Government of Saint Lucia

Preliminary Environmental and Social Assessment (ESA)

Caribbean Regional Air Transport Connectivity Project
(P170860)

DRAFT – FOR DISCLOSURE AND CONSULTATION

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List of Acronyms and Abbreviations

ADS-B	Automatic Dependent Surveillance-Broadcast
CATCOP	Caribbean Regional Air Transport Connectivity Project
CERC	Contingency Emergency Response Component
C-ESMP	Contractor's ESMP
DIPE	Department of Infrastructure, Ports and Energy
DSD	Department of Sustainable Development
ECCAA	Eastern Caribbean Civil Aviation Authority
ESMP	Environmental and Social Management Plan
ESA	Environmental and Social Assessment
FOD	Foreign Object Debris
GFLCA	George F. L. Charles Airport
HIA	Hewanorra International Airport
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
LWC	Labor and Working Conditions
OHS	Occupational Health and Safety
PSMA	Point Sable Management Area
RESA	Runway End Safety Area
SEP	Stakeholder Engagement Plan
SLASPA	Saint Lucia Air and Sea Ports Authority
SLU	George F. L. Charles Airport (IATA airport code)
UVF	Hewanorra International Airport (IATA airport code)

Executive Summary

The proposed CATCOP project includes a coordinated investment strategy to address the most critical observed safety and resilience deficiencies at St. Lucia's airports with a particular focus on (i) airfield and aircraft operations, and (ii) strengthening the capacity of SLASPA and Departmentof Civil Aviation and their coordination with ECCAA.The Project Development Objectives (PDO) are (i) to elevate compliance of St-Lucia's air transport with regional and international safety standards and (ii) enhance resilience of airport infrastructure to natural disasters.This will be accomplished through five components: (i) improvement of UVF runway safety and resilience; (ii) modernization of air navigation systems; (iii) institutional strengthening; (iv) Contingent Emergency Response Component (CERC); and (v) project management. CERC would finance the implementation of emergency works, rehabilitation and associated assessments, at the Government's request in the event of a disaster. If required, this fourth component would be triggered and disbursed in accordance with an Emergency Action Plan prepared by the Government of St. Lucia and the Bank's CERC Guidance (Oct. 2017). Total Project cost is estimated at US$45 million.

This Preliminary Environmental and Social Assessment (ESA) will be used to inform decision making and includes an initial assessment of the project induced environmental and social impacts and associated risks based on the currently available design information to ensure that the project will be environmentally and socially sound and sustainable. It confirms that the impacts are not significant for the proposed project and can be mitigated with standard mitigation practices through the different plans prepared for the project, including an Environmental and Social Management Plan (ESMP), a Labor Management Procedure (LMP), and a Stakeholder Engagement Plan (SEP) includinga Grievance Redress Mechanism (GRM). The ESA and associated plans will be further updated at the detailed design stage using the information provided within this ESA. In addition, the ESMP will require preparation of other plans such as Waste Management Plan (WMP), Hazardous Materials Control Plan (HMCP), Resource Efficiency and Pollution Management Plan (REPMP), Emergency Response Plan (ERP), Traffic and Road Safety Plan (TRSP), Community Health and Safety Plan (CHSP), and a Storm water, sediment and erosion control plan (SWSECP) at the detailed engineering phase. The contractor(s) will be required to prepare a Contractor's Environmental and Social Management Plan (C-ESMP) before execution of physical works.

The environmental and social risk classification is Moderate under the World Bank Environmental and Social Framework based on location, type, sensitivity and scale of the project intervention, nature and magnitude of potential environmental and social risks and impacts, and client capacity. The proposed project will not support expansion or major rehabilitation of the existing airports. The physical works are mainly focused on improvement of existing runway, consruction of Runway End Safety Areas (RESAs) for both UVF runway ends and drainage facilities in Hewanorra International Airport (UVF). In addition, the project includes equipment to improve traffic safety and efficiency in UVF and Georges FL Charles Airport (SLU). In addition to project interventions within the existing airports, the project will support the installation of up to two antennae for the Automatic Dependent Surveillance-Broadcast (ADS-B) system, which will be located outside of the airports most likely on existing communications tower facilities.

The project locations are largely developed areas with restricted access, thus minimizing community health and safety risks. Project activities are expected to be limited to existing sites (occurring within the current demarcations of both airports and ADS-B towers/antennas), limited in number, likely reversible in nature, and can be mitigated with measures that are readily identifiable and technically and

economically feasible. The project also includes improvement of the existing drainage systems in UVF, which will be carried out based on the further studies on the current drainage patterns to ensure there will no additional impactsfrom erosion and sedimentation that could impact off-site coastal and marine habitat due the drainage improvement work. Overall, the project is likely to reap positive environmental benefits through enhancing the safety and resilience at the two airports. The SLASPA and the World Bank will review the Environmental and Social Risk Classification (ESRC) on a regular basis throughout the project life cycle to ensure that it continues to accurately reflect the level of risk the project presents.

Table of Contents

List of Figures and Tables

1. INTRODUCTION

1.1 Background

The Caribbean Regional Air Transport Connectivity Project (CATCOP) is proposed to be funded by the World Bank Group (WBG) and has as its development objective to improve air transport safety in compliance with international and regional standards and enhance resilience of airport infrastructure to natural disasters. The project's focus is to (i) improve resilience and operational safety of the runway; (ii) improve air traffic safety and efficiency; and, (iii) build capacity in air transport management.

Currently there are two airports in St. Lucia which are vital for the regional movement of people and goods and for the tourism sector with its increased demand. The island has two airports: Hewanorra International Airport (UVF), the main international airport located in the south of the island, and George FL Charles Airport (SLU), a smaller airport which provides regional connectivity from the capital city of Castries in the north. Together, they account for commercial air travel non-stop services to 21 international destinations. The coexistence of the two airports at different locations on the island improves the island's resilience to major climatic hazard.

The existing airport infrastructure faces non-compliance with the international standards on safety, operational and logistical aspects and is highly vulnerable to natural disasters and climate change. The pavement of UVF's runway is in poor condition and its aircraft approaches are characterized as non-precision[1], both of which limit arrivals during poor meteorological conditions resulting in aircraft arrival delays, periodic diversions to alternate airports, and occasional flight cancellations. Also, certain International Civil Aviation Organization's (ICAO)safety standards are not being met, e.g., runway classifications in relationship to types of aircraft operating, pavement condition, and lack of Runway End Safety Areas (RESAs). While the SLU location is convenient to the capital and major population/tourism centers, it is smaller than UVF, situated in a highly constrained setting with little opportunity for expansion, and non-compliant with several ICAO safety standards such as runway shoulders and RESAs. Potential impacts from climate change, including extreme temperatures, could cause further buckling of airport runways, pavements, and access roads, while flooding can inundate and damage runways and parked aircraft, both of which can result in extended airport closures.

The Government of Saint Lucia (GoSL) has commissioned the preparation of a master plan for UVF. Based on a preliminary review, the draft master plan is found to prioritize the expansion of passenger handling capacity without enough emphasis on airfield safety and resilience improvements. The Draft Plan considers the construction of a new main terminal, air traffic control tower, and an extended aircraft parking apron, but due to financial constraints it does not sufficiently emphasize certain airfield safety and resilience improvements necessary to comply with ICAO SARPs such as runway end safety areas (RESAs) and rehabilitation of the runway. No significant works are planned for SLU.

The Saint Lucia Air and Sea Ports Authority (SLASPA) is the airport operator and air traffic services (ATS) provider in Saint Lucia and is the implementing agency for the CATCOP.

A full description of the project is provided in Chapter 2 of this Environmental and Social Assessment (ESA).

1.2 Environmental and Social Assessment (ESA) Objectives

[1] Area navigation (RNAV), Very high-frequency Omnidirectional Range (VOR), and Non-directional beacon (NDB),

This preliminary ESA has been prepared by the Borrower to assess the environmental and social risks and impacts of the project throughout the project life cycle as per the requirement of Environmental and Social Standard 1 (ESS1) of the World Bank Environmental and Social Framework (ESF). It will also be used to address the other relevant ESSs to the project. The ESA has been prepared based on the assessment of the works required to improve the safety and resilience of the airport. The ESA will be further updated at the detail design when more information will be available on exact location, size, scope and methodology of work.

Measures to mitigate the potential risks and impacts are included in the Environmental and Social Management Plans (ESMPs) which form part of this ESA. This ESA includes a Labor Management Procedure (LMP) to mitigate any risks and impacts associated with the labor force. A standalone Stakeholder Engagement Plan (SEP) and Grievance Redress Mechanism (GRM) were also developed to address potential project related concerns and claims from workers and the general public. All relevant documents are disclosed in-country and on the World Bank's external web site.

1.3 Project Components

The Project Development Objective (PDO) is to improve air transport safety in compliance with international and regional standards and enhance resilience of airport infrastructure to natural disasters. The development objectives would be achieved through a combination of safety and operational improvements at Saint Lucia's two existing airports – Hewanorra International Airport (UVF) and George F. L. Charles Airport (SLU) – and strengthening the capacity of SLASPA. The Project would comprise four components, as described below. The total Project cost is estimated at US$45 million.

1.3.1 Component 1: Improvements of UVF runway resilience and operational safety

This component is estimated to cost USD$32.5 million. This component seeks to improve the operational safety and climate/disaster resilience of St. Lucia's UVF runway which is its most critical piece of aviation infrastructure, and support Saint Lucia to comply with ICAO's Standards and Recommended Practices (SARPs) through a series of priority civil works described below.

- **UVF runway rehabilitation (estimated cost US$ 25 million including design).** Rehabilitating and upgrading the UVF runway is the highest priority airfield project considering the runway's poor and deteriorating condition and the steady growth in passenger traffic over the last nine years (5.6% CAGR). It has been 26 years since the last full runway pavement rehabilitation and numerous cracks are evident along the entire length of the runway. Weather resistant paving material would be used to the maximum extent practicable to help improve resilience to extreme temperatures. Rehabilitating the UVF runway and establishing shoulders of at least seven and a half meters on each side would comply with ICAO's requirements for runway dimensions and pavement condition for a code E airport. It would further improve aircraft operating safety by reducing risk of damage to the aircraft undercarriage associated with weak and cracked pavement condition and to aircraft jet engines associated with loose pavement materials. In addition to rehabilitating the runway pavement and constructing shoulders (which currently do not exist) the project would also include installation of an energy-efficient and disaster resilient LED lighting system, contributing to climate mitigation, and new markings for the runway.

- **Runway End Safety Areas (RESA) for both UVF runway ends (estimated cost US$ 1 million including design).** In compliance with ICAO's requirements, the proposed construction of paved stopways and RESAs would contribute to mitigating the risk to aircraft and of potential associated fatalities associated

with runway excursions. The project would include 60 meters of paved stopway from each runway end and non-paved but reinforced grounds for at least another 90 meters (for a total of 150 meters from the runway end). The paved stopways and RESAs would contribute to reduce the risk of aircraft fire or other damage in cases when an aircraft undershoots or overshoots the runway during a landing or overshoots during an aborted take-off. Paved stopways and RESA's are required by ICAO and their implementation would contribute to St. Lucia's efforts to abide by the POS Declaration signed on their behalf by ECCAA in 2014. In particular, it would facilitate St. Lucia's efforts to achieve ICAO certification of at least one of its two international aerodromes.[2] An airfield engineer would be engaged to prepare a detailed design for construction of the paved stopways and Runway End Safety Areas at UVF, including considerations of climate / disaster resiliency.

- **UVF airfield drainage/resilience improvements (estimated cost US$5 million including resilience plan and conceptual design preparation).** Done in concert with the runway works listed above, these investments would improve airport resilience to natural disaster events by reducing the risk of airfield flooding associated with the annual rainy season, hurricanes, and climate change and thus by contributing to safer operating conditions. The specific resilience works, and budget would be integrated with each above project based on an 'Airfield Resilience Plan' to be prepared by a drainage expert. The expert would be asked to prepare a detailed design for upgrades to airfield drainage to reduce the risk of airfield flooding associated with the annual rainy season, hurricanes, and climate change. Upgrades could include, but are not limited to, improvements and/or expansion of drainage canals/pipes in critical locations such as the drainage pipe under the runway in the original river location. This plan would be prepared in the context of leveraging the civil works associated with the runway rehabilitation and development of paved stopways and RESAs.

- **Crash Fire Rescue Improvements for UVF (estimated cost US$1.5 million including design).** This would improve capacity of firefighter management and control during emergency events, including providing full line of sight from the control room to the entire length of Runway and contributing to efficient management of emergency operation. This task would be completed in the context of an operational and organizational audit related to emergency services incorporated in Component 3. Specifically, the final design for the upgraded firefighters control room would be developed after the audit is completed. An architect would be engaged for the design effort.

1.3.2 Component 2: Air Traffic Safety and Efficiency Improvements

The estimated cost of this component is USD$4M. This component seeks to improve air traffic safety and efficiency through the modernization of air navigation systems and includes:

- **Installation of an Instrument Landing System (ILS) for UVF Runway (estimated cost US$ 2.5 million).** This would provide a precision instrument approach greatly enhancing safety during aircraft arrivals and reducing delays, diversions, and cancellations in poor weather situations, thus reducing fuel consumption and associated greenhouse gas emissions. An airspace and procedure design specialist would be engaged to design an instrument approach procedure associated with the new Instrument Landing System (ILS) for UVF Runway 10. Further, the specialist would develop specifications for the ILS installation including appropriate resiliency measures considering the harsh marine environment and risk of natural disasters and prepare an associated maintenance program for the system.

[2] The agreed goal in the POS Declaration is 48% of international aerodromes in the Caribbean region certified by December 2016.

- **Introduction of Automatic Dependent Surveillance - Broadcast (ADS-B) (estimated cost US$ 1.0 million).** Provide ADS-B for both airports in St. Lucia by installing one or more ground stations, equipping the air traffic control towers at both airports with a monitor, training air traffic controllers, and equipping St. Lucia-based aircraft.[3] This would contribute to improvement of aircraft operations safety at the two airports by allowing continuous position reports of most aircraft thereby greatly improving situational awareness for air traffic controllers and pilots. An additional task for the above referenced airspace and procedures specialist would be an ADS-B receiver antenna siting study to ensure unobstructed signal reception for aircraft operations at both of St. Lucia's airports. Ideally one site could be identified providing coverage for the entire island, but this may not be feasible given the highly mountainous terrain in St. Lucia and the need for the site to be readily accessible for maintenance. Nevertheless, given the small diameter of the relatively simple antenna, which typically is co-located at a cell phone tower, and given the fact that additional antennas should be mounted on the control towers of the two airports, the system can be considered as very resilient.

- **ATC-related technical studies and update of UVF Aeronautical Charts (estimated cost US$0.5 million).** As referenced above, an airspace and procedure design specialist would be engaged to support deployment of an ILS and ADS-B as well as updating all the UVF aeronautical charts for assisting in air navigation. Assuming detailed topographical data for St. Lucia is available, these technical studies (ILS procedure design and specifications, ADS-B receiver antenna siting, and UVF aeronautical charts preparation) are expected to cost in the range of US $400K to $600K. It is likely that one specialist consultant could conduct these studies.

1.3.3 Component 3: Institutional Strengthening and Project Management

This component is valued at US$8.5 million and focuses on institutional strengthening and project management through a broad review of opportunities for improving management and oversight of the air transport sector and staffing of SLASPA. Specific elements include:

- **Institutional Strengthening – SLASPA and Department of Civil Aviation (estimated cost US$5 million).** GoSL is keen to conduct a broad review of opportunities for improving its management and oversight of the air transport sector as part of the Project through strengthening SLASPA and the Department of Civil Aviation as well as improving collaboration with ECCAA. Agreements have been reached to include as a first step a "gap analysis" (estimated cost of US$0.5 million) in the form of a broad organizational and operational review of airport management in coordination with ECCAA to determine the areas with the greatest opportunity for improvement including (a) safety and security (including ICAO and ECCAA compliance); (b) financial management and performance; (c) operations and maintenance; (d) climate resilience best practices; (e) regulatory oversight and (f) analysis on recruitment, retention and promotion barriers for women in the aviation sector and development of a Gender Action Plan. Based on the results of the gap analysis specific studies and/or investments would be agreed upon during appraisal and incorporated in the Project. As described above, one early element of the gap analysis would be an operational and organizational audit related to airport emergency services.

[3] ADS-B provides air traffic control system at a fraction of the cost of traditional radar-based surveillance system. It requires that aircraft are equipped with an ADS-B transmitter, and a ground station that receives the signal. Since well over a decade, all jet liner aircraft are equipped with ADS-B, as this technology becomes compulsory in the US and Europe by 2020. However, smaller aircraft still need to be equipped with ABS-B, thus the inclusion of budget for equipping a few St. Lucia-based commercial aircraft.

- **Training of ATC staff (US$ 0.5 million).** Given the above referenced new equipment installations (i.e., ILS and ADS-B), as well as the new UVF aeronautical charts, appropriate training would be provided to air traffic controllers and supervisory staff in coordination with ECCAA. Also, the project would promote the recruitment of female air traffic control trainees and development of supervisory skills for existing female staff. Aspects of climate/disaster resilience and best practices would be covered, as appropriate, as part of the training activities.

