environment Protection Act 2002."

32. It should also be amended to ensure that a PER approval or EIA licence is required *prior to* submitting an application for a Building and Land Use Permit. Thus, Sections 98(6)(a)(ii) and Section 98(7)(a)(ii) should be amended to include the followings words immediately after "EIA licence":

"obtained in accordance with the relevant provisions of the Environment Protection Act 2002."

33. It should also be amended to extend the time for making a decision on certain projects. Thus, Section 98(6) should replace "2 weeks" with "15 business days" and Section 98(7) should replace "3 days" with "10 business days." These timeframes should better provide authorities with the time to make informed decisions while still ensuring a quick decision.

5.2.11 Investment Promotion Act 2000

34. The Investment Promotion Act 2000 does not clearly state that an EIA approval is required prior to submitting an application for an IRS certificate or a RES certificate. As such, an investor could submit an application and then claim that an EIA must be prepared within 30 days. That is obviously insufficient time. It should do so. Section 16 of the Investment Promotion Act 2000 should be amended by inserting a new paragraph (2) as follows:

    "(2) Prior to submitting an application for an IRS certificate or a RES certificate, the investor must first have an EIA licence approved in accordance with the relevant provisions of the Environment Protection Act 2002 by the Minister of Environment."

5.3 Proposals for Long-term Adoption

As noted in the introduction to this section, some aspects of Mauritian environmental law could be improved to better protect and manage ESAs, but the implementation of these strategies does not require immediate action. This section describes these additional measures.

5.3.1 Environment Protection Act 2002

35. Mauritius may want to consider amending Article 52(2) to eliminate the defence for releases and dumping in the "territorial sea" if a release or dumping is consistent with an international agreement to which Mauritius is a party. Seagrass beds, coral reefs, beaches, and other ESAs of the coastal zone are of critical ecological and economic importance to Mauritius and could be affected by pollution in the territorial sea, even if that pollution is consistent with international norms. Thus, Mauritius may want to avail itself of the provisions of UNCLOS that allow measures to control pollution that are stricter than generally accepted international norms. Because no stakeholder suggested that discharges of pollution into the territorial sea were causing environmental harm to coastal zone ESA at this time, this paragraph highlights the need to monitor the effects of pollution on ESAs and consider this amendment at a later time. If such an amendment to Article 52(2) is desired, Article 52(2) would be amended as:

"It shall be a defence to a prosecution under subsection (1) to prove that the release or dumping was due to or was rendered necessary by "force majeure" or for the protection of human life."

5.3.2 Removal of Sand Act 1982

36. As long as the ban on removing sand remains in place, no amendments to the Removal of Sand Act 1982 are needed. However, if the ban is repealed, then the Act should be amended to include an environmental threshold that must be met before the Minister of Housing and Lands may issue a permit to remove sand. At present, no such environmental threshold exists. Arguably, the Minister has authority to "make such regulations as he thinks fit for the purposes of the Act," such as for the "issue and revocation of *licences*."[257] Because the Minister may impose conditions on any lease to remove sand, and an authorised officer may impose conditions on a permit to remove sand at places other than a sand quarry,[258] the Minister may be able to adopt a regulation that imposes an environmental threshold. However, the Act uses the term licence to mean a licence provided to a dealer in sand. It uses the term "leases" and "permits" for activities involving the removal of sand. Thus, it may be that an amendment is needed. If so, the following <u>amendments</u> are recommended:

    a. Amend Section 6(1) to read (new language in italics): "Notwithstanding section 6 of the State Lands Act, the Minister may grant a lease of a sand quarry to a licensed dealer for such term and upon such conditions as he thinks fit and on giving such security as the Minister considers adequate for the observance of those conditions. *However, the Minister may not grant a lease if the removal of sand (a) will adversely affect a Category 1 ESA; (b) result in adverse impacts to a Category 2 ESA that are not mitigated by on-site beneficial environmental projects; or (c) will cause significant impacts to a Category 3 ESA.*

    b. Amend Section 9(3) to read (new language in italics): "No permit shall be granted under subsection (1) [for removals from a place other than a sand quarry of a licensed dealer] except on payment of the prescribed fee and subject to such conditions as the authorised officer thinks fit. *However, the authorised officer may not grant a permit if the removal of sand (a) will adversely affect a Category 1 ESA; (b) result in adverse impacts to a Category 2 ESA that are not mitigated by on-site beneficial environmental projects; or (c) will cause significant impacts to a Category 3 ESA.*

[257] Removal of Sand Act 1982, Section 18 (emphasis added).
[258] Removal of Sand Act 1982, Sections 6(1), 9(3).

5.3.3 Beach Authority Act 2002

37. Although the *regulations* to the Beach Authority Act 2002 prohibit harm to flora, it should be a long-term goal to amend the Beach Authority Act 2002 to prohibit harm to flora and fauna on a "public beach."

5.3.4 Forests and Reserves Act 1983

38. Although the Forests and Reserves Act 1983 adequately protects and manages ESAs, it could be strengthened by amending Section 9 to require planting of native species in reserves. In this way, forest lands and reserves will be restored.

39. The Forests and Reserves Act 1983 could be strengthened by amending Sections 8 and 9 to require the authorized officer to explain how his decision to allow cutting or replanting will not harm an ESA.

5.3.5 Wildlife and National Parks Act 1993

40. The Director is charged with the conservation of land generally and the conservation of wildlife in national parks and other reserves specifically. Yet, the Wildlife and National Parks Act 1993 does not define conservation. To frame the types of activities that the NPCS should carry out in pursuance of its duties, the Minister should promulgate a new regulation that defines "conservation." One possible definition is:

    The term "conservation" means to use and the use of all methods and procedures that are necessary to maintain the natural functions, biodiversity, habitat and amenity of wildlife, national parks and other reserved lands. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat restoration, acquisition and maintenance, propagation, live trapping, and trans-plantation.

41. To clearly provide authority to regulate hunting and other activities on private land, the Wildlife and National Parks Act 1993 should be amended as follows:

    (a) In Section 10(1)(a), by deleting the words "of land generally" and replacing them with the following words:

        "of State and private land."

    (b) By adding the following new Section 15A immediately before Section 15 in Part V:

"(1) The provisions of Part V apply on State and private lands."