- **Project Management (US$ 3 million).** Given the size and the scope of the Project, a dedicated implementation team would be financed to provide overall management, supervision, fiduciary control, and monitoring and evaluation (M&E) of the Project. Since such implementation team does not currently exist within SLASPA, a new team would be established within SLASPA with specialists covering safeguards, and technical matters procurement, financial management. This would include (i) acquiring and implementing Project Financial Management System acceptable to the World Bank that facilitates the recording, control and reporting of project transactions; and (ii) hiring an international procurement consultant to support SLASPA at key stages of the procurement process. This component will also finance annual audits that will be performed by an independent auditing firm.

1.3.4 Component 4: Contingent Emergency Response Component (CERC)

The Project includes a Contingent Emergency Response (CER) component with initial 'zero' allocation. This component would finance the implementation of emergency works, rehabilitation and associated assessments, at the GoSL's request in the event of a disaster. The component would be triggered and disbursed in accordance with an Emergency Action Plan prepared by the GoSL and the CERC's implementation modalities.

1.4 ESA Scope

This ESA considers the risks and potential impacts of physical works including installation of safety equipment under Components 1 and 2. The physical footprints and activities of these two components are expected to have some potential social and environmental impacts and this ESA provides the means to avoid, minimize, or mitigate. Activities under component 3 are comprised of institutional strengthening, capacity building and project management that have no physical footprints and that have no direct environmental and social impacts. However, according to the World Bank Environmental and Social Framework, the requirements set out in paragraphs 14–18 of ESS1 will be applied to TA activities as relevant and appropriate to the nature of the risks and impacts. Activities under component 4 are not yet known. However, ESA has included possible post-disaster related activities, list of negative activities, possible environmental and social impacts and process to be followed for a rapid environmental and social assessment.

2. DESCRIPTION OF WORK

2.1 Project Locations

The project location is in Saint Lucia (Figure 2.1a) mainly at the Hewanorra International Airport (UVF) in the town of Vieux Fort and George F. L. Charles Airport (SLU) in the town of Castries (Figure 2.1b).

Figure 2.1a,b: Saint Lucia geographic location, topography and airport locations

2.1.1 Hewanorra International Airport

The UVF is the main gateway to international destinations and is located at the southern end of the island in the town of Vieux Fort (Figure 2.1b and 2.1c). UVF is approximately one-hour drive from the capital city of Castries and an hour and a half drive from the main tourism center located in the north of the island. Although operational hours published in the Eastern Caribbean Aeronautical Information Publication (ECAR/AIP) for UVF is from 6:00 am to 11:00 pm daily, like the SLU, the airport remains open later to accommodate delayed and emergency flights when provided with early notification.

The UVF is assigned an International Civil Aviation Organization (ICAO) aerodrome reference code (ARC)[4] of 4E.Key design features of the existing UVF are as follows:

- Non-precision approach runway.
- Runway oriented west/east: runway 10/28 (RWY 10/28)
- Runway measures 2744m (L) x 46m (W) or 9,003 x 150 feet.
- Runway strip around 2866m (L) x 152m (W) with runway approximately central within the strip.
- Aerodrome elevation 4.2m (14 ft.).

[4] https://www.skybrary.aero/index.php/ICAO_Aerodrome_Reference_Code

- Runway threshold elevation 3.3m above sea level (ASL) at west end and 3.1m ASL at east end.
- Approach and runway lighting.
- Radio navigation and landing aids: non-directional (radio) beacon (NDB) and Very High-Frequency (VHF) Omnidirectional Range/Distance Measuring Equipment (VOR/DME).
- Terminal building situated about 325m north of runway center line (on eastern half of runway) accessible by two (2) taxiways.
- Disused runway oriented southwest to northeast about 260m (853 ft.) north of RWY 10/28.
- Area of the disused runway separated from the main compound by chain linked fence and secured gate (Gate 11).
- Gate 11 approximately 160m (525 ft.) from RWY 10/28 via closed taxiway A (TWY A).
- Eight (8) foot high perimeter fence along boundary consists of mixture of wire mesh, barbed wire and razor wire.

More aeronautical information of a lasting character essential to air navigation at the UVF is available in the ECAR/AIP[5].

Figure 2.1c Hewanorra International Airport area

Passenger traffic levels at UVF are steadily growing: From 2009 to 2018, annual passenger volumes at UVF grew by 63%, from 515,137 to 838,120 passengers, a compound annual growth rate of 5.6%. This passenger growth –

[5] http://www.horizoncaraibes.fr/charts/tlpl.pdf

and the associated growth in aircraft operations – places pressure on airport infrastructure requiring greater investments in facility expansion and maintenance.

2.1.2 George F. L. Charles Airport

The George F.L. Charles Airport (SLU) mainly accommodates regional travel and is situated on the northwest coast in the capitol city of Castries (Figure 2.1d). This airport is about five minutes from the downtown commercial center of Castries and its operational hours are nominally from 6:00 am to 8:00 pm daily.

Figure 2.1d George F. L. Charles Airport (SLU) area

Key design features of the existing SLU airport are as follows:

- Non-precision approach runway.
- Runway oriented west/east: runway 09/27 (RWY 09/27).
- Runway measures 1898m (L) x 45m (W) or 6,227 x 148 feet.
- Aerodrome elevation 6.7m (22 ft.).
- Runway threshold elevation 6m ASL at west end and 3m ASL at east end.
- Approach and runway lighting.
- Radio navigation and landing aid available: NDB.
- Eight (8) foot high fence along the entire perimeter consists of mixture of wire mesh, barbed wire and razor wire.

More aeronautical information of a lasting character essential to air navigation at the SLU is available in the

ECAR/AIP[6].

2.2 Overview of Works

The runway at the UVF, last resurfaced in 1992, has deteriorated significantly and is also without runway shoulders and runway end safety areas (RESAs). The existing drainage systems at both airports function poorly, resulting in water from rainstorms pooling close to the runway for extended periods of time before running off or infiltrating. As a result of the foregoing, the proposed CATCOP will comprise the following:

At the UVF:

- Rehabilitation of the existing runway, inclusive of runway shoulders
- Construction of code 4E turning bay on south side runway 10 (RWY 10)
- Installation of an up-to-date airfield ground lighting system
- Construction of RESAs
- Installation of an instrument landing system (ILS)
- Updating of the aeronautical charts, including procedure design for all approaches and departures
- Remodeling and renovation of the aerodrome rescue and firefighting (ARFF) facility
- Improvement of existing storm water drainage systems based on further studies

At both UVF and SLU:

- Installation of an automatic dependent surveillance-broadcast (ADS-B) system by erecting two (2) ground stations (receiver antennae) at locations outside the existing airport perimeters
- Installation of ADS-B monitor at the air traffic control (ATC) tower within the airport perimeter
- Provision of the requisite training to all air traffic controllers (ATCOs) and other personnel relevant to new equipment installations and procedures

All of the above activities have physical footprints (except the training related new equipment) that are within the existing airport boundaries, except for the ADS-B antennas. The final location of both towers/antennae will be decided after a detailed design study conducted once the project begins implementation, but two tentative locations have been selected on existing towers at Cape Moule-a-Chique (the promontory south of UVF) and Vigie Hill (the hilltop north of SLU). These locations already have towers in place as well as access roads, which will minimize or avoid any environmental or social impact.

Figure 2.2a shows a standard ADS-B ground station. The size and installation are similar to that of a cell phone tower. The site locations of the proposed ADS-B facilities are considered civil aviation security restricted areas and measures, such as fencing, will be taken to mitigate against unauthorized entry. Figures 2.2b and 2.2c illustrate the common ILS ground equipment used in aviation. The ILS will be located inside the UVF.

[6] http://www.horizoncaraibes.fr/charts/tlpc.pdf

Figure 2.2a ADS-B Ground Station

Figure 2.2b ILS Glide Slope Station

Figure 2.2c ILS Localizer Antenna Array

The above installations have small physical footprints and will be undertaken within the existing airport boundaries or on existing tower structures, and so will have minimal environmental and social risks and impacts. Specifically, ILS and ATC will be installed entirely within the airport boundaries, as well as any works or improvements to firefighting equipment and facilities. The off-site ADS-B antennae would need to be installed at a location with line-of-sight to the airport, such as the hilltops at Cape Moule-a-Chique (near UVF) and Vigie Hill (near SLU). If another location is selected the preference will be for hilltops already fitted with secure tower installations for cell phones or weather monitoring stations, for which the ADS-B may share the grounds and/or the tower itself.

There are also proposed works for improvement of the existing storm water drainage systems at both airports. The proposed project interventions will be limited to the existing facilities of the airports and will be designed to minimize any additional runoff due to these project interventions. The UVF will be the focus of most of the civil works being undertaken during the project.

There will be no works carried out on the La Tourney River as part of the drainage rehabilitation. A previous flood control study recommended that the surface drainage system at UVF be modified as a necessary first step in the control of flooding at UVF, in order to protect the UVF against the 1:100 rainfall event (see section 4.5.5 of this ESA).

In case of natural disasters, the project also includes a Contingency Emergency Response Component (CERC) component. To comply with World Bank Environmental and Social Standard requirements, the ESA has included possible post-disaster related activities, list of negative activities, possible environmental and social impacts and process to be followed for a rapid environmental and social assessment.

2.3 Proposed Construction Methods

Set out below is a summary of the proposed construction methodology for the runway upgrade at the UVF. This is best information available to date, which will be updated when detailed designs are available.

- Resurfacing (most likely using a bitumen product and double coat chip seal) and constructing RESAs.
- The likely equipment that will be required includes: a 20-ton excavator, loader, motor grader, vibration steel roller, dump trucks, water truck, miller, bobcat and assorted equipment (hand broom, shovels, bitumen kettle, 5-ton steel drum, trailer, jack hammer, compactor).
- The likely equipment that will be required for chip-sealing includes: a Bitumen Distributor, Chip spreader trucks, Rubber Tyre Roller, Mechanic Broom, Water Truck, Loader, Bitumen blower (Bitumen burner).
- All equipment and materials will be within the boundary of the Airport which is Government-owned land.

The chip sealing process involves resurfacing of the existing sealed surface resulting in no material change in the key characteristics of the runway. Bitumen will be laid using a spreader and imported emulsion material with the chip material being laid over the top and rolled.

The installation of ADS-B antennas e outside the airport facilities are expected to utilize existing tower structures at Cape Moule-a-Chique and Vigie Hill. If this is confirmed, then the ADS-B equipment may be installed on that tower with minimal or no site preparation required. If an alternate site is recommended in the detailed design study, then the selection of a new site(s) and improvements to access roads will be carefully evaluated using screening tools in this ESA. Although unlikely, if a new tower is required then a solid concrete footing must be excavated, the site should be clean and graded level, and a gate and access road would be needed. The project will also screen out activities that could take place on land (public or private) where there could be informal users who have structures, crops or pasture animals on vacant areas. Any activity that could require involuntary resetlement will be screened out and will not be eligible for financing under the project.

2.4 Schedule and Workforce

The anticipated project schedule and workforce are summarized in Table 2.4a and Table 2.4b. The information provided is the best information available and will be refined once information is available and the ESA and ESMP are updated. Further, as part of the bidding process the contractor will require that updated information be included in the Contractor's ESMP (C-ESMP).

Table 2.4a Anticipated Workforce and Schedule Activities

Activities	Schedule	Workforce
Runway resurfacing at UVF, inclusive of shoulders	Q1-Q2 2021	Contractor
Construction of code 4E turning bay on south side runway 10	Q1-Q2 2021	Contractor
Construction of runway end safety areas (RESAs) at UVF	Q1-Q2 2021	Contractor
Installation of up-to-date airfield ground lighting system at UVF	Q3-Q4 2021	Contractor
Rehabilitation of storm water drainage system at UVF	Q3-Q4 2020	Contractor
Rehabilitation of storm water drainage system at SLU	Q3-Q4 2020	Contractor

Installation of instrument landing system (ILS) at UVF	Q3-Q4 2021	Contractor
Erection of ground station (receiver antenna) for ADS-B system for UVF	Q1-Q2 2020	Contractor
Erection of ground station (receiver antenna) for ADS-B system for SLU	Q1-Q2 2020	Contractor
Installation of ADS-B monitor at UVF	Q1-Q2 2020	Contractor
Installation of ADS-B monitor at SLU	Q1-Q2 2020	Contractor
Remodelling and renovation of aerodrome rescue and firefighting (ARFF) facility at UVF	Q1-Q2 2021	Contractor
Updating aeronautical charts and procedure design for all approaches and departures at UVF	Q1-Q2 2020	Contractor
Training all air traffic control (ATC) staff and other personnel relevant to new equipment installations and procedural designs	Q1-Q2 2020	Contractor

Table 2.4b Personnel Requirements for Runway Resurfacing at UVF

Type	Roles	Number of Employees
Localized Pavement Maintenance Team	Heavy Plant Operator	6
	Laborers	16
Chip Sealing Team	Heavy Plant Operator	6
	Bitumen Heating	4
	Laborers	16

2.5 Timing and Expected Duration of Works

It is anticipated that the project will commence in 2020 with the detailed engineering design and other technical studies to prepare the bidding documents. This preliminary ESA will be updated during the detailed engineering phase. The physical works will not commence until after completion of the technical studies, detailed engineering and completion of bidding process. The entire implementation phase of the project will run for a total of six (6) years.

Installation of the ILS is not a major undertaking and should be accomplished in about 8 weeks. Improvements to the ATC (air traffic control) towers and lighting systems, and radar arrays, will likely require about 4 weeks to complete. Firefighting equipment and supplies can be delivered over the course of a few days.

Major works on runway surfaces either involve complete or partial runway closure for a continuous period of several weeks or a carefully managed program of night closures during which a complex resurfacing program can be progressively accomplished. In such cases, the friction characteristics of various parts of the available surface may vary on a daily basis which will invite very careful preflight attention to NOTAM information, especially if adverse weather conditions may occur.

Rehabilitation of the existing runway and construction of the RESAs at the UVF will be undertaken during the dry season (January to mid-April) and should last approximately twenty (20) weeks. Due to the UVF's operational activities, these works will be undertaken daily, between 10:00 pm and to 10:00 am.

The ADS-B antennae located outside the airport grounds will require from 1 month to 2 months to install, if they are on existing towers as is currently planned. If new sites are selected then the required times would be greater because site screening, design, and tower installation would be required. In this case 5 to 7 months would be required.

2.6 Project Cost

The project cost is estimated at USD$45 million.

As detailed in Section 1.3, the project consists of four components with the following estimated costs:

Component 1: Improvements of UVF runway resilience and operational safety (US$32.5M)

- Runway rehabilitation (estimated cost US$28 million)
- Runway End Safety Areas (estimated cost US$2 million)
- Airfield Resilience Plan (estimated cost US$5 million)

Component 2: Air Traffic Safety and Efficiency Improvements (US$4M)

- Instrument Landing System (ILS) for UVF
- Installation of Automatic Dependent Surveillance - Broadcast (ADS-B)
- Update of UVF Aeronautical Charts
- Technical studies to support ATC-related investments
- Repairs and modernization of Firefighters Control Room at UVF.

Component 3: Institutional Strengthening and Project Management (US$8.55M)

- SLASPA and Department of Civil Aviation Institutional Strengthening.
- Project Management. SLASPA and Department of Civil Aviation.

The fourth component (Contingent Emergency Response Component or CERC) has no allocation. This component will finance the implementation of emergency works, rehabilitation and associated assessments, at the Government's request in the event of a disaster.

3. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

3.1 World Bank

3.1.1 Environmental and Social Standards

The World Bank Environmental and Social Policy for Investment Project Financing sets out the requirements for projects it supports through Investment Project Financing. The Environmental and Social Standards set out the requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank. The Bank believes that the application of these standards, by focusing on the identification and management of environmental and social risks, will support Borrowers in their goal to reduce poverty and increase prosperity in a sustainable manner for the benefit of the environment and their citizens. The standards aim to:

a. support Borrowers in achieving good international practice relating to environmental and social sustainability;

b. assist Borrowers in fulfilling their national and international environmental and social obligations;

c. enhance nondiscrimination, transparency, participation, accountability and governance; and

d. enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

The ten Environmental and Social Standards (ESSs) establish the standards that the Borrower and the project will meet through the project life cycle and set out the obligations of the Borrower in identifying and addressing environmental and social risks and impacts that may require particular attention. These Standards establish objectives and requirements to avoid, minimize, reduce and mitigate risks and impacts, and where significant residual impacts remain, to compensate for or offset such impacts.

A summary of the key objectives of these ESSs and their relevance to the CATCOP project are provided in Table 3.1.

The Framework is also accompanied by non-mandatory guidance and information tools to assist Borrowers in implementing the Standards, Bank staff in conducting due diligence and implementation support, and stakeholders in enhancing transparency and sharing good practice. The World Bank Access to Information Policy, which reflects the Bank's commitment to transparency, accountability and good governance, applies to the entire Framework and includes the disclosure obligations that relate to the Bank's Investment Project Financing. Borrowers and projects are also required to apply the relevant requirements of the World Bank Group Environmental, Health and Safety Guidelines (EHSGs), including one specifically for airports that applies to the CATCOP project.[7]

[7] http://documents.worldbank.org/curated/en/665381496052174463/Environmental-health-and-safety-guidelines-for-airports

Table 3.1 Summary of Key Objectives and Relevance of Environmental and Social Standards

ESS#	Standard	Key Objectives	Relevance to Project
ESS1	Assessment and Management of Environmental and Social Risks and Impacts	ESS1 applies to all projects for which Bank Investment Project Financing is sought. ESS1 establishes the importance of: (a) the Borrower's existing environmental and social framework in addressing the risks and impacts of the project; (b) an integrated environmental and social assessment to identify the risks and impacts of a project; (c) effective community engagement through disclosure of project-related information, consultation and effective feedback; and (d) management of environmental and social risks and impacts by the Borrower throughout the project life cycle. The Bank requires that all environmental and social risks and impacts of the project be addressed as part of the environmental and social assessment conducted in accordance with ESS1.	The standard is relevant for the project. Although the proposed project is likely to reap positive environmental and social benefits through enhancing safety and resilience at the two existing airports, the project has limited environmental and social risks associated with the physical upgrading of the UVF existing runway and improvement of air traffic safety and efficiency system in both airports.
ESS2	Labor and Working Conditions	ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.	This standard is relevant given that the project will hire direct workers that will be engaged directly by the Borrower to work specifically in relation to the project. The ESA contains a Labor Management Plan to address these aspects.
ESS3	Resource Efficiency and Pollution Prevention and Management	ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local,	The standard is relevant since the physical interventions at the airports will generate construction debris and hazardous or non-hazardous waste - wastewater, fuel, asphalt, chemicals, wood and building materials, among others. In addition, the technical specifications of different equipment will promote energy

		regional, and global levels. This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life-cycle.	efficiency and measures to reduce GHG emissions (e.g. energy efficient Light Emitting Diode (LED) bulbs in runway lightening) at the detailed design stage.
ESS4	Community Health and Safety	ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.	The Standard is relevant considering the physical works at UVF and installation of equipment at both airports and on communications towers outside the airport perimeters. Transportation of construction materials, machinery and equipment may increase the risk of traffic hazard andthere are risks if unauthorized people enter any work zones.
ESS5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both. The term "involuntary resettlement" refers to these impacts. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement.	The standard is currently not relevant. No project-related land acquisition or restrictions on land use will take place and therefore, there is no potential for physical displacement (relocation, loss of residential land or loss of shelter) or economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood). The selected locations for potential ADS-B antenna locations and their access routes are intended to be on existing tower facilities; however, in the unlikely event that purchase or acquisition of any lands is needed any activity that could require involuntary resetlement (ESS5) will be screened out and will not be eligible for financing under the project.
ESS6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	ESS6 recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development and recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support.	Although there are no project induced impacts expected to occur on biodiversity conservation and living natural resources, the Standard iscurrently relevant as a precautionary measure, since there are areas of sensitive habitat near the perimeters of both airports. The ESMPs for all facilities consideroperational phase issues such as wildlife management or bird strikes through operational strengthening and planning

		ESS6 also addresses sustainable management of primary production and harvesting of living natural resources and recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples, who access to, or use of, biodiversity of living natural resources may be affected by a project.	support in line with the Airports EH&S guidelines.
ESS7	Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	ESS7 recognizes that these groups, when identified, may be referred to in different countries by different terms including "indigenous ethnic minorities," "aboriginals," "hill tribes," "vulnerable and marginalized groups," or "tribal groups." ESS7 applies to all such groups, providing they meet the criteria set out. For the purposes of this ESS, the term "Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities" includes all such alternative terminology.	The Standard is not currently relevant. There are no persons who meet the definition of indigenous people present in the project's area of influence.
ESS8	Cultural Heritage	ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present, and future. ESS8 sets out measures designed to protect cultural heritage throughout the project life-cycle.	The Standard is relevant. The project does not envisage any impacts on physical, cultural, and/or archaeological sites since physical works involving excavation or earth-moving will be limited to existing facilities that have alredy been cleared. However, it is triggered considering likely requirement of excavation below ground.
ESS9	Financial Intermediaries	ESS9 recognizes that strong domestic capital and financial markets and access to finance are important for economic development, growth and poverty reduction. The Bank is committed to supporting sustainable financial sector development and enhancing the role of domestic capital and financial markets.	The standard is currently not relevant, as there are no FIs involved in the project.
ESS10	Stakeholder Engagement	ESS10 recognizes the importance of open and transparent engagement	The standard is relevant. The main stakeholders are Government workers and officials as well as the nearby communities and the general public

	and Information Disclosure	between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.	who will make use of airport transportation services.

The project ESRS (Environmental and Social Review Summary) provides more details on the ESSs, which are currently relevant to the project. The project risk has been identified as 'moderate' under the World Bank's Environmental and Social Framework based on the location, type, sensitivity and scale of the project intervention, nature and magnitude of potential ES risks and impacts, and the implementing agency's capacity and ownership. The project ESCP (Environmental and Social Commitment Plan) sets out the actions to be taken by the GoSL to comply with relevant requirements for all the applicable ESS. The ESCP, as well as this ESA, are available on the SLASPA and GoSL websites.

3.2 Government of Saint Lucia

3.2.1 Environmental Laws

Table 3.2 lists environmental laws of Saint Lucia relevant to Environmental and Social Standards (ESSs) and the agencies with responsibility for their application.

Table 3.2 Environmental Laws of Saint Lucia

Related ESS	Agency	Responsibility	Legislation
ESS3 ESS4 ESS6	Department of Infrastructure, Ports and Energy	This Ministry is primarily responsible for the provision and maintenance of major infrastructure (roads and drains) within the state. It also issues licenses for the extraction of sand from beach areas. The Ministry is responsible for the provision and management of technical services in the areas of communications, meteorology, transport, electrical safety, roads, hydraulic and building infrastructure, and utilities. The Chief Engineer represents the Ministry on the Development Control Authority and the National Emergency Management Advisory Committee (NEMAC).	Motor Vehicle and Road Traffic Act 2003 Beach Protection Ordinance 1963
ESS1 ESS5	Department of Physical Planning	The objectives of this Act include ensuring that appropriate and sustainable use is made of all publicly and privately-owned land in Saint	National Physical Planning and

		Lucia in the public interest. The Act also promotes the protection and conservation of the natural and cultural heritage of Saint Lucia.	Development Act (2001 and 2005)
ESS1 ESS5	Development Control Authority (DCA)	Regulates development and sets out the requirements for ESIA studies	National Physical Planning and Development Act (2001 and 2005)
ESS3	Saint Lucia Solid Waste Management Authority (SLUSWMA)	This Act provides for the management of waste in conformity with best environmental practices and to provide for matters incidental thereto. The Saint Lucia Solid Waste Management Authority is responsible for providing a coordinated and integrated systematic approach to collection, treatment, disposal, and recycling of wastes including hazardous wastes. The Authority is also responsible for the management of two sanitary disposal sites, one in the north at Deglos, and the other in the south in Vieux Fort.	Solid Waste Management Authority Act (2004 and 2007)
ESS3 ESS5 ESS6	Department of Agriculture, Fisheries, Natural Resources and Cooperatives	This legislation establishes a legal framework for the management of forests and forest resources. Removal of and dealing in timber are regulated by a permit system. It establishes the guidelines for maintaining protected forests.	Forest, Soil and Water Conservation Act (1945 and 1983)
		This Act defines fisheries management and development, marine reserves and conservation measures, enforcement measures and other regulations applying to fisheries in the fishery waters.	Fisheries Act (1984)
		This Act creates a legal framework for wildlife protection, conservation, and management. A Chief Wildlife Protection Officer is responsible for administration and enforcement of the Act, research and data collection.	Wildlife Protection Act (1980)
		This Act provides for the conservation of land in Saint Lucia and establishes the Land Conservation Board. The main functions of the Board shall be to advise the Minister responsible for Agriculture and Lands on the general supervision of land.	Land Conservation and Improvement Act (1992)
ESS2	Department of Labor (Occupational Health and Safety Section)	This Act provides the standards of occupational health and safety in places of employment.	Employees [Occupational Health and Safety] Act, No. 10, 1985
ESS8	Saint Lucia National Trust (SLNT)	The Saint Lucia Nation Trust Act of 1975 established the Saint Lucia National Trust,	Saint Lucia National Trust Act (1975)

		which is a membership organization set up to help conserve the natural and cultural heritage of sites of Saint Lucia. The objectives of the Saint Lucia National Trust include the listing of buildings, objects and monuments of prehistoric, historic and architectural interest, and places of natural beauty.	
ESS6	National Conservation Authority (NCA)	The National Conservation Authority was established in 1999 "to identify, manage, conserve, and generally provide stewardship over natural assets including beaches, coastal, protected and other declared or designated areas, in a sustainable manner and to provide ancillary amenities thereby contributing to the social and economic development of Saint Lucia."	National Conservation Authority Act (1999)

The Development Control Authority (DCA) is empowered under the Physical Planning and Development Act No 29 of 2001 to consider and grant approval for all development within the state (Interview DPPS-MPDH, Executive Secretary- DCA). The DCA is made up of a government appointed Board of various professional interest and main technical government offices which also includes the Chief Engineer of the Ministry of Infrastructure or his representative. The Act does not include airports in a list of developments that require an EIA; and, the applications that are exempted from such consideration are listed in Schedule 3 of the said Act, including "(d) repairs to roads bridges, and harbor installations, (e) repairs to services". If the works are considered as "repairs" then it is unlikely that an EIA may have to be submitted to the Authority for evaluation and approval prior to the commencement of any project related activities; however, this should be confirmed with the DCA prior to undertaking any rehabilitation or construction works.

3.2.2 Environmental Policies

- National Environment Policy and National Environmental Strategy (2005)

In 2005, the Government of Saint Lucia approved a five-year National Environmental Management Strategy and a National Environmental Policy. The 2005 Policy, with a pending update initiated in 2014, is intended to guide implementation of national environmental goals and targets and track progress towards these goals and targets. The focus is on a clearly defined results-based operational strategy and action plan detailing specific modalities for interventions by national agencies as well as by regional and international development partners.

- National Land Policy (2007)

This policy is intended to guide the use, management, development and administration of land resources in Saint Lucia in order to optimize the contribution of land to sustainable development.

- National Energy Policy (2010)

The objective of the National Energy Policy is to create an enabling environment, both regulatory and institution, for the introduction of indigenous renewable energy to the national energy mix, thus achieving greater energy security and independence.

- National Climate Change Adaptation Policy (2013)

The National Climate Change Adaptation Policy provides a framework for addressing the impacts of climate change, in an integrated manner, across all key sectors. While the Policy specifically addresses climate change adaptation, it is recognized that some activities provide meaningful adaptation, as well as mitigation, co-benefits, thereby increasing resilience in the face of existing and emerging climate change impacts.

- National Water Policy (2004)

The goal of the policy is to sustain economic growth, human development and environmental sustainability by promoting and facilitating the use and management of freshwater resources in an efficient, sustainable, and equitable manner that is consistent with the social, economic, and environmental needs of current and future generations as well as with the country's international obligations.

3.3 International Commitments

3.3.1 International Labor Convention Commitments

Saint Lucia is a member of the International Labor Organization. The International Labor Organization produces Conventions, which are legally binding international treaties that may be ratified by member states. Saint Lucia has ratified a total of 28 Conventions (International Labor Organization 2009).

3.3.2 Civil Aviation Organization (ICAO)

The International Civil Aviation Organization (ICAO) is a UN specialized agency, established by States in 1944 to manage the administration and governance of the Convention on International Civil Aviation (Chicago Convention). The association has 193 member states, including Saint Lucia, whose well-being, growth and sustainability is monitored by ICAO. The ICAO codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth.

The ICAO Standards and Recommended Practices (SARPs) for each area of the agency's responsibility are contained in 19 Annexes. Each Annex deals with a subject area. All are subject to regular amendment and the detail in respect of many of them is contained in publications in the numbered ICAO Document Series. The ICAO Annexes are listed in the Table 3.3 below.

Table 3.3 List of ICAO Annexes

ICAO ANNEXES	
1	**Personnel Licensing**
2	**Rules of the Air**
3	**Meteorological Services for International Air Navigation**
4	**Aeronautical Charts**
5	**Units of Measurement**
6	**Operation of Aircraft**
	Part 1 International Commercial Aeroplane
	Part 2 Aeroplane
	Part 3 Helicopter
7	**Aircraft Nationality and Registration Marks**
8	**Airworthiness of Aircraft**
9	**Facilitation**
10	**Aeronautical Telecommunications**
	Vol 1 Radio Navigation Aids
	Vol 2 Communication Procedures on International Operations
	Vol 3 Communication Systems
	Vol 4 Surveillance and Collision Avoidance
	Vol 5 Radio Frequency Spectrum Utilization
11	**Air Traffic Services**
12	**Search and Rescue**
13	**Aircraft Accident and Incident Investigation**
14	**Aerodromes**
	Vol 1 Aerodrome Design and Operation
	Vol 2 Heliports
15	**Aeronautical Information Services**
16	**Environmental Protection**
	Vol 1 Aircraft Noise
	Vol 2 Aircraft Engine Emissions
17	**Security**
18	**The Safe Transportation of Dangerous Goods by Air**
19	**Safety Management**

The ICAO Annex 14[8] is relevant to this project. Annexes 2, 5, 7, and 8 contain international standards and no recommended practices (RPs). The remaining 15 Annexes contain both.

Contracting States are required to give notification of differences to standards and invited to notify differences from Recommended Practices in Annexes. This information is then listed in Supplements to the Annexes. It should be noted that ICAO Standards do not preclude the development of national standards which may be more stringent than those contained in an Annex.[9]

The ICAO Document Series (Docs) cover a range of matters from regulation to guidance. Some are free of charge while others are only obtainable at a fee. To access the Documents, visit ICAO's website.[10]

3.4 Key Factors of Airport Safety and Security

Runway construction projects are the most critical for the aviation safety since they imply modifying the operating conditions and involving non-aviation staffs and machines in the close vicinity of runway operations.

In an effort to ensure a safe and secure environment for air transport operations at aerodromes, including the movement and maneuvering areas, it is essential to adopt and implement processes, procedures and measures consistent with the ICAO SARPs and industry best practice as it relates to, among others, the following:

- Security
- Vehicle control
- Control of work in progress on the movement area
- Airport surface inspections
- Two-way radio communication

The maneuvering area is that part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons. The movement area, on the other hand, is that part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the maneuvering area and the apron(s).

3.4.1 Security

SLASPA has as its primary objective the safety of passengers, crew, ground personnel and the general public in all matters related to safeguarding against acts of unlawful interference with civil aviation.

A security system is established at both airports to deny access to unauthorized persons to those parts of the airport not intended for public use, among those the airside. The movement area of the airport is protected by a fence to prevent or deter the inadvertent or premeditated access of unauthorized persons. Gates provide access to the movement areas for emergency services, maintenance parties and other authorized personnel. Gates are locked when not in use and, when not, are always manned by security

[8] https://www.bazl.admin.ch/dam/bazl/de/dokumente/Fachleute/Regulationen_und_Grundlagen/icao-annex/icao_annex_14_aerodromesvolumei-aerodromedesignandoperations.pdf.download.pdf/an14_v1_cons.pdf
[9] https://www.icao.int/safety/airnavigation/nationalitymarks/annexes_booklet_en.pdf
[10] https://www.theairlinepilots.com/forumarchive/quickref/icaolist.pdf

guards. There is also a system of identity passes instituted at the airports for persons and vehicles. Persons or vehicles without correct passes are denied entry to the movement area.

More information on this subject matter is available in the ICAO Annex 17 on Security (Safeguarding International Civil Aviation Against Acts of Unlawful Interference), and ICAO Doc 8973 – Restricted (Aviation Security Manual).

3.4.2 Vehicle Control

Air traffic control (ATC) is responsible for the control of the movement of vehicles on the maneuvering areas. To maintain such control, vehicles operating on the maneuvering area must be fitted with radio telephony (R/T) on the appropriate channel, or closely escorted by an R/T equipped vehicle.

The SLASPA is responsible for ensuring that all possible steps are taken to cooperate with ATC in discharging its responsibility for control of vehicles on the maneuvering areas. In particular, action is taken to ensure that:

a. Only authorized vehicles are permitted on the maneuvering area;

b. Radio telecommunication(R/T) equipment is provided on vehicles and is maintained in a fully serviceable condition;

c. Drivers are fully conversant with:
   - Proper radio telecommunication procedures;
   - The terms and phrases used in air traffic control, including the ICAO spelling alphabet;
   - The meaning of visual signals on the airport, with particular emphasis on those intended to prevent inadvertent infringement of active runways;
   - The geography of the airports;
   - The “rules of the road” relating to vehicles and aircraft; and
   - The need to avoid infringement of the restricted areas associated with radio navigation facilities.

d. An airport plan is displayed in the cab of all vehicles indicating the boundaries of the maneuvering areas and the runway crossing points; and

e. Unless specifically exempted, vehicles are fitted with appropriate obstacle marking and lighting as specified in the ICAO Annex 14 (Areodromes), Chapter 6.