(2) All provisions of Part VII concerning offences and powers to enforce this Act apply on State and private lands.

42. Both the Wildlife and National Parks Act 1993 and the Forests and Reserves Act 1983 relate to nature reserves. While not necessary for the conservation of ESAs, the consolidation of these two laws may provide uniform treatment of different reserves and/or better distinguish the conservation and management approaches to different types of reserves.

5.3.6 Plant Protection Act 2006

43. The Plant Protection Act 2006 could be improved to better protect ESAs by specifying that ESAs should receive priority attention to ensure they remain pest free or areas of low pest prevalence.

5.3.7 Fisheries and Marine Resources Act 2007

44. Sections 4(2) and 74(1)(h) of the Fisheries and Marine Resources Act 2007 give the Minister of Agro Industry, Food Production and Security the authority to make regulations concerning the management and conservation of marine protected areas. The Minister should use this authority to promulgate a new regulation that establishes criteria for designating different types of marine protected areas (fishing reserves, marine parks, and marine reserves) and the rules that apply to the various types of marine protected areas.

45. The Minister of Agro Industry, Food Production and Security should promulgate a new regulation to require fishermen to provide information to the Fisheries Division concerning where they will fish. In that way, the Fisheries Division will be able to ascertain whether a particular fisherman should be able to use a particular gear type in a specific area.

46. Section 74(1)(a) introduces a new concept not subject to any provisions of the Act—"fish ranching." If "fish ranching" differs from "fish farming," then the Minister should promulgate a new regulation that defines the term and regulates activities that fall within the scope of the definition. If the use of "fish ranching" is a mistake, then the Act should be amended to delete the term.

5.3.8 Waste Water Management Act (2000)

47. Article 47 of the Waste Water Management Authority Act 2000 grants the Minister of Renewable Energy and Public Utilities the authority to issue regulations. He should use that authority to promulgate a new regulation that

more clearly prohibits any discharge of effluent except into a public sewer, septic system, or other approved conveyance designed for the collection and treatment of waste water. In this way, it will be clear that the Central Water Authority has jurisdiction over other discharges.

48. The Waste Water Management Authority Act 2000 should be amended to more carefully distinguish "effluent" and "waste water" on the one hand and "polluted water" under the Central Water Authority Act 1971 on the other.

5.4 Legal Mechanisms to Protect and Manage ESAs on Private Land

Because many ESAs are on private land, the government of Mauritius will need a larger set of legal tools for protecting and managing ESAs. These tools may include subsidies or one-time compensation payments in return for not developing an ESA. Preferably, such compensation would be made annually (and in smaller amounts than the one-time payment) after verification that the landowner has not developed or otherwise harmed the ESA. This mechanism allows the government to monitor regularly the status of the ESA and does not require the same commitment of resources in the short term. One of the most effective ways to do this is through conservation easements.

5.4.1 Subsidies

Governments frequently use subsidies to encourage beneficial behavior, whether for conservation or other purposes. In the United States, for example, the voluntary Water Quality Incentives Program (WQIP) provides crop subsidies for farmers to adopt environmentally and economically sound management practices to prevent soil erosion, protect wildlife habitat, and conserve water resources. Such programs require, of course, cash payments to farmers or other eligible recipients. Thus, they require the legislative body to allocate sufficient funds for subsidies.

5.4.2 Benefit Conditions

It may be, however, that persons already receive certain subsidies or certain benefits. If so, Mauritius could condition the receipt of these subsidies or benefits on compliance with requirements to protect wetlands, caves, and other ESAs on their property. As an example, the U.S. “Swampbuster” program discourages the conversion of wetlands to agricultural production by making a person ineligible for agricultural benefits, such as crop insurance, loans, price support programs, and other benefits, if the person produces an agricultural commodity on wetlands. The obvious benefit of this program is that it does not cost the government any additional money. It leverages existing benefits by conditioning receipt of those benefits on protecting ESAs or producing some other environmental benefit. Such programs do not need to be limited to agricultural producers.

5.4.3 Conservation Easements

Conservation easements are legally binding, voluntary agreements between a landowner and the government or other eligible organization that restrict the type or amount of development on the landowner’s property. The landowner retains private ownership of the land, but the government or organization manages the land in perpetuity to protect the land’s conservation values. After the easement is signed, it is recorded with the governmental authority responsible for recording title to property so that the conservation easement applies to all future owners of the land. In exchange for limiting

development rights on the land, the landowner receives tax credits, payments, or some other form of compensation.

Conservation easements are excellent tools for protecting and managing privately-owned lands for conservation purposes. Using them, however, demands technical capacity and funds. For example, the value of the land must be appraised so that the owner of the land receives the correct compensation. Similarly, an accurate appraisal is needed so that the government does not overpay for the conservation easement. Where the appraisal over-values the land, then the landowner will receive a larger tax credit or other form of compensation and the government loses tax revenue.

Moreover, conservation easements cost money. Funds must be set aside so that the lands can be properly managed and the terms of the conservation easement may be monitored and enforced. In addition, because conservation easements restrict future use, easement-protected land has diminished market value. In some cases, the value of a property has declined by 80 percent, although usually the devaluation is much less. Regardless of the extent of the devaluation, landowners will want a way to recoup the loss in property value—even the most conservation-minded landowner is unlikely to allow his property to devalue by a significant amount without a mechanism to recoup some of that lost value.

A particular issue for Mauritius will be identifying appropriate taxes to credit. Conservation easements typically allow a landowner to deduct the value of the easement from income taxes. However, remission of property taxes, excise taxes, or other taxes can also be used.

5.5 Funding Legal Mechanisms to Protect and Manage ESAs on Private Land

The legal mechanisms need to protect and manage ESAs effectively and adequately on private land will require an additional commitment of financial resources. There are several ways for government to pay for these programs.

5.5.1 Private Charitable Deductions

In many places, the landowner can deduct the conservation easement as a charitable deduction. That option is currently not available in Mauritius. Mauritius may wish to reinstate such charitable deductions, particularly as it is linked to the use of tax credits below.