SLASPA is responsible for the supply, fitting and maintenance of signs, lights and markings needed for the control of traffic on the maneuvering areas.

3.4.3 Control of Work in Progress on the Movement Area

See Appendix H for chapter 8 of the ICAO Doc 9137 (Airport Services Manual), Part 8 (Airport Operational Services), on this subject.

3.4.4 Airport Surface Inspections

See Appendix I for chapter 3 of the ICAO Doc 9137 (Airport Services Manual), Part 8 (Airport Operational Services), on this subject.

Procedures for carrying out daily inspections of the movement area and control of foreign object debris (FOD) at both airports, are conducted in accordance with the ICAO standards and best industry practice. FOD is any object, live or not, located in an inappropriate location in the airport environment that has the capacity to injure airport or air carrier personnel and damage aircraft.

The surfaces of all movement areas including pavements (runways, taxiways and aprons) and adjacent areas are inspected, recorded, and their conditions monitored regularly as part of an aerodrome preventive and corrective maintenance program with the objective of avoiding and eliminating any FOD that might cause damage to aircraft or impair the operation of aircraft systems.

More information on FOD can be found in Appendix J.

3.4.5 Two-way Radio Communication

Two-way radio communication is essential for ground movement control, particularly within the airside restricted areas, to avoid runway incursions. Runway incursion are any occurrences at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and takeoff of aircraft. Communication procedures at aerodromes are in accordance with the ICAO Annex 10 (Aeronautical Telecommunication), Volume II (Communication Procedures including those with PANS status) and ICAO Doc 4444 (Procedures for Air Navigation Services-Air Traffic Management), Chapter 12 (Phraseology). Ground communication involving vehicles also use best industry practice. Both airports have designated VHF ground communications frequencies (see Table 3.4.5) All workers (temporary and permanent) to be granted access to the airside must undergo the SLASPA's training in airside safety and radio communications procedures.

Table 3.4 VHF Radio Ground Frequencies

Airport	VHF Radio Ground Frequency
Hewanorra International Airport	121.6 MHz
George F. L. Charles Airport	121.8MHz

All of the procedures relevant to airport safety and security, mentioned above, are applicable to all workers engaged as part of the project and require access to certain airport restricted areas. It is essential that, when required, all workers adhere to the airport procedures.

4. DESCRIPTION OF EXISTING ENVIRONMENT

4.1 Saint Lucia General Context

4.1.1 Location and Geography

Saint Lucia is a small island developing state (SIDS) located in the Caribbean Sea bordering the Atlantic Ocean at about 13°53'North, 60°58'West between Saint Vincent to the south and Martinique to the north (see Figure 2.1a). The island is approximately 616.4km^2 (238 square miles) in area with an estimated population of 177,301 in mid-2017. The island exhibits a punctuated mountainous terrain with a forested interior and is subject to a tropical climate. The major communities are located along the coast with the larger collection of population located in the north of the island.

4.1.2 Topography and Drainage

The topography of St. Lucia (see Figure 2.1b) is rugged due to its origin as a volcanic island, the younger part of which is the mountainous southern half, and the older the hilly but more nearly level northern half. The highest mountain, Mt. Gimie, rises 950 m (3,117 ft.) above sea level. Better known are the two peaks on the southern coast, Gros Piton (798 m/2,619 ft.) and Petit Piton (750 m/2,461 ft.), which together form one of the scenic highlights of the West Indies. In the upper reaches of the island the average range elevation is approximately 900 feet (274m) above sea level but this is also dominated by peaks such as La Sorciere (2221 ft./677m) and Piton Flore (1850 ft./564m).

Watersheds drain the highlands through steep, rugged streams and rivers, carrying substantial volumes of runoff as well as sediment during storm events. The Vieux Fort watershed (marked No. 16 in Figure 4.1aheads in the slopes of Mount Gimie, the nation's highest peak, and debouches at the coast by the airport as the La Tourney River. The Castries watershed (marked No. 34) drains a smaller area.

The lowlands and valleys of the island have fertile soil and are irrigated by many streams. Many of the island's rivers have been affected by sedimentation and siltation due to high erosion rates from clay-rich soils and poor past agricultural practices. Buildup of sediments and debris at the mouths of rivers and at obstructions such as bridges often leads to flooding upstream.

4.1.3 Climate

Annual rainfall in St. Lucia ranges from 250 inches in the wet central mountainous interior to 60 inches in the dry coastal locations (Figure 4.1b). This is largely due to the orographic effect as a result of the general topography of the island with a high central mountain range and lower coastal areas.

St. Lucia has two seasons; a dry season which starts from December and usually ends in May, and a wet season which is from June to November. It is during the wet season that St. Lucia is very vulnerable to hurricanes and other tropical storm occurrences as this is known as the hurricane season. It has been observed that some changes to these clearly defined seasons have been occurring, and this has been attributed to factors of global climate change.

The island enjoys a relatively pleasant climate with temperatures averaging around 27°C, a maximum temperature is 32° C. with minimum temperature of about 22° C experienced in the mountainous interior

during the cool months of November to January. While the island's relative humidity hardly varies, ranging in the high 70% year round, it is highest in the warmer parts of the year. The island is subject to the northeast Trade Winds with winds generally travelling from the east. It has been observed that stronger winds tend to occur during the drier season of the year.

Figure 4.1a Watersheds Saint Lucia

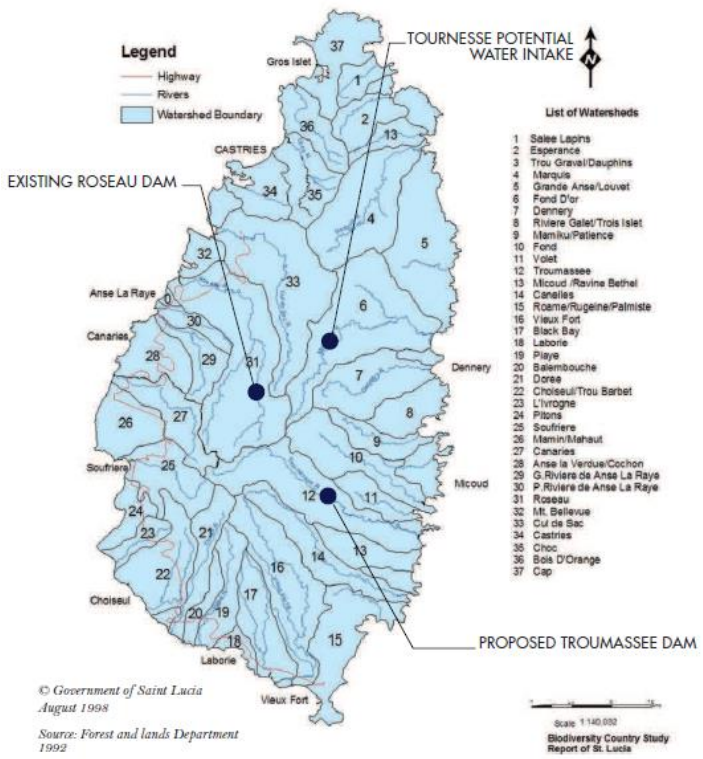
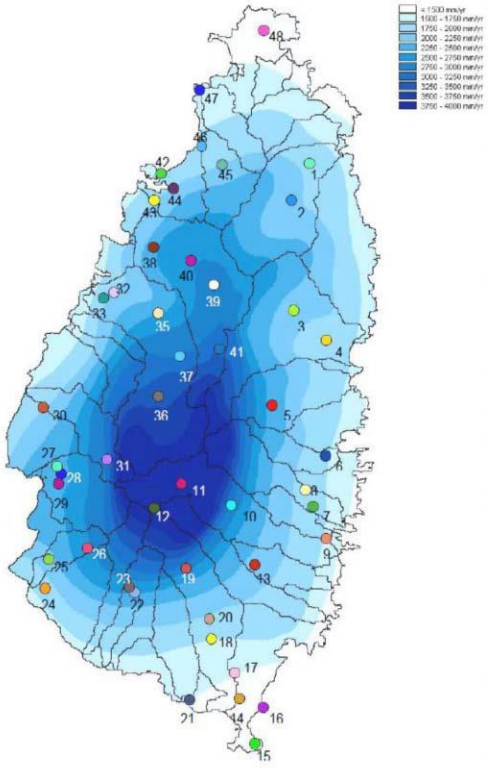


Figure 4.1b Precipitation Map of Saint Lucia[11] (rain gages indicated by colored circles)



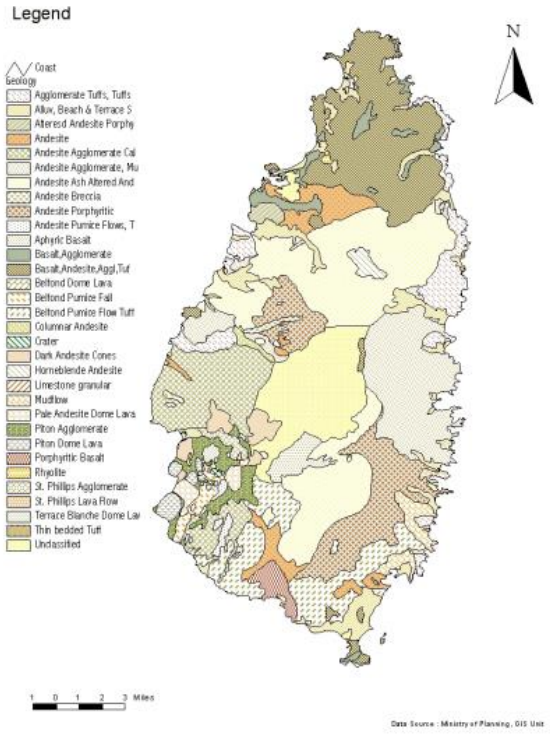
4.1.4 Geology

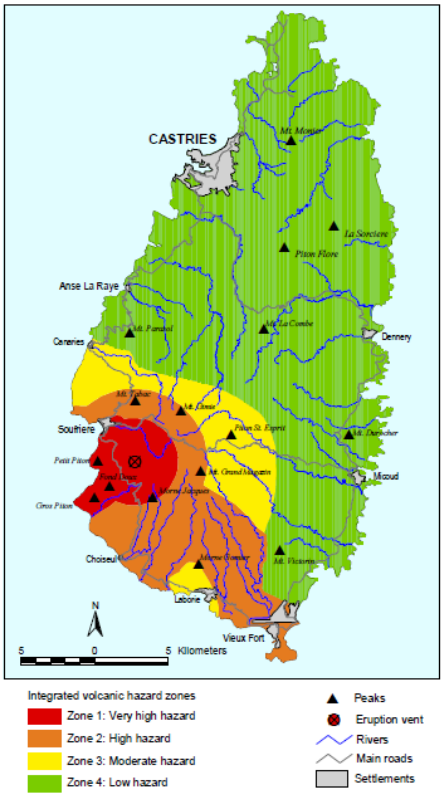
The rocks of Saint Lucia (Figure 4.1c) are almost entirely of volcanic origin with the oldest rocks, largely of rhyolite, andesite and various basalts, dating from the early Tertiary (Eocene) epoch. The rock formations have been grouped into three series, from oldest to youngest: a northern series (of Eocene age) of mainly basaltic composition (with occasional andesite porphyry and rhyolite) which have been heavily folded; a central series (of Miocene-Pliocene age) consisting of andesite, basalts, agglomerates and tuffs; and, a southwestern series (of Pleistocene age) of dacite composition which includes the island's active volcanoes and highest peaks. Near the volcanic craters are found pyroclastics produced by eruptions and avalanches of andesite pumice on the adjacent slopes. Near the modern shorelines are found beach deposits of eroded material brought in from rivers and washed in from nearby coral reefs. Alluvium and colluvium cover the river valleys and slopes, including areas near the Vieux Fort and Castries townsites.

[11]http://www.charim.net/sites/default/files/handbook/maps/SAINT_LUCIA/SLUFloodReport.pdf

The volcanic origin of the island is reflected in the hazard of volcanic eruptions on Saint Lucia (Figure 4.1d). The active volcano of Soufriere is located on the southwest side of the island where the hazard is the greatest, as evidenced by hot springs, fumaroles, and other geothermal manifestations in the area.

Figure 4.1c Geologic Map of Saint Lucia[12]Figure 4.1d Integrated volcanic hazard map of Saint Lucia[13]





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4.1.5 Land Use and Biological Resources

According to a 2016 assessment by the Ministry of Agriculture and Forestry, about one-third (35%) of the total land area (of 61,600 hectares) remains as natural vegetation with 7,550 hectares (about 12%) being Forest Reserves. The majority of the land (55%) is under agriculture, while one-tenth (9.5%) is surface water, urban use and exposed rock. The rainforest areas are dominantly the central regions of the island with cultivated areas surrounding these areas and extending outwards to the coastal regions (Figure 4.1e). Major crops cultivated in addition to bananas are coconut, cocoa, fruit trees grown either in monoculture or on an intercropped basis. Secondary forest lands encompass non-agricultural land coverage, with rural settlement comprising clusters of rural housing with surrounding areas devoted to small gardens and orchards.

[12]http://www.oas.org/reia/IWCAM/pdf/St.%20Lucia/Chapter%202.PDF
[13]https://www.mona.uwi.edu/cardin/sites/default/files/cardin/vchastlucia.5c06cc7a8f21b0.03773578.pdf

Terrestrial ecosystems are dependent in part on elevation and aspect relative to prevalent winds and rain and exhibit an astonishing variety (Figure 4.1e). Vegetation types range from elfin shrublands and cloud forest in the highest mountains, montane forest and lowland mountain rainforest and semi-evergreen seasonal forest in intermediate locations, and drier associations such as deciduous seasonal forest, littoral evergreen forest and shrubland, and even cacti shrub by the southern coasts. Freshwater swamps and mangroves also occur in isolated locations.

Figure 4.1e Land use and Vegetation Types[14]

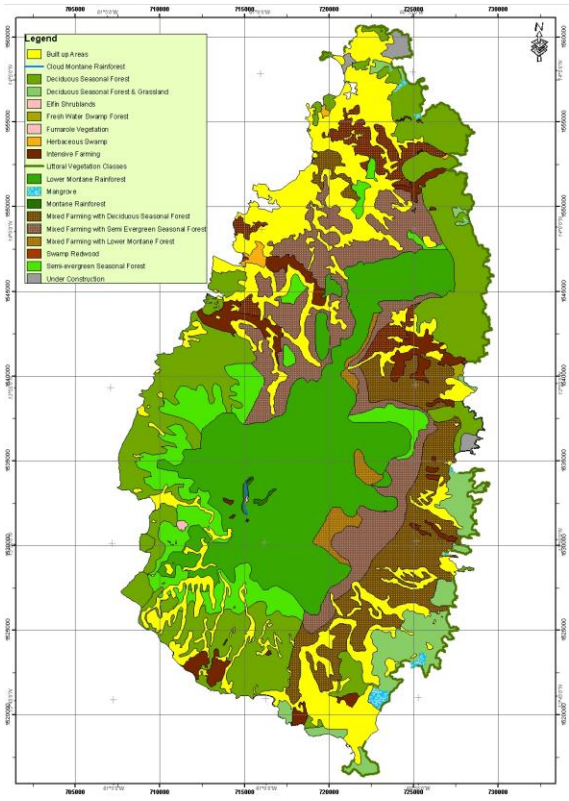
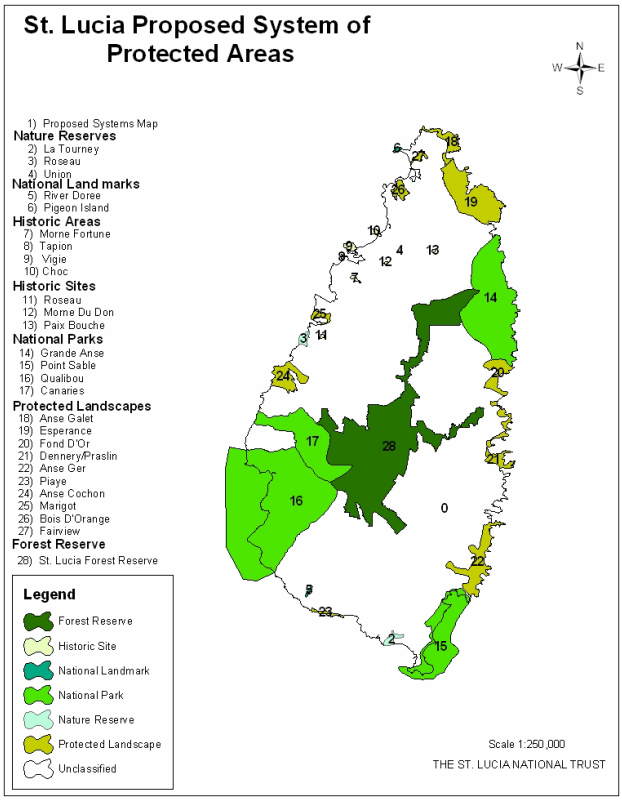


Figure 4.1f Protected Areas in Saint Lucia[15]



The island's rich association of vegetation types, geographic settings, and climatic variations results in high biodiversity. In all some 1,300 species of vascular plants and 145 species of ferns and related plants occur on the island. Mammal species number 17, reptiles and amphibians 24, and some 134 species of birds occupy the island (excluding migrants). Invertebrates recorded in a 2009 biodiversity survey included more than 800 species of beetles and 26 dragonflies, among others. More than 200 species are endemic to the island (found nowhere else) including 7 percent of resident birds and 53 percent of reptiles including the protected Saint Lucia fer-de-lance (*Bothropscaribbaeus*).[16] Chief threats are overdevelopment and invasive species of which there are over 300 (including mongoose, opossum, feral pigs, and African Snail); at least 69 species of plants have already disappeared, while the endemic iguana and white breasted thrasher are endangered.

[14]http://sluncf.org/Portals/0/Documents/Biodiversity/
[15]https://www.cbd.int/doc/pa/tools/
[16]https://www.cbd.int/doc/world/lc/lc-nr-05-en.pdf

Marine ecosystems and coastal zones are characterized by beaches, mangrove, seagrass beds, and coral reefs. As of a 2011 survey, Saint Lucian reefs are some of the healthiest recorded in the Caribbean,[17] and are highly diverse both in abundance and occurrence of larger individuals. Typically, the reefs have large boulders which provide refuge to a diversity of fish, particularly at Soufriere. Fishing is over 90% artisanal within 50 miles of the shore. Main threats are runoff from poor land use practices, unregulated sand mining, tourism-related development, and in some areas fishing-related activities.

A variety of protected areas have been declared or proposed in Saint Lucia. A system of protected areas (Figure 4.1f) has been proposed for a broad network of marine and terrestrial areas, including forest reserves, wildlife reserves, marine protected areas, and nature reserves, as well as national landmarks, historic areas and sites, and national parks.

4.1.6 Geo-hazard and Natural Disaster Vulnerability

Relevant geohazards include volcanic eruptions on Saint Lucia, which is rated as "high" for UVF and "low" for SLU as the active volcano of Soufriere is located on the southwest side of the island (Figure 4.1d). Tsunamis from the active subsea volcano of Kick-em-Jenny (located near Grenada) could reach 1.7 meters at Saint Lucia. The island is also subject to earthquake (seismic) risk that is fairly high, as the island is part of an active tectonic subduction zone – where one tectonic plate slides or scrapes below another, melting the underlying slab and creating the volcanoes of the region.

Seismic hazard (earth shaking) results from tectonic activity (the subduction of the Atlantic Plate beneath the Caribbean Plate). In St. Lucia the peak ground acceleration (expressed as a percentage (%) of g, the acceleration of gravity), is up to 15%g every 100 years, 25%g every 500 years, and 40%g every 1,000 years.

Landslides are also common, especially during heavy rain events. However, both airport sites are located on flat land away from landslide risks. The tentative locations for the ADS-B towers at Cape Moule-a-Chique and Vigie Hill are also not vulnerable to this geohazard.

Saint Lucia is also susceptible to heavy rains and tropical storms by virtue of its geographical location in the Eastern Caribbean hurricane belt. The effects of flooding events are further compounded by inadequate drainage systems at both airports. This makes airport operations even more vulnerable to such extreme weather conditions, as was evident with Hurricane Tomas in 2010 and the Christmas Trough in 2013. The runways at both airports were affected. The UVF was significantly impacted by flooding as a result of Hurricane Tomas, forcing closure for at least 72 hours.

4.2 Local Environmental Conditions

4.2.1 Topography and Landscape

Both the UVF and SLU airports are close to the sea or shoreline with elevations as low as a few meters above mean sea level. Both airports are on lands that have been heavily altered by human activity and have been dedicated to airport activity for decades. The airports are close to or within the towns of Vieux Fort and Castries.

[17] https://www.cbd.int/doc/world/lc/lc-nr-05-en.pdf

The UVF was originally constructed in the 1940's over a former grassland or wetland area but since World War II has been used as an airfield. The grasslands were likely the result of sluggish natural drainage systems, which affect the UVF airport to this day. Lands bordering the UVF include the La Tourney Nature Reserve (a wetland to the north and west), the Pointe Sable Environmental (Marine) Protected Area to the southeast, and beaches and fishing ports towards the southwest. The tower at the hilltop of Cape Moule-a-Chiqueis located in a zone that has already been cleared and converted to communications use.

The SLU is located in the immediate environs of the capitol city of Castries. The airport lies adjacent to the Vigie Beach, an important local recreational area. Choc Cemetery is also aside the airport and is an important site for the community and is part of the greater Vigie Historic Area. Vigie Hill is located near the airport and is the site of an existing tower where a tower for the ADS-B antenna has been tentatively selected.

4.2.2 Drainage

There are unlined existing drains at both airports that are close to the ocean and are influenced by tidal effects. Gradients are slight with elevations as low as 2m at UVF and 3m at SLU. The drainage systems function sluggishly and, as a result, water from heavy rainstorms may pool close to the runway for extended periods of time before running off or infiltrating. Storm surge can also affect both airports because they are on the coastline.

The Vieux Fort Watershed drains a large area upstream from UVF including the southern slopes of the island's highest mountain, Mount Gimie. The river can carry significant flow during storm events and has been heavily infilled from siltation, reducing its capacity. Its channel was diverted around the west end of the airport during an expansion in the 1970'sthe river now bypasses the airport grounds. The old abandoned channel has been infilled and now lies beneath the UVF runway through a buried culvert that has been eroded in some areas by periodic flood events. High soil moisture near the buried channel may present a hazard for piping (soil liquefaction and collapse) and/or structural stability, especially during floods. The La Tourney River has been known to overbank during major flood events, though data are lacking on specific frequencies and a 2016 study found causes which may include upstream development or sedimentation of the river channel.[18]Dredging of the river to increase its capacity, and construction of a levee, were recommended in a 2019 study[19]; however, simulation of the 100-year rainfall event was calculated to be about 160 mm in one hour, resulting in widespread flooding around the UVF airports, but not from the La Tourney River itself(Figure 4.2a). In this light the main priorities are interpreted as the need for improved local drainage within the airport property.

At the SLU the drainage situation is less complex. Ditches surround the airport and adjacent roadways, and there is only one a large storm drain which leads from the airport through the cemetery and on to Vigie Beach. Storm water runoff from developments in the nearby city of Castries has greatly impacted the coral offshore of Vigie Beach, which is heavily used for recreation.

Figures 4.2b and 4.2c show the existing drainage channels at UVF and Figure 4.2d shows the drainage channels at SLU. Table 4.1provides approximate lengths of these drains and do not include any buried culverts at the airports.

[18]http://www.charim.net/sites/default/files/handbook/maps/SAINT_LUCIA/SLUFloodReport.pdf

[19]Comprehensive Flood Protection Study for the Hewanorra International Airport and its Environs and the George F.L. Charles Airport – Project Report #4 Options and Design Considerations. Arcadis Consultants, March 2019.

Figure 4.2a Maximum Inundation at Hewanorra International Airport for 1 in 100 Rainfall Event[15]

Figure 4.2b Western drainage channels at Hewanorra International Airport with La Tourney River to the north and west

Figure 4.2c Eastern drainage channels at Hewanorra International Airport

Figure 4.2d Drainage channels at George F. L. Charles Airport

Table 4.1 Approximate lengths of drains at UVF and SLU

Western Drains (UVF)		Eastern Drains (UVF)	
North	South	North	South
1500m	1100m	700m	1400m
Northern Drains (SLU)		**Southern Drains (SLU)**	
1068m		1638m	

4.2.3 Natural Habitat and Biodiversity

As mentioned previously, the UVF was constructed over a former grassland or wetland area, but the area itself has been used as an airfield for decades. It has been completely modified and now has little ecological value. The airport is bordered to the north and west by the wetlands of the La Tourney Nature Reserve (Figure 4.2e). The Nature Reserve is in the proposed status, and a field visit showed that it is settled with numerous homes and businesses. The Reserve may however host bird or amphibian populations of ecological or conservation interest. The La Tourney River will not be affected by the project induced works at UVF since these will be carried out within the airport perimeters which does not drain towards the river (see Figure 4.2b,c). The rehabilitation of existing drainages at UVF will most likely be restricted to areas within the perimeters of the airport and will be designed in such a way as to avoid negatively affecting the outfalls on the coastline. The improvement of the drainage work and project induced activities will not contribute in increasing the runoff through the drainage. The scope of the drainage work will be finalized through further technical studies after the project approval.

Mangroves extend from the former mouth of the La Tourney River northward to the airport boundary from the south. The area receives urban runoff from Vieux Fort and the airport but still retains ecologic value that should be considered in design and operation of the drains from UVF.

There is a unloading site for imported materials at the Wilrock Quarry site, which is the area devoid of vegetation on the southwest margin of UVF along the coastline (see Figure 4.2h). It is an area that may possibly be used as a potential unloading site for project materials, and possibly as a quarry, although actual locations will be decided during the detailed design phase. This site is convenient to the UVF and is not ecologically sensitive because it has already been cleared; however, if it will be used then care must be taken to avoid disturbing the nearby coastline, beaches, or any other areas of sensitive habitat, recreation, or fishing.

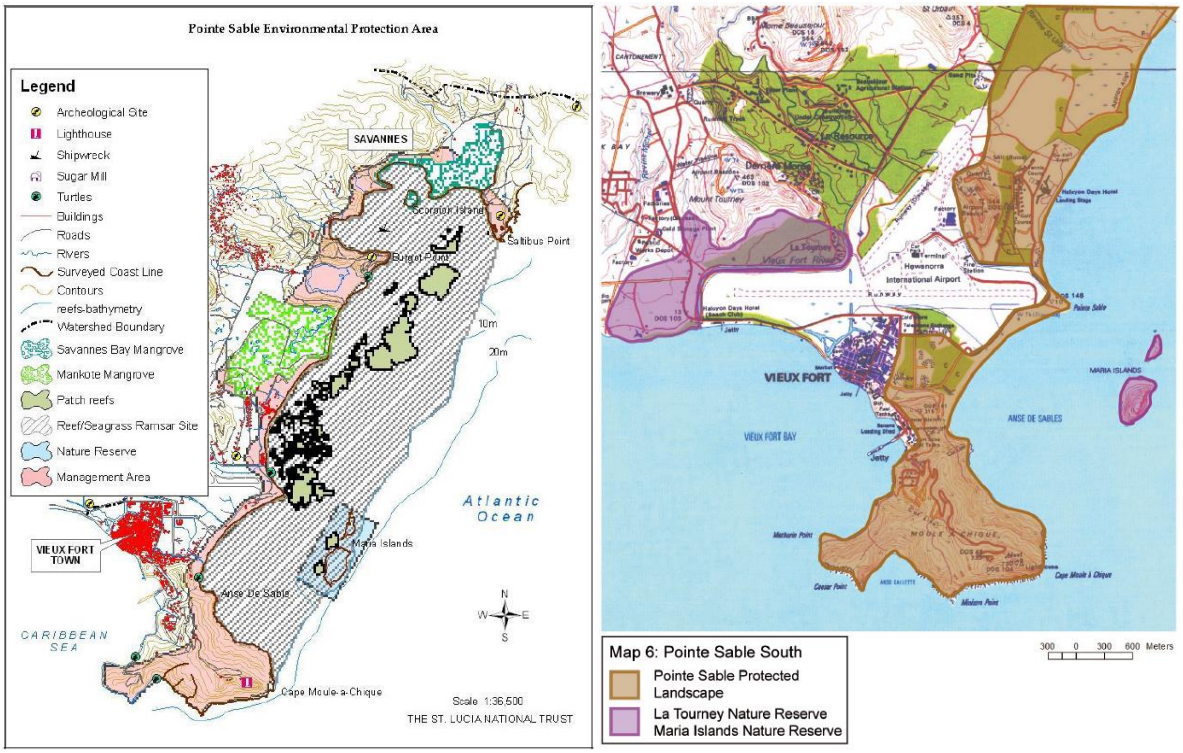
Figure 4.2e La Tourney Nature Reserve

The HIA is bordered to the east, south and southwest by the Point Sable Management Area (PSMA), where coral reefs and seagrass create important marine habitat (Figure 4.2f,g). A recent assessment[20] found that

[20]Preparation of Guidelines and Coral Reef Enhancement Plan for Point Sable Environmental Protection Area, October 2018: CREOCEAN Environment et Oceanografie. Report prepared for Department of Economic Development, Transport and Civil Aviation, Saint Lucia.

many reefs in the area are in a good state of conservation, and the chief threat to coral health is turbidity from sedimentation. The far northeast side of the Point Sable area is the most sensitive and ecologically valuable, featuring a RAMSAR site. Patch reef development occurs northeast of the airport by Sandy Beach, where one of the existing drains from the airport enters the sea. There are at least three turtle nesting sites on the southwest side of Cape Moule-a-Chique (Espeut, 2006), underscoring the importance of this natural habitat. Although the PSMA is in close proximity to the airport, the proposed project induced activities will be designed to avoid any impacts on the PSMA.

Figure 4.2f,g Pointe Sable Management Area (PSMA)[21]



The PSMA is also an Important Bird Area (IBA) with particularly rich shorebird breeding grounds at the Mankote Mangrove and Savannes Bay which are RAMSAR wetlands (swamps) on the far northeast end of the PSMA. Up to 20,000 Sooty Terns (*Sterna fuscata*) may nest on the northeast side of the PSMA, as well as significant numbers of Bridled Terns (*S. anaethetus*), Roseate Terns (*S. dougallii*), Royal Tern (*S. maxima*) and Red-billed Tropicbird (*Phaethon aethereus*). The Endangered St Lucia Black Finch (*Melanospizarichardsoni*) occurs in the forested areas although the population is unknown.[22] Herpetofauna in the area may include the Endangered St Lucia racer (*Liophisornatus*) and the vulnerable St Lucia whiptail (*Cnemidophorusvanzoi*) which are endemic to the nearby Maria Islands, which are rat- and mongoose-free.

The Moule-a-Chique promontory, south of the town of Vieux Fort, is forested and under protection as part of the Point Sable Management Area (PSMA) and is a mix of private and crown lands (Figure 4.2f,g). The forest itself hosts trails and sites of conservation interest. The tower that exists on Cape Moule-a-Chique is owned by the airport authority.

[21]https://www.cbd.int/doc/pa/tools/

[22]Anthony and Dornally, Important Bird Areas (IBAs) in the Caribbean – St Lucia. Birdlife International, 2006.

The SLU is on the northeast outskirts of Castries adjacent to Vigie Beach and Choc Cemetery. A recent marine assessment of the former showed that the reef is heavily impacted by sedimentation and turbidity from runoff of the city; however, the beach is used heavily for recreation. A storm drain leads from the airport through the cemetery and on to Vigie Beach. There are no protected areas near the SLU and the area can be considered as urban to peri-urban. The Choc Cemetery is actively used and is an important site to the communities of Castries.

The site for placement of the ADS-B antenna near UVF has been tentatively identified as the existing tower at Cape Moule-a-Chic. This site is on a hilltop or ridge line with a visible line-of-sight to the airport. The existing tower has already been converted to communications use and is not considered as an environmentally sensitive area. The tower site near SLU is atop Vigie Hill which is a residential area near Castries. Using the existing tower to place an additional antenna for ADS-B would not be considered socially sensitive from the point of view of land use, access, or homeowner perception.

Information on the measures thus far adopted by the SLASPA regarding bird and wildlife management is available in Appendix G.

4.2.4 Archeological and Cultural Resources

Cape Moule-a-Chique is a promontory on the south side of the UVF with a rich history. The etymology of the site name is believed to trace back to the French colloquial term for “small ticks” (redbugs or chiggers) that inhabited the local grasslands. Two historic forts exist (which gives the town of Vieux Fort its name) as well as a former sugar mill and lighthouse (see Figure 4.2f,g) and a former WWII radar tracking station. An Amerindian archeological site (see Figure 4.2f,g) is documented on the right (west) bank of the former channel of the La Tourney River where its mouth meets the sea; while this is outside the airport property and not in an area to be affected by project works, it shows that other nearby archeological sites may exist. Using the existing tower at Cape Moule-a-Chique would not endanger any of the area’s physical cultural resources, as no new areas would need to be cleared or otherwise affected.

The historic Vigie Lighthouse is on a ridgetop (Vigie) above the SLU in Castries and is an historic site worthy of preservation. Walls and mausoleums of the Choc Cemetery, which also includes a World War military cemetery, may also represent historical artifacts, although the area is currently in use. Using the existing tower at Vigie Hill would not endanger any of the area’s physical cultural resources, as the antenna would be placed on an existing communications facility.

4.2.5 Traffic

In the case of the UVF, most project works will be confined to the airport premises. Other activities relevant to the project, including the transportation of equipment, aggregate and other materials as well as disposal of waste, will require use of the main road network. There are two access roads to the UVF from the main road. One of these is immediately opposite the Wilrock Quarry, which may be used for ship offloading if necessary; this would have the benefit of avoiding road transport for some equipment or materials. The SLU on the other hand has only one access road to the Vigie Peninsula.