5.5.2 Tax Credits

Tax credits can encourage landowners to protect ESAs through conservation easements. Tax credit schemes take a variety of forms; they are not dependent on using one type of tax (income tax) instead of another (e.g., excise tax). The tax credit schemes should apply equally well regardless of the type of tax used to 'pay" for the easement.

1. **Payment Method.**

    a. **Lump-sum credit**. Under a lump-sum credit scheme, the government chooses a percentage of the amount of the lost value to credit and then offers the landowner a lump-sum tax credit for a single year. The state of Georgia in the United States, for example, provides a lump sum credit of twenty-five percent of the fair market value of the value of the conservation easement (i.e., the amount equivalent to the devaluation of the property). Georgia limits the total value of the tax credit to US$250,000 for individuals and $500,000 for corporations.

    b. **Annual Credit.** Rather than allow a lump-sum tax credit, it is also possible to offer an annual credit of a specified amount for a certain number of years. As in the lump-sum approach, the government must choose a percentage of the value of the easement for which it will offer a tax credit. The government must also choose the amount of the annual tax credit.

    Under the annual credit approach, a government foregoes less tax in a single year than under the lump-sum approach. However, the annual credit approach will require more auditing and administrative costs than the lump-sum approach, because it requires the issuance of credits each year rather than in a single year.

2. **Auditing.** To ensure that the landowner is acting consistently with the conservation obligations of the easement, the government must impose auditing requirements on the landowner. The government can reserve the role of auditor to itself or it can delegate that responsibility to an NGO or other third-party auditor. Auditing requires the government to have qualified staff or fund auditors.

3. **Value the Credit.** The value of the credit given to landowners is of obvious importance to both the landowner and the budget of the government. The value of the tax credit raises three related issues: the basis for calculating the

credit value, caps on maximum value, and the number of years over which a credit may "roll over" to offset tax liability.[259]

a. A survey of conservation easement programs in the United States found that programs generally cap the tax credit at 25–55% of the property's lost value. However, other methods exist for ascertaining the value of the easement, including the costs of negotiating the easement and the value of some other tax, such as a landowner's property tax.

b. The maximum cap on the tax credit is a policy choice. There is no uniform rule. In the United States, some states do not impose a maximum cap while others impose caps ranging from US$80,000 in Maryland to US$375,000 in Colorado. A few states, including South Carolina, do not place any limits on the total credit claimed by a taxpayer, but most state programs have adopted statutory maximums.

c. Programs also vary by the number of years in which the tax credit may be "rolled over"—that is, regardless of whether the program is a lump-sum or annual credit program, the landowner may be able to carry forward the tax credit into subsequent tax years. For example, the program could allow a taxpayer with $50,000 in credits to deduct that amount over 5 years.

4. **Transferability.** Many landowners do not have sufficient income to take full advantage of tax credits. For example, farmers with valuable land may donate an easement worth millions of dollars. The value of their tax credit may be several hundred thousand dollars. Nonetheless, because of their low incomes, they do not have large tax liabilities (i.e., their tax liability is much lower than the value of their tax credits). To encourage conservation easements that allow landowners to benefit from the full value of their tax credit, some governments have made tax credits transferable. That is, easement donors may sell their tax credits to an unrelated taxpayer who may claim the purchased value of the credit on his tax return. One recent article reports that "[m]any conservationists view transferable credits as their most effective tool for land protection, since transferable credits offer donors an immediate cash benefit in exchange for an easement." [260] However, transferability poses two issues that warrant careful consideration.

a. Because easement tax credits are resold on private markets for about seventy-five percent of their face value, the state foregoes more tax

[259] Christen Linke Young, *Conservation Easement Tax Credits in Environmental Federalism*, 117 Yale L.J. Pocket Part 218 (2008), http://thepocketpart.org/2008/04/01/young.html.
[260] Christen Linke Young, *Conservation Easement Tax Credits in Environmental Federalism*, 117 Yale L.J. Pocket Part 218 (2008), http://thepocketpart.org/2008/04/01/young.html.

revenue than the landowner receives in cash. This invites questions about efficient use of limited state resources.

b. Because these tax credits provide taxpayers with an opportunity to reduce their taxes by more than the cost of purchasing the tax credits, transferable tax credits may encourage tax fraud. "Landowners may partner with unscrupulous nonprofits, donate easements that do not offer adequate conservation, or use inflated appraisals to claim unjustified credits."[261]

With or without transferable tax credits, tax credits are an effective means for inviting conservation on private lands. Given the extent of private lands in Mauritius, as well as the number of ESAs on private lands, it is an option that Mauritius should consider.

5.5.3 National Environment Fund

The Environment Protection Act 2002 establishes the National Environment Fund (NEF).[262] The Fund shall consist of money lawfully accruing to the Fund, such as through the budget process, as well as donations and grants and other funds raised from public activities organized with the approval of the Fund's Board. The Fund can be used to pay for a wide variety of environmental purposes, including support for pollution prevention programs and non-governmental environmental organizations, local environmental initiatives, and "activities relating to environment protection and management."[263]

Most of the funds of the NEF have been recently transferred to the Ministry of Finance. Stakeholders view this as a setback for the Ministry of Environment's ability to fund environmental projects given that the Board managing the NEF can now only consider very few projects due to the limited funds available. At the same time, stakeholders agreed that the NEF, while under the management of the Ministry of Environment, did operate optimally. However, stakeholders also commented that inadequate monitoring of funded projects occurred.

Regardless, the NEF could be one source of funds for paying for conservation easements or otherwise assist in the preparation of management plans for ESAs. NGOs, for example, could pay program costs for negotiating conservation easements with landowners. They could also use the funds to pay for developing conservation plans of ESAs on private land and audits. To ensure that the NEF is properly used, however, it may be necessary to narrow the scope of the NEF or prioritize the types of projects that will be funded.

[261] Christen Linke Young, *Conservation Easement Tax Credits in Environmental Federalism*, 117 Yale L.J. Pocket Part 218 (2008), http://thepocketpart.org/2008/04/01/young.html.
[262] Environment Protection Act 2002, Section 59.
[263] Environment Protection Act 2002, Section 60.

Returning the NEF to the Ministry of Environment, with clearer program objectives, should be a priority.

6 INSTITUTIONS

As noted in the National Development Strategy (NDS), "Mauritius stands at the threshold of fundamental changes in its economy which will bring in its train substantial changes in life styles and social and cultural needs."[264] The NDS provided an important framework to ensure that these changes occur in a way that is economically efficient, socially desirable, and environmentally sustainable. The NDS made a number of recommendations to move Mauritius towards these goals. Achieving those goals is dependent not only on a set of integrated laws designed to protect and manage ESAs from a variety of impacts of economic and social activities, but also on the establishment of appropriate institutional arrangements and appropriate staffing of institutions.

A number of key factors highlight whether a country has established the appropriate institutional arrangements for conservation. These include:

- Adequacy of integration among agencies;
- Adequacy and appropriateness of public consultation;
- The location of the service within the administrative structure; that is, is the regulation of certain activities placed within the "right" agency and does an agency have conflicting conservation and exploitation roles; and
- Adequacy of monitoring and enforcement, including adequacy of financial and technical resources to perform these functions.

Based on the assessment of environmental law and discussions with stakeholders, this report makes the following summary conclusions, discussed in more detail below, concerning the institutional arrangements of Mauritius for protecting and managing ESAs:

- Mauritius, through its various inter-ministerial boards and committees established under numerous environmental laws, has a well-integrated institutional structure.
- Public consultation tends to be informal and irregular, and thus, inadequate.
- Inadequate financial and technical resources are dedicated to environmental concerns. This is particularly true with EIA and monitoring and enforcement.
- The placement of duties to both exploit a resource and to protect the environment and ESAs within a single Ministry, namely the Ministry of Agro Industry, Food Production and Security, raises some concerns. In addition, the split in authority over different types of beaches should be consolidated.

[264] NDS, Vol. 2, at 4.

- The overlapping responsibility for enforcement has led in many cases to a lack of monitoring and enforcement.

6.1 Overview of Institutional Responsibility

As is typical of most countries, Mauritius designates a number of ministries and departments with responsibilities for protecting and managing the environment and ESAs. At least seven ministries have such responsibilities:

- Ministry of Environment and National Development Unit;
- Ministry of Agro Industry, Food Production and Security;
- Ministry of Public Infrastructure, Land Transport and Shipping;
- Ministry of Local Government, Rodrigues, and Outer Islands;
- Ministry of Housing and Lands;
- Ministry of Tourism, Leisure and External Communication; and
- Ministry of Renewable Energy and Public Utilities.

Generally speaking, the Ministry of Environment has overall responsibility for coordinating environmental policy and establishing standards for environmental protection. It also has authority to enforce environmental laws. The other ministries have primary responsibility for implementing specific environmental law. For example, the Ministry of Agro Industry, Food Production and Security, through its National Parks and Conservation Service, implements the National Parks and Wildlife Act. These ministries, known as enforcing agencies for environmental law purposes, also have authority to enforce the laws within their jurisdiction. For example, the Environment Protection Act 2002 gives the Minister of Environment the authority to establish and enforce standards for water pollution. Meanwhile, the Central Water Authority, the Waste Water Management Authority, and the Fisheries Division are responsible for implementing and enforcing discharges of various pollutants.

The following tables provide an overview of the institutional responsibilities for protecting and managing ESAs.

Table 1—Institutional Responsibilities

Institutions	Responsibility	ESA Types Affected
Ministry of Environment	• EIA • Standards for Environmental Quality	• All ESA Types
Ministry of Agro Industry, Food Production and Security – Fisheries Division – Forestry Service – National Parks and Conservation Service	• Fisheries • Forests • National Parks • Reserves	• Forests • Coral Reefs • Lagoon • Mangroves • Seagrass beds
Ministry of Local Government, Rodrigues and Outer Islets – Beach Authority	• Shoreline Development • Beaches	• Beaches
Ministry of Housing and Lands	• Planning Policy	• All ESA Types
Ministry of Public Infrastructure, Land Transport Shipping	• Marine Pollution from Vessels • Ports	• Lagoon
Ministry of Tourism	• Coastal hotels • Recreation	• Coral Reefs • Lagoon • Seagrass Beds
Ministry of Renewable Energy and Public Utilities		• Rivers and Streams
– Central Water Authority	• Water Allocation; pollution	
– Water Resources Unit	• Assessment of Freshwater Resources	
– Waste Water Management Authority	• Wastewater Management	

Table 2—ESA Protection and Management Responsibility (excluding EIA)

ESA Type	Responsible Ministry/Department	Resource
Beaches	Beach Authority	Public Beaches
	Ministry of Housing and Lands	Pas Géométriques
Caves		
Coral Reefs Lagoon Seagrass Beds	Fisheries Division Ministry of Tourism	Fish; pollution Boat speed limits; mooring
Forests	Forestry Service	Forests in Nature Reserves
Mangroves	Fisheries Division	
Rivers and Streams	Fisheries Division	Pollution; on both public and private lands.
	Forestry Service	Development in river and stream reserves
Islets	NPCS	Islet National Park
	Forestry Service	Islets Nature Reserves
Wetlands	No specific Ministry has jurisdiction over wetlands.	

6.2 Adequacy of Integration Among Agencies

The effective implementation of environmental legislation depends on the proper integration of environmental issues among the various institutions having jurisdiction and expertise concerning a particular resource or issue. Indeed, a recent technical report of the Convention on Biological Diversity stated:

> More commitment is required within governments to ensure inter-departmental collaboration. In the absence of such cross-departmental cooperation, policy-makers become inwardly focused on their sector and tend to not consider impacts on other sectors.[265]

Similarly, the Government of South Africa has noted:

- Coordination of, and sound working arrangements among, departments and different levels of government are fundamental to the success of land policy; and

- A monitoring and evaluation system that can track the progress of policy measures and provide timely feedback to managers and the public is a key element in ensuring that policy measures are able to achieve their intended goals.[266]

The need for effective integration and coordination is especially acute where countries, like most countries, address environmental issues on a sector-by-sector basis—that is, based on the resource to be managed (i.e., water is managed by one agency, forests by another) rather than having a single agency responsible for managing the different ecological components of an area. In Mauritius, for example, forests are managed by the Forestry Service but adjacent forests may be managed by the NPCS. Similarly, upstream pollution may be regulated by the Central Water Authority or the Waste Water Management Authority, which empties into the lagoon, where management is under the jurisdiction of the Fisheries Service, among others.