Figures 4.2h and 4.2idepict the main road networks near both airports.

Figure 4.2h Main road network near the UVF in Vieux Fort

Figure 4.2i Main road network near the SLU in Castries

4.2.6 Noise

There is no baseline data available with respect to minimum decibels and no anticipated increase as a result of this project. There may be some temporary increase of noise due to the rehabilitation work.

It may be noted that existing daytime ambient noise levels near the project locations are consistent with that of airport operations, particularly during afternoon into early night scheduled and non-scheduled operations. Other noise sources include vehicular traffic and stationary sources encountered along the roadways near the airports consistent with that of town and city settings. Ambient noise levels at night are typically lower than during the daytime.

There are residents living in the vicinity of the potential project areas. Near the airport of UVF there are mostly businesses within about 1,000 feet of the proposed project location with very few residential homes. Within about 3,000 feet of UVF there are several residences in the town of Vieux Forte also some residences in the La Tourney/Cedar Heights areas.

4.2.7 Quarry and Aggregate Supply

There is an existing, unnamed quarry less than a mile away to the northeast of the UVF. It has not been determined whether this supplier will be used to provide aggregate for the project works at that airport; however, should the supplier be used, the traffic flow would not be impeded by the transport of materials since it is opposite an access road to the airport which bypasses the main highway.

Wilrock Quarry is another site on the southwest part of the UVF property. At present the area is used specifically for stockpiling and distribution of quarry material to other countries, and so it is primarily an area for ship loading and offloading. Quarry materials shipped into Saint Lucia normally arrive at the Vieux Fort Sea Port, located in the town of Vieux Fort, south of the UVF. The seaport and Wilrock Quarry are both located less than 3 miles from the airport and are only accessible via the main road network (see Figure 4.2h).

The source of any required sand or aggregate will be determined based on design characteristics. In any event, the source will be ascertained and evaluated to ensure that the supplier does not engage in sand mining or use of child labor.

4.3 Socioeconomic Conditions

4.3.1 Affected Communities

All activities related to the project will be concentrated on the existing airport sites with the exception of the installation of ADS-B antennae on the existing towers at Cape Moule-a-Chique and Vigie Hill.

The social infrastructure near the airports in both Vieux Fort and Castries provide health, education, financial, ecclesiastical, postal, law enforcement and other services synonymous with urban settings. Based on the project's activities, the communities of La Tourney and Cedar Heights near the UVF and Vigie near the SLU are not likely to be affected significantly.

Vulnerable groups such as the poor, elderly, disabled and members of the LGBTQ community are generally not excluded from stakeholders' engagement and decision-making processes.

Table 4.2 provides data from a 2010 population housing census.

Table 4.2 Central Statistics Census 2010 Population Housing Census

COMMUNITY	NO. OF HOUSEHOLDS	POPULATION		
		Male	Female	Total
Town of Vieux Fort	348	1,259	1,243	2,502
La Tourney/Cedar Heights	495	693	698	1,391
Beanfield	Not available	31	27	58
City of Castries	362	476	574	1,050
Vigie	117	133	155	288
Vide Bouteille	186	261	270	531
La Clery	559	702	776	1,478
L'Anse Road	Not available	172	189	361
Sans Souci	Not available	284	335	619

4.3.2 Land Use near airports

Other than the town of Vieux Fort located within two kilometers (2km) south of the UVF[23], much of the land in the vicinity of that airport is used for commercial and agricultural purposes. In particular, that part of the town of Vieux Fort adjacent the Laborie - Vieux Fort Highway is occupied primarily by businesses. Bordering the immediate north is an industrial free zone and a solar farm project with the neighboring communities of La Tourney and Cedar Heights more than 1km away. The nearby Sandy Beach and AnseDes Sables Beach to the southeast is accessible by the general public and used for recreational activity. Lands to the southwest and west along the coastline are sparsely settled. Wilrock Quarry uses a small portion of land in that area for the stockpiling and distribution of aggregate.

Land use near the SLU is mostly commercial with the city center about 1km away. Other than Vigie Hill to the northwest, which is occupied by mostly residential properties, many of the buildings in neighborhoods within 1km are mixed use. Vigie is also home to the St. Mary's College, a renowned secondary school, as well as the Vigie Lighthouse station, which dates back to 1883. To the immediate north of the runway is the Peninsular Road and adjacent Vigie Beach. This beach is popular, especially on weekends, and provides public access for recreational use. The Choc Cemetery lies on a portion of land between the Vigie Beach and the airport. To the immediate south is the John Compton Highway and adjoining Seraphine Road which are almost the same length. Along the John Compton Highway are commercial businesses and adjacent the Seraphine Road is a playing field as well as a few large lots covered mostly with turf and scattered trees. Land adjacent Seraphine Road is sparsely populated. To the immediate east is the entrance to Port Castries harbor.

[23] http://www.charim-geonode.net/maps/217/view

4.3.3 Employment, Livelihood and Income

Economic activity and employment in Saint Lucia are driven mainly by the tourism (hotels, etc.), construction and agricultural sectors; however, there is potential for the project to provide employment to some unskilled workers. According to the Central Statistical Office of Saint Lucia, in 2018 overall unemployment was 20.2% and youth unemployment 36.3%.

The aviation sector plays a pivotal role in sustaining the tourism industry. Table 4.3 provides information on aircraft movements (landing and takeoff), including domestic helicopters, for the UVF. Appendix C shows the flight schedule for UVF for August and September 2019. There is generally an increase in aircraft movements from mid-November to March (winter season).

Table 4.3 Aircraft movements at the UVF for 2018

MONTHLY AIRCRAFT MOVEMENTS AT UVF (2018)											
Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1,816	1,768	2,090	1,694	1,343	1344	1,212	1,166	850	1,094	1,314	1,652

Tourism is the single largest economic activity on the island. It is primarily concentrated in the town of Gros Islet in the northernmost part of the island, and Soufriere in the southwest. The sector is also dependent on the blue and green economies. The development of eco-tourism is on the rise and the Pointe Sable Management Area near the UVF has much potential for economic growth. The project is not expected to hinder the tourism industry or affect the livelihood of those who currently depend on it.

Information on selected visitor statistics between 2014 and 2017, from the Central Statistical Office of Saint Lucia, is provided in Appendix D. Appendix E provides the Saint Lucia Tourism Authority's annual passenger arrival by airport entry from 2014 to 2018.

Although the practices of crop and livestock production are the most productive subsectors of the agricultural industry in Saint Lucia, there is little agricultural activity near the airports. Most of the areas close to the project sites consist primarily of commercial and residential developments.

4.3.4 Land Acquisition and Resettlement

Since most works pertaining to the project will be implemented within the boundaries of the two existing airports, which are public lands and free of encroachments, there is no possibility of displacement or relocation of individuals or households .The ADS-B antennae are tentatively to be located atop existing towers outside the existing airport properties on Cape Moule-a-Chique and Vigie Hill. It is possible that during detailed design there are alternate locations proposed for the ADS-B antennae, in which case these locations will be screened, and exclusion criteria applied to ensure that there is no potential for involuntary land acquisition or resettlement.

5 PROJECT RISKS AND IMPACTS

5.1 Overview and Preconstruction Activities

This chapter assesses the potential environmental and social risks and impacts of the proposed project interventions. As mentioned earlier, Components 1 and 2 include physical improvements and the activities under these components are assessed in detail. The technical studies under component 2 and 3 will also be required to comply with ESS1 of the World Bank Environmental and Social Framework; therefore, the Terms of Reference and technical study reports for activities under these components will be reviewed to ensure that they fulfill the requirements of ESS1.

The proposed actions with physical works that were assessed for potential environmental and social risks and impacts include:

At UVF:

- Runway resurfacing
- Runway end safety areas (RESAs) construction
- Instrument landing system (ILS) and lighting systems installation
- ARFF facility remodeling and refurbishment
- Stormwater drain rehabilitation

For both airports:

- ADS-B antenna array installation outside existing airport properties

The entire installation of the ILS system, as well as any works or improvements to the ARFF equipment and facilities, will be undertaken within the UVF premises. Storm water drain improvement activities will be confined to the areas within the existing airport facilities of UVF and will be designed to prevent off-site effects from sediment runoff.

The environmental and social risks and impacts are discussed below under two (2) phases:

1. Preconstruction and Construction phase; and,
2. Operation phase.

The discussion below is organized around each of the Environmental and Social Standards (ESS) and provides details on the risks and potential impacts.

5.1.1 Environmental and Social Assessment (ESS1)

Inherent in this discussion is the overarching role of ESS1 (Assessment and Management of Environmental and Social Risks and Impacts) which develops this ESA and its ESMPs; and, during implementation, the updating of the ESA and ESMPs during the detailed design phase of the project. As well during the procurement of services the contractor will be tasked with fulfilling all the relevant requirements by submitting a C-ESMP and associated plans as described in section 7 of this ESA.

5.2 Construction Phase

5.2.1 Labor Demand, Labor Influx and Worker Health and Safety (ESS2)

Analysis of the labor and working conditions (LWC) under ESS2 shows that the project will hire direct workers who will be engaged directly by the SLASPA to work specifically in relation to the project. Some specialized personnel may be hired to install state-of-the-art safety equipment and to provide training for the purpose of capacity building. Some unskilled workers may also be hired to perform small, repetitive, and unskilled tasks, but relatively in a small amount that will be estimated before the project appraisal.

The project may also be engaged with contracted workers who are people employed or engaged through third parties for different aspects of project implementation including repairs to equipment and airport facilities. An estimate of the number of workers will be provided before project board approval; however, it is anticipated that this figure should not exceed 50 persons.

Government civil servants are expected to be involved in the project, whether full-time or part-time. They will remain subject to the terms and conditions of their existing public-sector employment agreement or arrangement, unless there has been an effective legal transfer of their employment or engagement to the project. ESS2 will not apply to such government civil servants, except for ensuring the protection of the work force as it relates to Occupational Health and Safety. There will likely be the involvement of primary supply workers for the provision of raw materials, such as sand, for resurfacing the runway. The project does not intend to include the use of community workers.

Worker safety is critical to any operation. The mishandling of equipment, the improper storage and usage of various chemicals and construction materials on site, poor and unsafe working conditions, high levels of continuous noise and fumes, as well as inadequate safety equipment can cause serious injury and down time to the workers and project. The relevant best management practices to ensure worker safety as well as acceptable working conditions will have to be implemented along with adherence to the appropriate local legislation that govern health and safety. Proper facilities will need to be provided for workers so that they are able to dispose of their solid wastes, as well as sanitary wastes without any negative impacts on the environment.

Some operational, health and safety risks are associated to the hiring of an estiated amount of 20-50 low skill workers, coming from local communities. There are also potential risks for child labor, related to primary supplier who could be providing raw materials like sand, for the resurfacing of the airport runway. SLASPA will implement labor management procedures, Occupational Health and Safety (OHS), a grievance mechanism for workers as well as due diligence to prevent the use of all forms of forced labor and child labor as well as other pertinent instruments to address these potential risks.

5.2.2 Generation of Waste and Waste Management (ESS3)

The improper management and disposal of solid and liquid wastes can be detrimental to both the terrestrial and the nearby marine environment. The mishandling of construction wastes such as chemicals, detergents, greases, oils, building materials, can lead to the poisoning of the terrestrial environment. The entry of these substances into the marine environment, either through runoff, via drains, or by being blown by the wind, can also poison the marine environment or damage the fragile marine ecosystem. The management of human wastes on site is also critical for maintaining a healthy working environment and

reducing the risk of fecal contamination. The same can be said of food wastes for reducing the incidence of vector entry into an area and infestation.

The physical interventions at the airports will generate construction debris and hazardous or non-hazardous waste including, among others, wastewater, fuel, asphalt, chemicals, wood and building materials. The project will seek to avoid or minimize project-related emissions and generation of waste as well as promote the sustainable use of energy where there is opportunity to do so. The repairing and installation of equipment (including dismantling of old equipment) at the airports will generate construction debris and hazardous or non-hazardous waste that need to be disposed of in a proper way.

The project will promote proper waste management practices as part of the Environmental and Social Management Plans (ESMPs), which may also be used in CERC activities for debris removal and disposal. These measures would help minimization of hazardous and non-hazardous waste production and facilitate appropriate management of wastes. These measures will also be reflected in the contract documents (for repairing and installation) to ensure the requirements to manage waste from construction operations, including end location of the waste removed, are in accordance with ESS3.

5.2.3 Water Resource Management and Energy Efficiency (ESS3)

The technical specifications of different equipment will promote energy efficiency and measures to reduce greenhouse gas (GHG) emissions. The runway lighting system will utilize energy efficient Light Emitting Diode (LED) bulbs. Given the negligible change in emissions from the project, GHG accounting will not be undertaken. There are no opportunities for water conservation given the scope of the project.

5.2.4 Hazardous Materials (ESS3)

Based on a preliminary visual assessment of site conditions at UVF carried out during site visits during ESA preparation, there appeared to be no contaminated soils or water that would be encountered during the works at that airport. Further, the aerodrome rescue and firefighting (ARFF) training area, which could contain aqueous film forming foam (AFFF), is located at a distance from the runway. Storage tanks for jet fuel and hydrocarbons are also located some distance from the runway. However, there is reportedly an abandoned fuel line which crosses beneath the runway. If the abandoned line is uncovered during excavation, it will be carefully screened for residual hydrocarbon contamination using the training and protocols referred to in the ESMPs. Any contaminated soils or materials will be handled, stored, and disposed of appropriately. The project will also require the use of other hazardous materials such as asphalt, paints and other chemicals which must be appropriately managed by SLASPA at both airport facilities.

5.2.5 Air Pollution and Noise Emission (ESS3)

Increased noise levels from activities adjacent to or within communities and residential areas can be deemed as an unnecessary and unwanted nuisance affecting local businesses and day to day activities. Care must be taken in the judicious usage of any form of heavy noise and vibration equipment. Associated vibrations from the use of heavy equipment such as rollers can negatively impact surrounding communities, causing nuisances by shaking household items and possibly affecting the stability of nearby structures.

Among others, wind gusts are a safety hazard and one must be mindful that there is no shortage of soil, dust and other small particles on or near a construction site that can become airborne with the right amount of wind.

Workers at the sites and on the airport property will more than likely be susceptible to air emissions from vehicle exhaust or machinery operation, dust from excavation and material hauling and noise and vibration from construction activities. Given the distance of the communities from the project work sites, storage areas, entry and access points, members of those communities are less likely to be vulnerable to these effects. By and large, such exposures can be considered a temporary nuisance; however, if acute or prolonged, they can have health implications, which will not be case for the proposed interventions. Standard measures will be employed to reduce impacts of dust (e.g. wetting of road surfaces), noise (barriers or personal protection equipment), and air emissions (equipment and vehicle maintenance).

5.2.6 Increased Traffic and Potential Traffic Conflict (ESS4)

Community Health and Safety issues (ESS4) are relevant considering the repairing/renewal works and installation of equipment at both airports. Although most of the work will be confined to the existing and secured areas of the two airports, some of the related activities such as the movement of machinery and equipment and transportation of construction materials may increase the risk of traffic hazards and associated incidents.

5.2.7 Community Safety (ESS4)

The proposed project activities at the airports are restricted areas and fenced. SLASPA has their own security for controlling the airport premises. However, risks to community health and safety could occur if unauthorized persons enter work zones. SLASPA will review the requirement of additional security personnel at the detailed design stage based on the potential work schedule of different activities.

5.2.8 Land Acquisition and Resettlement (ESS5)

ESS5 states that if there are any project-related land acquisitions or restrictions on land use, then there is potential for physical displacement (relocation, loss of residential land or loss of shelter) or economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood).The project activities will not cause displacement or relocation of individuals or households, since activities will take place within the boundaries of the two existing airports which are already restricted and dedicated areas.

The ADS-B antennae will be tentatively located outside the existing airport properties on existing towers that are already dedicated to communication uses. These locations will be confirmed during implementation based on a detailed design study. If alternative locations are proposed, then careful screening and selection of the sites will be done to ensure that there is no resettlement or economic displacement. Any proposed sites where involuntary resettlement could apply must be excluded.

5.2.9 Loss of Natural Habitat and Biodiversity (ESS6)

Although impacts to natural habitat, biodiversity or living natural resources are not anticipated, care must be taken to not affect the nearby wetlands at the La Tourney Nature Reservoir sensitive marine and coastal habitat at the Point Sable Management Area. The project activities at UVF will be restricted within

the airport boundaries and therefore no potential direct or indirect project-induced impacts are expected to the PSMA or to the La Tourney Preserve. This will again be confirmed during the detailed design stage and the corresponding ESA update.

Measures to avoid or address such impacts are included in the ESMP for the UVF, including strict runoff and erosion/sedimentation control plans for these civil works. The ESMP provides guidance, including an evaluation of the systems and verification practices used by the primary suppliers, to ensure that any natural resource commodities will not result in any significant conversion or significant degradation of natural or critical habitats due to the physical work at the UVF. Primary suppliers, of sand for example, will be verified to ensure that raw materials are sourced taking the provisions of ESS6 into consideration. Ultimately, the SLASPA will identify where the supply is coming from and ensure that natural habitats are not affected in accordance with ESS6.