Lack of integration can lead to significant resource management problems, including:

"• ineffective policy making where agency turf wars impede good decision-making;

• inefficient use of resources as agencies duplicate the work of other agencies; and

[265] SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, CROSS-SECTORAL TOOLKIT FOR THE CONSERVATION AND SUSTAINABLE MANAGEMENT OF FOREST BIODIVERSITY, Technical Series no. 39, at 6 (I. Thompson & T. Christophersen, 2008).
[266] Government of South Africa, White Paper on Land Policy, Section 6.1 (undated) *available at*: http://land.pwv.gov.za/legislation_policies/white_papers.htm.

- different agencies working to different, and at times, conflicting timeframes making coordination of decision-making difficult."[267]

In many respects, Mauritius has overcome these potential problems by developing a system of coordination that appears to integrate relevant ministries effectively into the decisionmaking process through the creation of inter-ministerial boards and committees. For example, the EIA process within the Ministry of Environment ensures adequate integration through the EIA Committee, an inter-ministerial committee that submits recommendations to the Minister of Environment concerning individual EIA applications. Similarly, the Beach Authority Board includes representatives from a number of ministries and other institutions having some role in the management of activities on public beaches.

To the extent that this integration and coordination has weaknesses, it is that perhaps there are too many such inter-ministry boards and committees. Several stakeholders commented that some board/committee meetings were poorly attended or attended by junior staff. Without knowing the full extent of the problem, this report hesitates to make any specific proposals. However, it does suggest a review of the boards/committees to ascertain their effectiveness and the level of participation in meetings. The following table provides a list of known boards and committees and their composition, and meeting schedule.

Table 3—Overview of Boards and Committees and Their Functions

Board/Committee	Duties	Composition	Meeting Schedule
National Environmental Committee	Sets national objectives and goals for environmental protection.	Prime Minister Ministers from 22 Ministries	Not specific meeting schedule. Has not met since 2005.
Beach Authority Board	Has "all the powers necessary for the administration" of the Act.	representatives from: Ministries of Tourism, Environment, Agro Industry (Fisheries), Housing and Lands, Youth and Sports. Commissioner of Police, Association of District Councils	At least once every month.
Central Water Authority Board	Is responsible "for the control, development and conservation of water resources."	Representatives from Ministries of Renewal Energy & Public Utilities Finance & Economic Development, Labour, Industrial Relations and Employment, and others	At least once every month.

[267] GARY MIDDLE, INSTITUTIONAL ARRANGEMENTS, INCENTIVES AND GOVERNANCE—UNLOCKING THE BARRIERS TO SUCCESSFUL COASTAL POLICY MAKING, para. 2.2.1 (2002)

PER committee	Examines PERs in light of Director's review and makes recommendations to Minister of Environment as it thinks fit.	Director of Environment representatives from ministries responsible for agriculture, health, wastewater, water resources; the Chief Executive of the relevant local authority	No specific meeting schedule, but in practice at least once every month, depending on number of applications received.
EIA Committee	Examines EIA licences referred to it by Director and makes recommendations to Minister of Environment as it thinks fit.	Permanent Secretaries or their representatives from Ministries having responsibility for Environment, Agriculture, Health, Fisheries and Marine Resources, Local Government, Public Infrastructure, Housing and Lands, Water Resources, Waste Water, Director of Environment	No specific meeting schedule, but must give recommendations to Minister not later than 14 days after receiving EIA application from Director.
PER/EIA Monitoring Committee	Reviews progress on implementation of PER approvals and EIA licences.	Director of Environment; representatives from Ministries having responsibility for Environment, Agriculture, Health, Fisheries and Marine Resources, Local Government, Public Infrastructure, Housing and Lands, Water Resources, Waste Water. one or more officers of the Department, designated by the Director, one of whom shall be the Secretary to the Committee; an officer of the 'Police de l'Environnement'; and the Chief Executive of the relevant local authority	At least monthly.
MEA Committee	Coordinates implementation of MEAs.	Minister, Director, and Permanent Secretary of Environment; Representatives from	No specific meeting schedule.

		14 ministries and departments.	
ICZM Committee	Develops an integrated management plan and takes other actions to assist with the protection and management of the coastal zone.	Director of Environment; from more than twenty Ministries, departments, and institutions; Six NGO representatives	At such time and place as the Chairman things fit.
Environmental Coordination Committee	Ensures maximum coordination among enforcing agencies; develops policy on enforcement of environmental law.	Permanent Secretaries; Director of Environment; Others as designated by Minister of Environment.	"As often as necessary … but in any case at least once every month."

6.3 The Location of the Service within the Administrative Structure

Whether a particular service is within the proper administrative sector is a question of whether the "right" agency has responsibility for a particular issue. This is, in some respects, a question of whether agencies are adequately coordinating activities. It also asks whether an agency has conflicting conservation and extraction roles.

This report identifies two issues for consideration: the failure to manage beaches properly and the location of substantial conservation services, particularly those of the NPCS, within a ministry generally responsible for extraction and production services. This report suggests that the issue of beach conservation be given attention due to the importance of beaches as an ESA. This report flags the issue concerning the NPCS as one for discussion and consideration, although no apparent problems are currently of concern.

6.3.1 Authority over Beaches

Beaches are managed by two different agencies. The Ministry of Housing and Lands manages the Pas Géométriques while the Beach Authority within the Ministry of Local Government, Rodrigues and Outer Islands manages public beaches, which compose about 10% of the total beach area. According to the Report on updating the National Environmental Strategy, neither agency is taking responsibility for beaches adjacent to hotels and Integrated Resort Schemes (IRSs).[268] The Ministry of Housing and Lands leases these beaches to hotels and IRSs and thus has enforcement authority. Nonetheless, the view appears to be that the owners of hotels and IRSs will protect the beaches because they have a self-interest in protecting the beaches for their guests. That view represents a common view of human behavior—that people will protect the resource on which their livelihood depends. Experience suggests, however, that this is not

[268] UPDATING OF THE NATIONAL ENVIRONMENTAL STRATEGIES AND REVIEW OF THE IMPLEMENTATION OF THE SECOND NATIONAL ENVIRONMENTAL ACTION PLAN: FINAL REPORT, Vol. 1, p. 30 (Nov. 2007).

the case, whether in Mauritius or any other country. In Mauritius, for example, various tour operators that depend on the reef have promoted activities, such as "reef walks," water skiing, and jet skiing, that have destroyed parts of the reef.

A third ministry, the Ministry of Environment, also has a large influence over beach management through its responsibilities to issue PER approvals or EIA licences concerning undertakings, such as hotel development, that affect beaches. It also monitors implementation of conditions included in EIA licences. In addition, the Ministry of Environment has authority for integrated management of the coastal zone (including beaches). The Ministry's Department of Environment includes an Integrated Coastal Zone Management Division, which has the mandate for integrated management of the coastal zone. The Ministry of Environment and NDU has commissioned the preparation of an ICZM Plan and ICZM Strategies, expected to be completed in April 2009. These documents, once approved by the Government, would form the basis for the integrated management of the coastal zone (including beaches).

Local authorities, which issue development permits, also influence development of the coastal zone. As a result, no single agency has authority to manage beaches for beach erosion, pollution runoff, and other impacts to beaches.

One consequence of this institutional structure has been beach erosion. One principal reason is the presence of illegally constructed jetties and other barriers, which have adversely affected the movement of water and sand. In addition, there is substantial concern raised by stakeholders and identified in previous reports that the beaches of Mauritius are being set aside for tourists, with little beach area truly accessible to the general public.

To better manage beaches and to ensure a harmonized approach to beach management, this report suggests placing the authority to manage beaches in a single agency. At this point, it is not clear which Ministry that should be. The Ministry of Housing and Lands perhaps is the more obvious choice, since it currently has authority over the vast majority of beaches. At the same time, it has not taken sufficient action to remove jetties and other structures.

6.3.2 Transfer Conservation Duties of Ministry of Agro Industry to Ministry of Environment

The report on Updating the National Environment Strategy and some stakeholders during our site visits have recommended the adoption of a central environmental authority responsible for administering and enforcing all environmental laws. This proposal has a number of benefits to it. Foremost, it would concentrate expertise that is now disbursed among several ministries within a single ministry. In addition, it would establish clear lines of authority concerning monitoring of compliance and enforcement. One concern with the current approach—in which the Ministry of Environment and an enforcing agency have dual enforcement responsibility—is that neither ministry takes responsibility, each believing that the other ministry should take the lead for enforcement.

For purposes of protecting and managing ESAs, there are indeed many benefits to such an approach.

While a centralized authority may represent the best institutional arrangement for implementing and enforcing environmental law, it is perhaps more than necessary at this time to adequately protect and manage ESAs. Nonetheless, this report believes that there are benefits to rearranging the following responsibilities:

- Move the Department of National Parks and Conservation Service (NPCS) to the Ministry of Environment;
- Move the conservation duties of the Forestry Service to the NPCS; or
- Move both the NPCS and the conservation duties of the Forestry Service to the Ministry of Environment.

The principal reason for posing this issue is the inherent conflict that exists when an agency or ministry has responsibilities to develop a resource for exploitation and protect those same resources. The Forestry Service has the most direct conflict: it is charged with managing timber operations as well as nature reserves. This is not to say that forest management should not include conservation. Proper forest management must include conservation. The question is whether an agency tasked with resource exploitation is best placed to deliver optimal conservation benefits. The NPCS, which with the Forestry Service is lodged in the Ministry of Agro Industry, Food Production, and Security, has a similar problem, although not as direct.

Not only may this conflict create tension within the ministry, but it may also erode trust within the community, as an agency is perceived as biased in favor of one of its mandates.[269] In fact, a minority of stakeholders indicated that they perceived the conservation duties of the Forestry Service and NPCS as inappropriately placed in the Ministry of Agro Industry, Food Production, and Security due to that Ministry's other exploitation-oriented responsibilities. The possibility for institutional bias in Mauritius cannot be discounted given the broad discretionary authority, frequently unbounded by mandatory substantive thresholds for making decisions. As such, this report outlines problems this situation has caused elsewhere as well as solutions taken by other countries.

[269] A review of coastal management agencies in Australia noted:

> Some of the key policy making agencies have a real or perceived conflict of interest, which will not help in building trust with the community. This is particularly true where the agency responsible for making the policy also has a role in facilitating or promoting development. For example in some states, Local Governments are responsible for drawing up coastal policies and management plans but also have a role in promoting coastal developments.

GARY MIDDLE, INSTITUTIONAL ARRANGEMENTS, INCENTIVES AND GOVERNANCE—UNLOCKING THE BARRIERS TO SUCCESSFUL COASTAL POLICY MAKING, para. 2.14.1 (2002).

6.3.2.1 Creating the Conflict: An Example from the United States

An example from the United States illustrates the problem of placing conservation and exploitation duties within the same agency. The agency responsible for managing fisheries in the United States is the National Marine Fisheries Service (NMFS). According to its mission statement, NMFS is "dedicated to the stewardship of living marine resources through science-based conservation and management, and the promotion of healthy ecosystems."[270] Consistent with its conservation mandate, NMFS is charged with implementing the Marine Mammal Protection Act (MMPA), which protects all marine mammals regardless of their conservation status, and the Endangered Species Act (ESA), which seeks to conserve and recover threatened and endangered species. NMFS, however, is a division of the Department of Commerce, an agency whose mission is "to foster, serve, and promote the Nation's economic development,"[271] including fisheries resources. As part of that mission, NMFS is responsible for developing fishery management plans for resource exploitation, promoting economic development,[272] and setting catch limits for fisheries resources. This dual charge—both as a protector and as an exploiter—has led one scholar to conclude: "[t]he conflicts inherent in the process are patent."[273]

The conflicting tasks of NMFS have had deleterious effects for both the administrative process and the marine ecosystem. One striking example relates to NMFS's duty to protect threatened and endangered species under the ESA. The ESA requires federal agencies to consult with the expert wildlife agency before undertaking any action that may affect a threatened and endangered species or its critical habitat.[274] In the case of fishery management plans, NMFS is both the action agency charged with setting catch limits and the expert agency required to ensure that catch quotas do not harm threatened and endangered species. Where this conflict arises, some courts have applied stricter scrutiny to decisions of NMFS.[275]