The ESMPs for all facilities also consider incursions of domestic animals or wildlife and bird strikes. SLASPA has developed a bird and wildlife management program that is consistent with ICAO and the World Bank EHS Guidelines for Airports.[24]Appendix G provides a brief insight into the SLASPA's Bird and Wildlife Control Program, which includes a Bird and Wildlife Control Committee and Airport Assistants with the responsibility for bird and wildlife control at the aerodromes. Areas for improvement may be identified throughout the project review for operational strengthening and planning that may reinforce alternative analysis covering possible impacts on terrestrial and marine habitats as well as migratory birds and flyways. These controls will be applied during the construction as well as operation phases.

5.2.10 Storm water, Erosion and Sedimentation (ESS6)

The improvement and rehabilitation of the existing, unpaved drainage systems at UVF may increase the velocity and flow rate of runoff leaving the sites, which could have negative impacts on downstream areas if poorly designed. The implementation of the project includes additional studies and design efforts to effectively reduce the risk of airfield flooding associated with the annual rainy season, hurricanes and climate change. The main environmental risk is from erosion and sedimentation that could impact off-site coastal and marine habitat, specifically the Point Sable Management Area. It may be noted that the terrain is flat at the work sites and there are standard construction protocols and operation design parameters to address these risks. Further, the drain rehabilitation design will be optimized to capture silt, debris, and oils before leaving the site perimeters.

The source of the raw materials has not yet identified, and quarries may also have impacts that need to be taken into account. The locations and permit status of quarries will be identified and evaluated during the detailed project design stage. Any incremental impacts from the project will be addressed as detailed in the ESMPs.

Access roads for the ADS-B antenna may also produce erosion and sediment runoff, if damaged during construction. This will be avoided by verifying that existing access roads are adequate, and that standard erosion control methods are applied.

[24]https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

5.2.11 Loss of or Damage to Archeological and Cultural Resources (ESS8)

During construction activities, there is the possibility of coming across or "chance finding" what may appear to be an historical or cultural artifact which may need to be studied and preserved by the relevant authorities. This is particularly important for works that may require excavation below ground such as the rehabilitation of existing drains. The ESMP therefore includes a chance finds procedure as a precaution that must be followed as part of construction contracts to be awarded under the project.

There is no potential for the Choc Cemetery and Vigie Lighthouse near SLU to be affected during the project. This will be further verified during the design phase and measures included in the ESMP as a precaution.

Historical resources have been identified near the existing communications tower at Moule-a-Chique near UVF (see Figure 4.2f,g). These will be avoided by using the existing access road and tower and will be verified during the detailed design phase.

5.3 Operation Phase

Potential biophysical impacts following completion of the proposed works are similar to that of the existing operational runway and are not considered further since this will remain unchanged.

A range of potential positive social and socioeconomic impacts can be identified as follows:

- Potential for increased income to tourism activities in Saint Lucia as a result of improved access.
- Provision of an upgraded surface that is resilient to the potential impacts of climate change such as increased rainfall, temperatures, etc.
- Improved drainage with silt and debris traps to lessen impact on coral reefs and beaches.
- A runway that is more resilient to the effects of heavier aircraft arrivals in the event of a future requirement for disaster relief.
- Improved safety to the travelling public due to the provision of a new surface that is less likely to damage planes during take-off and landing.
- Improved procedures for security and access.
- Improved procedures for wildlife management.

The potential negative impacts of airport operations are outlined in the World Bank EHS Guidelines for Airports and include noise and vibrations, air emissions, stormwater and wastewater, management of waste and hazardous materials, energy and water consumption, and safety of workers and nearby communities. The project will not cause any additional impact with regards to these aspects at either airport, hence these impacts are not reviewed in detail. The project's operational and planning support will, however, identify opportunities for improvements in operating procedures such as security and access control, bird and wildlife management, waste management, water and energy conservation, and others.

Use of the access roads for periodic maintenance of the ADS-B, as well as the need for future repairs to such roads, may be considered as a continued impact depending on the specific location and condition of the installations. As existing towers and access are planned to be used, no additional impacts would be

likely; however, if a new antenna tower and access road is proposed, then it would require maintenance throughout operations that would result in additional impacts. This will be assessed in the detailed design phase and the ESA and ESMPs updated accordingly.

6 ANALYSIS OF ALTERNATIVES

6.1 Overview

This section takes into consideration the possibility of alternatives when developing the proposed project. More specifically, it relates to site selection for equipment installation and the potential environmental and social impacts. However, most of the new equipment, with the exception of the ADS-B antennae, must be installed inside the existing airports' compound and is therefore not subject to a meaningful alternative analysis.

6.2 Site Selection for ADS-B Antennae

The ADS-B antennae are tentatively identified for installation on existing towers located outside the existing airport properties at Cape Moule-a-Chique and Vigie Hill. These locations will be verified during project implementation based on a detailed design study. If an alternative location is proposed, then careful screening and selection of the sites and their access routes and roadways will be done to ensure that there is no resettlement or economic displacement as well as no effect on natural habitat. Alternatives for installing the antenna on existing tower locations, with existing adequate access, will be favored. Any activity that could require involuntary resetlement will be screened out and will not be eligible for financing under the project.

6.3 Daily Work Schedule

Reducing the possibility of delays on the project and any disruptions to airport operations during the project is critical. As a result, runway construction and rehabilitation, as well as drainage works, should be undertaken during what is typically the dry season. At the UVF in particular, methods which avoid taking the pavement out of commission for lengthy periods should be employed. This can best be affected by resurfacing during periods that normally have little or no traffic (10 pm to 10 am) whilst maintaining safety standards and ensuring aircraft can use the runway during normal scheduled hours. It is therefore not anticipated that the aviation industry or any related services or sectors will be significantly impacted.

6.4 Design of Drains

The selection of the design for drain rehabilitation at UVF will consider alternatives that reduce sedimentation and debris transport outside the facility perimeters. At present the drains are unlined, and paving or otherwise improving the drains would necessarily result in an increase in flow rate and transport of sediment, debris, and oily water which would otherwise be reduced or ameliorated by the vegetation in the drains. Therefore, the design must incorporate the means to capture the sediments and debris, remove any oily water, and dissipate energy before it reaches the discharge points at the ocean, and this must be accomplished within the airport property boundaries. Further review and assessment of the hydrology, debris, and sediment in the drains will be conducted as part of detailed design development of the storm drains, and solutions may include innovative sediment traps, floating debris removal screens, oil-water separators, or other measures to improve the environmental performance of the drainage systems at both airports. The drains will also review, verify and take into consideration the 1:100-year flood event (Figure 4.2a) for resiliency against major storms.

6.5 No-Project Alternative

One alternative is to not undertake the project at all. In this case there would be continued operation and safety risks at both airports. If a new airport is constructed, then it would benefit from the new equipment and operations procedures developed by the project. In this sense there is a “no-regrets” outcome of implementing the project.

7 MITIGATION MEASURES

7.1 Overview and Preconstruction Activities

Details of the mitigation plans and measures to be implemented to avoid or minimize social and environmental impacts identified in section 5 are presented in this chapter of the ESA. These plans and measures are amplified in Section 8 in the context of the Environmental and Social Management Plans (ESMPs) and Appendix A contains summary matrices of the ESMPs that also provide the language for the contractor and requirements to be included in procurement documents to guide the preparation of C-ESMPs by contractors. Finally, this section of the ESA provides the criteria to be considered during development of physical works locations, design, and planning, as well as during the construction and operation phases.

Details of mitigation measures relative to each ESS are discussed below.

7.1.1 Environmental and Social Assessment (ESS1)

It must be noted that prior to the construction phase the following actions must be taken to fulfill the requirements of ESS1, the overarching assessment standard that guides the safeguards process:

- Update the ESA and ESMPs to address detailed designs, selected locations and site conditions, and include any new information.
- Staff the environmental and social specialists in the PIU and refine budgets for supervision.
- Develop bid and contract (procurement) documents to include relevant specifications, ESMPs, and other contractor's requirements.
- Other activities described in the ESCP as applicable.

These critical preconstruction actions will ensure that environmental and social mitigation measures are built into the project design, execution and supervision. Further, the following actions must be taken to fulfill the requirements of ESS10 for Stakeholder Engagement and Information Disclosure:

- Disclose and publish the draft ESA, SEP, and ESCP on the Government of Saint Lucia website
- Hold public consultations on the draft ESA and other safeguards documents
- Initiate the Stakeholder Engagement Plan (SEP) and Grievance Redress Mechanism (GRM) for the project.

7.2 Construction Phase

7.2.1 Labor Management Plan (ESS2)

SALSPA has preppared Labor Management Plan (LMP), which is part of the this ESA as Annex -F. The LMP, as a living document and will be reviewed and updated as necessary throughout the development and implementation of the project. The LMP will help in addressing the follwing risks: i) Health screening and monitoring where appropriate, ii) Protective measures for hazardous conditions or substances, iii)

Workers training, iv) Accident and incident monitoring procedures, v) Emergency response procedures vi) Remedies for adverse environmental or social impacts, vii) Terms and conditions of employment such as rights to regular payment hours of work, overtime, adequate rest, benefits such as annual, sick, maternity, and family leave and timely notice of termination, vii) Non Discrimination and equal opportunity; provisions for all aspects of employment and including measures to prevent and address harassment, intimidation and or exploitation, viii) Prohibitions against child labour and forced labour; and ix) Access to grievance mechanisms specifically for direct and contracted labour.

The LMP also includes the following aspects:

- Overview of Labor Use on the Project
- Assessment of Key Potential Labor Risks
- Brief Overview of Labor Legislation: Terms and Conditions
- Brief Overview of Labor Legislation: Occupational Health and Safety
- Responsible Staff
- Policies and Procedures
- Age of Employment
- Terms and Conditions
- Workers Grievance Redress Mechanism
- Contractor Management
- Community Workers
- Primary Supply Workers

In addition, the LMP includes suggested contracting provisions to ensure compliance with the labor management requirements described in the LMP.

The contractor shall ensure that all workers operate within a safe environment. All relevant Labor and Occupational Health and Safety regulations must be adhered to ensure worker safety. The contractor shall provide the contracting officer with an occupational health and safety plan for approval by the local health authority prior to the commencement of site activities. Appropriate information shall be posted on site to inform workers of key rules and regulations to be followed.

Sanitation facilities shall be provided for all site workers. All sanitary wastes generated as a result of project activities shall be managed in a manner approved by the contracting officer and the local authority responsible for public health[25]. The contractor shall ensure that there are basic medical facilities on site and that there are staff trained in basic first aid. Workers must be provided with the necessary protective gear as per their specific tasks. These include, among others, hard hats, overalls, gloves, goggles and boots.

7.2.2 Waste Management Plan (ESS3)

SLASPA will prepare a general Waste Management Plan at the detailed engineering design phase. This plan will be further updated with site specific information by the contractors for all construction works.

[25]The Ministry of Health, Wellness, Human Services, and Gender Relations, in particular the Environmental Health Department, is the agency responsible for public and environmental health matters, and the issuing of the relevant health permits. It also reviews Occupational Health and Safety plans as part of project reviews.

The plan will conform to the solid waste management policies and regulations of the relevant Saint Lucian authority[26]. Under no circumstances shall the contractor allow construction wastes to accumulate to cause a nuisance or health risk due to the propagation of pests and disease vectors. The Waste Management Plan shall include a description of how all wastes will be stored, collected and disposed of in accordance with current law. Additionally, the contractor shall provide for the regular removal and disposal of all site wastes and provide the contracting officer with a schedule for such removal.

In addition to the above, all waste introduced during works relating to the rehabilitation of the runway at UVF, shall be removed after every work session and stored at a location at least 1,000 meters from the runway until collection and disposal in accordance with current law.

As mentioned earlier, sanitation facilities shall be provided to site workers and all sanitary wastes generated as a result of project activities shall be managed in a manner approved by the contracting officer. The contractor shall also provide the contracting officer with a liquid waste management plan as part of a site waste management plan that conforms to the waste management policies and regulations of the relevant Saint Lucian authority[27]. Under no circumstances shall the contractor allow construction related liquid wastes to accumulate on or off the site, or to flow over or from the site in an uncontrolled manner or to cause a nuisance or health risk due to its content.

Specific elements of the contractor's liquid waste management plan shall include:

- contractor to abide by all pertinent waste management and public health laws;
- waste collection and disposal pathways and sites to be identified for all major waste types expected from demolition and construction activities;
- construction and demolition waste to be stored in appropriate bins;
- liquid and chemical wastes to be stored in appropriate containers separated from the general refuse;
- all waste to be collected and disposed of properly in approved landfills by licensed collectors;
- records of waste disposal to be maintained as proof for proper management as designed;
- contractor to reuse and recycle appropriate and viable materials (except asbestos) whenever feasible;
- construction related liquid wastes not to be allowed to accumulate on or off site, or to flow over or from site in an uncontrolled manner or cause a nuisance or health risk due to its contents.

Considering the negative impact foreign object debris (FOD) can have on aircraft operational safety at airports, the contractor shall also ensure that, as part of the waste management plan, there are procedures in place for thorough inspection of the runway and other areas used during execution of his/her duties. To ensure there is no buildup, such inspections shall be conducted regularly during periods of work as well as before vacating the airport premises to ensure the area is free of FOD. These inspections shall be coordinated with the airport operator.

The waste management plans and practices within the ESMPs may also be used in emergency response (CERC) activities for debris removal and disposal. These measures seek to minimize hazardous and non-

[26]The St. Lucia Solid Waste Management Authority is the responsible agency. The Environmental Health Department of the Ministry of Health may request such plans as part of their permitting process as well.

[27]As above.

hazardous waste production and facilitate appropriate management of wastes. These measures will be reflected in contract documents to ensure the requirements to manage waste from construction operations, including end location of the waste removed, are in accordance with ESS3.

7.2.3 Waste Conservation and Energy Efficiency (ESS3)

There are limited opportunities for energy conservation during the construction phase of the project. However, as part of the project design, energy efficient lighting (LED bulbs) will be specified for use in the ILS.

The use of water during construction (distinct from operations) will be limited and mainly for ground spraying for dust control. Concrete mixing will most likely be done off-site. No separate resource efficiency will be prepared for the project.

7.2.4 Hazardous Materials (ESS3)

Bitumen used during chip-sealing may generate hazardous components in soils or runoff, or as fumes during the installation process. Given resurfacing is typically completed when it is dry and the surface hardens as the hydrocarbons in the mixture evaporates relatively quickly after the chip seal is laid, runoff of hydrocarbons in stormwater from the newly laid surface is considered as a minimal potential impact. Additionally, the grass strip along the edge of the runway has the potential to absorb small amounts of hydrocarbon runoff should it occur. Storage and handling of the bitumen material itself should be managed as described below.

During construction, the use of any hazardous materials including oils, fuels, and petroleum products such as bitumen or asphalt, shall conform to the proper use recommendations of the product. Waste hazardous materials and their containers shall be disposed of in a manner approved by the contracting officer. SLASPA will prepare a general Hazardous Materials Control Plan at the detailed engineering design phase that will include operations at both airports. This plan will be further updated with site specific information by the contractors for all construction works if the operation involves the use of these materials. This plan must include estimated quantities to be consumed in the process, storage plans, spill control plans, and waste disposal practices to be followed. The plan and the manner of management are subject to the approval of local authority responsible for safety, waste management, and the contracting officer[28].

Elements of SLASPA's hazardous materials control plan shall include:

- contractor must provide temporary storage on site for all hazardous or toxic substances;
- hazardous or toxic substances are to be kept in safe containers labeled with details of composition, properties and handling information;
- the containers of hazardous substances must be placed in a leak-proof container to prevent spillage and leaching;
- the wastes shall be transported by specially licensed carriers and disposed in a licensed facility;
- paints with toxic ingredients or solvents or lead-based paints will not be used;
- banned chemicals will not be used on any project.

[28]The local Authorities here are the Saint Lucia Fire and Emergency Services, The Saint Lucia Solid Waste Management Authority, and the Ministry of Health.

All paints and preservatives shall only be used with the approval of the contracting officer. In an effort to make a well-informed decision regarding the potential for environmental effects and suitability of such products, information describing the essential components of the materials to be used shall be provided to the contracting officer. Storage, use, and disposal of excess paints and preservatives shall be managed in conformance with the manufacturers' recommendations and as approved by the contracting officer. The contractor shall provide the contracting officer with a list of materials and estimated quantities to be used, as well as storage, spill control, and waste disposal plans to be observed during the execution of the contract. This plan is subject to the approval of the contracting officer. Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies.

It is also necessary to ensure that any legacy issues, such as oil or fuel pollution that may exist in soils that may be excavated or uncovered beneath the runway and other infrastructure to be repaired, are handled properly. While storage tanks for jet fuel and hydrocarbons are located some distance from the runway, there is an abandoned fuel line which crosses beneath the runway. Accordingly, soil testing will be required in areas that will be excavated to determine whether residual hydrocarbons are present. Further, if the abandoned line is uncovered during excavation, it will be carefully screened for residual hydrocarbon contamination and any contaminated soils or materials will be handled, stored, and disposed of appropriately. The aerodrome rescue and firefighting training area, which may contain aqueous film forming foam (AFFF), is located at a distance from the runway. Nevertheless, if any AFFF is encountered during the works it must also be stored, managed, and transported according to best practice. The design of the infrastructure will consider measures to minimize impacts in cases of spills and retention of sediment that may runoff into adjacent areas, e.g. through oil-water traps.