NMFS's duty to promote resource extraction has also conflicted with its duty[276] to designate a species as threatened or endangered species.[277] One court even commented

[270] NOAA Fisheries, About National Marine Fisheries, http://www.nmfs.noaa.gov/what/mission.htm (last visited Nov, 28, 2008).
[271] US Department of Commerce, Mission and Organization of the Department of Commerce, http://dms.osec.doc. gov/cgi-bin/doit.cgi?204:112:f23c40e440fd58af1c94886c8dafe2a0115c34e0e318d0b74b9aa67fc54ea5be:288 (last visited Nov, 28, 2008).
[272] NOAA Fisheries, About National Marine Fisheries, at http://www.nmfs.noaa.gov/aboutus.htm.
[273] Donna R. Christie, *Living Marine Resource Management: A Proposal for Integration of the United States Management Regimes*, 34 ENVTL. L. 107, 126 (2004).
[274] 16 U.S.C. 1536(a)(2) (2000).
[275] *See, e.g*., Greenpeace Found. v. Mineta, 122 F. Supp. 2d 1123, 1129-33 (D. Haw. 2000).
[276] NMFS has been delegated this authority by the Secretary of Commerce. Steven G. Davidson, *Federal Agency Action Subject to Section 7(A)(2) of the Endangered Species Act*, 14 MO. ENVTL. L. & POLICY REV. 29, 32 n. 11 (2006).
[277] 16 U.S.C. 1533 (2000).

"that political considerations may have been lurking in the corridors" [278] and illegally influenced NMFS's decision not to list the Cook Inlet beluga whale as a threatened or endangered species. The court suspected that the agency's decision was influenced by politics, because one of NMFS's own scientists had said that "the evidence 'towards a listing … are compelling' and that 'most knowledgeable scientists would support a listing decision in the absence of politics.'"[279]

The dual charge of NMFS has had environmental fallout as well. In 2004, 86 fish stocks were classified as overfished and 66 stocks were experiencing overfishing.[280] During that same time, NMFS classified 695 stocks as "unknown or not defined" and had not yet established a population threshold for 658 other stocks.[281] In other words, it appears to be erring in it decisions towards setting unsustainable fish quotas.

6.3.2.2 Avoiding the Conflict: An Example From New Zealand

The example of New Zealand presents a contrast to the conflicts inherent in the systems of the United States and Mauritius. New Zealand has structured its ministries so that all conservation-related obligations are met by Ministries separate from those managing extractive practices. Unlike in the United States, New Zealand's Ministry of Fisheries governs the Quota Management System and establishes catch limits for fish stocks,[282] while the Ministry for the Environment establishes policies for natural resources and ecosystems and identifies "significant environmental impacts" from the actions of other agencies and private institutions.[283]

New Zealand's approach to structuring agencies also contrasts with the current structure in Mauritius. New Zealand has a Ministry of Agriculture and Forestry (MAF) tasked with managing and regulating all forestry practices in the country.[284] In Mauritius, the Forestry Service of the Ministry of Agro Industry, Food Production and Security serves a similar function to the MAF in managing timber production. Unlike MAF, the Forestry Service is also responsible for managing some nature reserves and NPCS protects national parks and some reserves. In New Zealand, the department tasked with protecting New Zealand's natural and cultural resources, including the National Park System, is the Department of Conservation (DOC).[285] DOC is a division not of MAF, but of the Ministry of Conservation. The Ministry of Conservation manages National Parks

[278] Cook Inlet Beluga Whale v. Daley, 156 F. Supp. 2d 16, 22 (D.D.C. 2001).
[279] Cook Inlet Beluga Whale v. Daley, 156 F. Supp. 2d 16, 22 (D.D.C. 2001).
[280] Donna R. Christie, *Living Marine Resource Management: A Proposal for Integration of the United States Management Regimes*, 34 ENVTL. L. 107, 120 (2004).
[281] Christie, *Living Marine Resource Management*, at 120.
[282] Ministry of Fisheries, Commercial Fishing, http://www.fish.govt.nz/en-nz/Commercial/default.htm (last visited Nov. 28, 2008).
[283] Ministry for the Environment, Environment Act, http://www.mfe.govt.nz/laws/environment.html (last visited Nov. 28, 2008).
[284] Ministry of Agriculture and Forestry, MAF Forestry, http://www.maf.govt.nz/forestry/ (last visited Nov. 28, 2008).
[285] Department of Conservation, About DOC, http://www.doc.govt.nz/about-doc/ (last visited Nov. 28, 2008).

and sets conservation management strategies.[286] By shaping its bureaucracy to avoid conflict within its ministries, New Zealand offers a more sensible alternative to the conflicts inherent in the systems of the United States and Mauritius.

6.3.2.3 Effects of Transferring Conservation Duties to Ministry of Environment

The transfer of the conservation duties of the Forestry Service and NPCS should have benefits beyond separating conservation and exploitation duties into distinct ministries. First, it would bring additional conservation, biodiversity, and wildlife expertise to the Ministry of Environment. This would help the Ministry with its duties to analyze PERs and EIAs and to recommend mitigation measures for proposed undertakings. It would also potentially eliminate a representative or two from various committees, such as the EIA Committee, thereby reducing staff resources spent at meetings. In addition, the transfer of conservation duties of the Forestry Service and NPCS may raise the profile of the Ministry of Environment among citizens and within government, even if it does not raise the ranking of the Ministry of Environment within the formal hierarchy of ministries (which depends on the political hierarchy of the Minister leading the Ministry).

1. This report proposes that the responsibilities of the Forestry Service for managing nature reserves be transferred to the NPCS. Placing the duty to protect nature reserves in one agency will consolidate resources and expertise.

2. Moreover, it proposes that Mauritius give strong consideration to transferring the NPCS to the Ministry of Environment.

6.4 Adequacy and Appropriateness of Public Participation

Decisionmaking and successful implementation of decisions requires adequate and appropriate public participation and consultation from a broad spectrum of stakeholders—NGOs, the private sector, user groups, the community at large, citizen groups, and academia—that may be affected by a new environmental policy, law, or regulation. *Inadequate* public participation occurs when governments provide insufficient time and effort on consultation prior to making decisions or fail to consult with all relevant stakeholders. *Inappropriate* public participation occurs when the views of stakeholders are canvassed but those comments are not taken into account as part of the decisionmaking process.

Principle 10 of the Rio Declaration on Environment and Development recognizes these important aspects of public participation:

[286] *Id.* at http://www.doc.govt.nz/publications/about-doc/role/policies-and-plans/conservation-management-strategies-and-plans/

> Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities … and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.[287]

In many respects, Mauritius has adopted the spirit of Principle 10 of the Rio Declaration. Citizens have access to courts, provided they have *locus standi*. The Environment Protection Act 2002 includes express provisions for public review of EIAs. In addition, ministries tend to publish draft legislation or regulations in newspapers prior to finalizing such texts. During stakeholder consultations, no comments were made suggesting any hostility towards citizen involvement in the decisionmaking process.

Nonetheless, because the process for public participation in the development of regulations is at best informal and irregular, public participation is inadequate and inappropriate. Because there is no legal requirement to publish draft regulations or to respond to comments, public participation occurs when the ministry or department decides to do it. When it decides to do it, it chooses the process by which it will do it and with whom to do it. As a consequence, complications have arisen when those affected by a new regulation learned of the new rules. For example, when the Ministry of Tourism recently adopted speed limits and specific areas for water skiing, it apparently did not consult the hotels and others that provide ecotourism activities in the area. After consultation, however, the new rules were revised. The Ministry, which is adopting similar rules for other areas, apparently is now engaging stakeholders prior to issuing new regulations. However, it is not clear that all relevant stakeholders are being asked to participate.

The public participation process in Mauritius needs to be strengthened, something that Mauritius has already recognized in the biodiversity context.[288] Appropriate and adequate public participation not only yields better decisions, but it also makes the public more aware of environmental and other issues. Moreover, it helps to shield government from accusations of bias or corruption, provided the relevant ministry or department takes the comments of the public into account.

To strengthen the process of public participation, Mauritius should consider a new law or amendments to existing laws that includes the following elements:

3. In the preparation of any regulation, the relevant ministry or department must publish a notice of any draft regulations in newspapers and the *Gazette*.

[287] Rio Declaration on Environment and Development, UN DOC A/CONF.151/5/Rev. 1, June 13, 1992, *reprinted in* 31 International Legal Materials 874 (1992).
[288] NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 55 (stating that "Stakeholder interaction needs to be enhanced to enable their contributions towards biodiversity conservation.").

4. The public must be given an opportunity to comment on the draft regulations.

5. The relevant ministry or department may want to hold public hearings where an issue is controversial or may have significant impacts on the environment, regulated entities, or the community at large. In such circumstances, the relevant ministry or department may also want to conduct individual meetings with each relevant stakeholder group.

6. When drafting the final regulation, the relevant ministry or department must respond meaningfully and in writing to comments submitted by the public by explaining why it adopted or rejected a comment from a citizen.

6.5 Adequacy of Monitoring and Enforcement

Various reports and consultations with stakeholders consistently cite the lack of monitoring and enforcement as a principle threat to the Mauritian environment generally and to ESAs specifically. The lack of monitoring and enforcement appears to result from two problems:

- Inadequate financial and technical resources; and

- The overlapping authority of the Ministry of Environment and the enforcing agencies.

The inadequacy of financial and technical resources is readily apparent from a review of some staffing levels. For example, just four people within the Ministry of Environment are charged with conducting post-monitoring of PERs and EIAs, an almost insignificant staff to review implementation of more than 1000 EIAs produced since the adoption of EIA. In 2005–2006, the NPCS had just 87staff and a budget of 16.3 million rupees.[289] Stakeholders from at least two ministries noted that vacancies were going unfilled as ministries attempt to save financial resources.

Moreover, it is unclear whether the Forestry Service has the capacity to manage these lands. Despite a staff of 1,037 and a budget of 157 million rupees for 2005–2006, the Forestry Service is only actively managing 4.4 hectares of the 200 hectares of nature reserve within its jurisdiction.[290]

Concerning overlapping authority, one report commented in the context of jurisdiction over the Islets:

> Enforcement of existing legislation is the responsibility of several authorities, including the National Coastguard, but there appears to be

[289] MAURITIUS, NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 36.
[290] MAURITIUS, NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, at 37.

inconsistency and a general lack of co-ordination at an operational level between them in the fulfilment of enforcement functions.[291]

The overlapping authority allows an agency to point to the other agency as the authority best placed to monitor and enforce compliance with environmental law. For example, the Ministry of Public Health might not enforce noise standards, because it believes that the Ministry of Environment, as the ministry responsible for the environment and the agency that has promulgated noise standards, should enforce noise standards. The Ministry of Environment, on the other hand, may believe that the Ministry of Public Health, as the implementing and enforcing agency for laws and regulations concerning noise, should take responsibility.

In this vacuum, compliance with environmental laws goes unmonitored and unenforced. There does not seem to be a good solution to this problem. Mauritius may want to consider these choices:

- **Place all enforcement authority in Ministry of Environment**. If enforcement authority is removed from the enforcing agencies and transferred to the Ministry of Environment, then most of the technical expertise will remain with the enforcing agencies unless some personnel and funding is transferred to the Ministry of Environment. Moreover, the enforcing agency, which will still have the authority to regulate in its field of jurisdiction, may feel disempowered and become unmotivated. This may be especially true if it loses staff to the Ministry of Environment. On the positive side, the Ministry of Environment has shown a willingness to enforce certain laws where other ministries have not done so.

- **Place all enforcement authority in the enforcing agencies**. If enforcement authority is removed from the Ministry of Environment and returned to the enforcing agencies, then the Ministry, which develops standards for environmental protection, may feel less motivated to adopt such regulations knowing that it will not be able to enforce those standards. On the other hand, the technical expertise will remain with the enforcing agency and no transfer of personnel is required.

[291] The Islets National Park Strategy, p. 15 (undated).