Finally, the project does not anticipate the purchase or use of pesticides. However, if incidental and minor use of pesticides is required (e.g. for termite treatment or insect extermination), it must be approved by the contracting officer and shall conform to the manufacturers' recommendations for use and application. Any person using pesticides shall demonstrate that they have read and understood these requirements and can comply with the usage recommendations to the satisfaction of the contracting officer. All pesticides to be used shall conform to the list of acceptable pesticides that are not banned by the relevant local authority. If termite treatment is to be utilized, only licensed and registered pest control professionals with training and knowledge of proper application methods and techniques shall be used. This is to ensure that appropriate chemical management measures are implemented to prevent contamination of surrounding areas.

7.2.5 Air, Noise and Dust Control (ESS3)

Workers at the sites, and on the airport property, will likely to be susceptible to some increased air emissions from vehicle exhaust or machinery operation, dust from excavation and material hauling, and noise and vibration from construction activities. Standard measures will be employed to reduce the effects of dust emission and noise (e.g. wetting of road surfaces, barriers, personal protection equipment) as well as air emissions (equipment and vehicle maintenance). Given the distance of the communities from the project work sites, storage areas, and entry and access points, members of those communities are less likely to be vulnerable to these impacts. However, should it become evident that noise, dust or fumes emanate from the site to nearby receptors, an appropriate pollution control plan will be developed. SLASPA will develop a generic Pollution Control Plan at the detailed engineering design phase, which will be further updated with site specific information by the contractors for all construction works.

The following conditions apply to work sites for the control of air quality, including dust control:

- Construction materials such as sand, cement, or other fines should be kept properly covered;
- Cement should be kept stored within a shed or container;
- The sand and fines can be moistened with sprays of water;
- Unpaved, dusty construction roads must be compacted and then wet periodically;
- Demolition debris shall be kept in controlled area and sprayed with water mist to reduce debris dust;
- During pneumatic drilling or wall destruction, dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site;
- The surrounding environment (e.g. sidewalks, roads) shall be kept free of debris to minimize dust;
- There will be no open burning of construction or waste material at the site;
- There will be no excessive idling of construction vehicles at sites;
- The bins of all haulage vehicles transporting aggregate or building materials must be covered on all public roads.

The contractor shall control noise emissions generated as a result of contracting activities to the extent possible. In the case of site locations where noise disturbance will be a concern, the contractor shall ensure that the equipment is in good working order with manufacturer supplied noise suppression (mufflers, etc.) systems functioning and in good repair. Further, the contractor shall make reasonable efforts to schedule activities, such as the transport of equipment and materials to the staging area, during normal working hours (between 8 am and 5 pm). Where noise is likely to pose a nuisance to the surrounding community, the contractor shall inform the contracting officer and shall develop a public notification and noise management plan for approval by the contracting officer.

Specific elements of the noise control activities by the contractor may include:

- work activities to be undertaken within specified daylight hours;
- residents or the public to be informed in advance of any work activities to occur outside of normal working hours or on weekends;
- engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed as far away from residential areas as possible;
- there will be no excessive idling of construction vehicles at sites;
- noise suppression equipment or systems supplied by manufacture will be utilized;
- ensure all vehicles and equipment are properly serviced.

7.2.6 Community Health and Safety/Site Access (ESS4)

To address community health and safety concerns, mitigation measures will be implemented to reduce the potential of any occurrences of unauthorized access to work sites, thereby minimizing the risks of injury or accidental exposure to hazardous materials to persons from nearby communities, especially children. This will be achieved through the establishment of a security perimeter around the site, erection of signage, and where appropriate, temporary fencing to cordon off entryways, all to ensure public safety. A Community Health and Safety Plan (CHSP) will be prepared by SLASPA at the detailed design phase. This plan will be updated before the construction/rehabilitation work by the contractors. SLASPA will

coordinate schedule and activities of different contractors to ensure the community health and safety measures.

SLASPA will depend on its existing airport security personalfor project work related security and safety, and it is not likely that any additional security personnel will be required; however, SLASPA will prepare a Security Plan befor processing the hiring of additional security, if required. The plan would describe the process to: (i) make reasonable inquiries to verify that the direct or contracted workers to provide security are not implicated in past abuses; (ii) train them adequately (or determine that they are properly trained) in the use of force (and where applicable, firearms), and appropriate conduct toward workers and affected communities; and (iii) require them to act within the applicable law. SLASPA will review all allegations of unlawful or abusive acts of security personnel, act (or urge appropriate parties to act) to prevent recurrence and, where necessary, report unlawful and abusive acts to the relevant authorities.

Since there are already access restrictions at the airport facility, it is not anticipated that public safety will be an issue for works on the airport premises. However, the staging area shall require adequate security if it is not within the confines of the airport restricted area. Other areas off the airport site, such as locations for ADS-B installation and drainage rehabilitation, may also require implementation of measures to restrict access during construction.

7.2.7 Traffic Safety and Management (ESS4)

The contractor will be expected to ensure that trucks unloading equipment do not cause any delays to vehicular traffic and equipment and supplies are safely offloaded. If those tasks can be undertaken during lulls in vehicular and pedestrian traffic flow, the likelihood of any adverse effects will be further reduced.

SLASPA will prepare a generic Traffic Management Plan at the detailed design stage considering the schedule of the different activities under the project. In the event that contractor or construction activities have the potential to disrupt area transportation services, including temporary loss of roadways or blockages due to deliveries and site related activities, then the contractor shall provide the contracting officer with a Traffic Management Plan including a description of the anticipated service disruptions, community information plan, and traffic control strategy to be implemented so as to avoid or minimize the impact to surrounding communities. This plan shall consider time of day for planned disruptions, and shall take into consideration alternative access routes, access to essential services such as medical, disaster evacuation, and other critical services. The plan shall be approved by relevant local authority[29] and the contracting officer. SLASPA will coordinate schedule and activities of different contractors to ensure better management of traffic and less disruption in the traffic movement due to project activities.

Elements of the Traffic Management Plan to be developed and implemented by contractor shall include:

- alternative routes to be identified in the instance of extended road works or road blockages;
- the public to be notified of all disturbance to their normal routes;
- signposting, warning signs, barriers and traffic diversions must be clearly visible, and the public warned of all potential hazards;

[29]The Transport Division of the Ministry Infrastructure, Port Services, and Transport, with the assistance of the Chief Engineer's Office in that Ministry is the authority responsible for reviewing and approving traffic management plans.

- provision must be made for the safe passages and crossings for all pedestrians where construction traffic interferes with their normal route;
- there must be active traffic management by trained and visible staff at the site or along roadways as required to ensure safe and convenient passage for the vehicular and pedestrian public;
- adjustment of working hours to local traffic patterns (e.g. avoiding major transport activities during rush hours or times of livestock movement).

7.2.8 Emergency Response (ESS4)

An emergency is any unplanned event that can cause deaths or injuries to employees, customers or the public; or that can shut down a business, disrupt operations, cause physical or environmental damage, or threaten the facility's financial standing or public image. Examples of events which can be considered emergencies are fire, explosion, toxic release, any natural disaster like hurricane, earthquake etc., communications failure and civil disturbance. Emergency response management is the process of preparing for, mitigating, responding to and recovering from an emergency. Emergency response management is a dynamic process. Planning, though critical, is not the only component. Training, conducting drills, testing equipment and coordinating activities with the community are other important functions. SLASPA will prepare a generic emergency response plan (ERP), which will help to effectively manage an emergency situation during an incident to: (i)control and/or extinguish fires or explosions; (ii)contain leakages or spillages; (iii)rescue people and bring for treatment if necessary; (iv)safeguard human lives; and (v)minimize damage to property and environment. The purpose of this ERP is to ensure that any form of emergency, which interrupts normal and safe working conditions in the project activities, can be dealt with in a systematic manner. Operational procedures are spelt out to enable a coordinated plan of action to be carried out to control the emergency and to restore it back to normal.

Each contractor will be required to prepare an emergency response plan (ERP) based on the generic ERP for events and accidents before initiating any physical construction. This includes procedures for management of spilled hydrocarbons or hazardous materials, as previously noted.

The contractor shall be responsible for maintaining security over the construction site, including the protection of stored materials and equipment. In the event of severe weather, the contractor shall secure the construction site and associated equipment in such a manner as to protect the site and adjacent areas from consequential damages. This includes the management of onsite, construction materials, construction and sanitary wastes, additional strengthening of erosion control and soil stabilization systems, and other conditions resulting from contractor activities which may increase the potential for damages.

In addition, the A Borrower's Guide to Response to Environmental, Social and Occupational Health and Safety Incidents for the World Bank Financed Projects has been added in the Appendix – N.

7.2.9 Land Acquisition, Temporary Access and Resettlement (ESS5)

The tentatively selected locations for the ADS-B antennae are on existing towers and should therefore cause no inconvenience to residents or nearby communities. However, if a new location is proposed then the locations and their access routes will be screened and any sites with involuntary resettlement must be excluded. Any land acquisition or lease for such purpose must follow a fair and transparent voluntary process. Screening criteria include:

- There must be no involuntary acquisition of lands, physical relocation of persons (even if not the property owner), and removal of crops or access to livelihood;
- There will be no removal of persons or their assets such as crops or structures, or by requiring access or occupation without recourse or recompense;
- If any works or activities to be financed as part of this project or at a later stage will be on government lands, the lands should be unoccupied and unencumbered by informal settlers or their assets;
- Privately owned land or land purchased through willing-seller and willing-buyer is acceptable, provided that the land acquisition must occur by mutual agreement in exchange for a notarized purchase contract based on the market price at the date of acquisition;
- Any temporary access agreements should be equitable, voluntary, and documented in writing.

The requirements above provide general guidelines. Any purchase or acquisition of any lands, as needed, would be done in compliance with standard ESS5 and ensure that any sites where involuntary resettlement would occur must be excluded.

7.2.10 Bird Hazard and Wildlife Management (ESS6)

As mentioned earlier, the project induced activities will not result any impact on the nearby wetlands (the La Tourney nature Reserve) or sensitive marine and coastal habitat (the Point Sable Management Area). Further investigation will be carried out on possible risks and impacts during the detailed engineering design and updating of the ESA. If any significant impact is identified, a biodiversity conservation plan will be prepared as part of the updated ESA and ESMP. The updated ESA will also provide guidance to include an evaluation of the systems and verification practices used by the primary suppliers to ensure that any natural resource commodities, specifically sand mining, will not result any significant conversion or significant degradation of natural or critical habitats due to the physical work in UVF. Primary suppliers (e.g. of sand) will also be verified to ensure that provisions of raw materials are sourced with consideration of ESS6 provisions. The borrower will identify where the supply is coming from and the habitat type of the source area and include appropriate measures consistent with ESS6 in the updated ESMP.

During the construction phase, the airport access controls already in place will serve to prevent incursions of domestic animals onto the facility. Access controls for trucks, heavy vehicles, and traffic controls will also include measures to prevent animals from entering the property as part of standard airport safety measures.

Appendix G provides a brief insight into the SLASPA's Bird and Wildlife Control Program, its Bird and Wildlife Control Committee and Airport Assistants with the responsibility for bird and wildlife control at the aerodromes. These procedures will continue to be used during the construction phase of the project works.

7.2.11 Storm water, Erosion and Sediment Control (ESS6)

As part of the detailed design of the UVF drainage system, SLASPA will carry out further study for the drainage improvement works which shall consider sediment and debris traps that will minimize the transport of materials to the perimeter of the airport properties before any runoff can enter sensitive

coastal areas or mangroves. The design shall also consider the quantity of stormwater flow directed to the property boundaries prior to the drain outfalls and incorporate measures to dampen flow energy as needed to minimize erosion or excess bedload transport, which will further protect nearby coastal areas and mangroves. Water quality monitoring must be done before construction and at regular intervals to determine turbidity levels and other quality parameters in the drains at the airport property boundaries.

For the rehabilitation of the existing drains at the UVF, temporary erosion control measures will be employed to prevent off-site transport of sediment and debris. Such measures would include silt traps, geotextile fencing, pits, or other mechanisms to arrest movement of sediment off the sites, ensuring that sites are adequately graded, visual observation of turbidity and performance in streams at the property boundary, and monitoring and repair of these measures weekly or after storm events. The contractor shall implement measures at the site of operations to manage soil erosion through minimization of excavated areas, preservation of existing ground cover to the extent possible and provision of approved ground cover.

Erosion control measures shall be approved by the contracting officer. The erosion control measures include an assessment of the potential threat, mitigation measures to be applied, consideration for the effects of severe weather and an emergency response plan. The contractor must ensure that appropriate erosion control measures such as silt fences are installed. Proper site drainage must be implemented, and any drain clogged by construction material or sediment must be unclogged as soon as possible to prevent overflow and flooding. All construction materials, including chemicals, must be properly stored. The contractor will establish appropriate erosion and sediment control measures such as hay bales, sedimentation basins, and/or silt fences and traps to prevent sediment from moving off site and causing excessive turbidity in nearby streams, rivers, wetlands, and coastal waters.

SLASPA will prepare a stormwater, sediment and erosion control plan (SWSECP)at the detailed design stage. This plan will be updated with the relevant contractors with site specific issues and work schedule before initiating the physical work.

Under no circumstances shall the contractor permit the collection of standing water because of contractor activities without the approval of the contracting officer and consultation with the relevant local environmental health authority. Recommendations from that local authority on how to manage and treat the standing water must be implemented. The condition of the standing water must be monitored by the contractor to ensure that it does not present itself as a breeding ground for any pests such as mosquitoes. This is especially important to runway rehabilitation works at UVF as under no circumstances should there be standing water on the runway.

Quarries used for aggregate or material extraction for the runway or RESA at UVF may be considered related to the project. Quarries must be licensed through the relevant authority and utilize satisfactory runoff and erosion control measures, as described above and in the ESMP summary tables (Appendix A Table 1).

Access roads for the ADS-B antenna may also produce erosion and sediment runoff, if damaged during construction. This will be avoided by verifying that existing access roads are adequate, and through the application of standard erosion control methods.

7.2.12 Chance Find Procedures (ESS8)

If any material considered to be of historical or cultural value is discovered onsite during the execution of activities contained in the Contract, all work shall stop and the supervising contracting officer shall be notified immediately. The area in which the material was discovered shall be marked and the evidence preserved for examination. Such material of historical and cultural interest includes evidence of prior settlements, native or historical activities and the existence of anything which may be of cultural significance. The area in which the material was discovered shall be secured, cordoned off, marked, and the evidence preserved for examination by the local archaeological or cultural authority[30]. No item believed to be an artifact must be removed or disturbed by any of the workers. Work may resume, without penalty of prejudice to the contractor, upon permission from the contracting officer along with any restrictions necessary to protect the site as determined by the relevant authorities.

The above procedures most likely will not pertain to aspects of the runway rehabilitation at UVF since the process for undertaking such works does not involve any excavation or digging. However, it may apply to works associated with drains or quarries. It may also apply to work at pads and access road improvements for the ADS-B antennae if new tower locations are selected. A generic Chance Find Procedure is attached in the Appendix J.

7.3 Operation Phase

As noted previously, there will be few biophysical differences from pre to post-project conditions. Therefore, only a limited set of mitigation measures can be undertaken to specifically address risks or impacts from the project. Most of the changes are positive in terms of airport operations. Those include:

- An upgraded surface that is resilient to the potential impacts of climate change such as increased rainfall and temperatures;
- Improved drainage for safety during and after rainfall events;
- A runway that is more resilient to the effects of heavier aircraft arrivals in the event of a future requirement for disaster relief;
- Improved safety to the travelling public due to the provision of a new surface that is less likely to damage planes during take-off and landing.

These are not discussed further in the context of this chapter which focuses on mitigation measures for potential negative impacts.

There are also opportunities for improvements in operating procedures at both airports such as security and access control, bird and wildlife management, waste management, water and energy conservation, and others. These are discussed briefly below.

- Waste management strategies may include recycling of airport and airline wastes, and segregation/disposal of food and waste from aircraft to protect human and animal health;

[30]The local authority in this case is the Archaeological and Historical Society. The Saint Lucia National Trust would also be involved only after discussion and agreement with the Archaeological and Historical Society.

- Water and energy efficiency can be improved by monitoring use and researching improvements in water fixtures, lighting options, and systems for luggage conveyance, heating and cooling of terminals;

- During operations, mitigation measures for storage, handling, transportation and disposal of hazardous materials such as fuels, are already practiced as part of Airport Security and Safety. These may be improved by considering the addition of spill prevention and control plans as well as emergency response and preparedness plans specific to the facilities;

- Explore opportunities for improvement in minimizing, preventing, and controlling air emissions from ground services and aircraft ground movements, as part of operational plan reviews;

- Efforts to improve access control systems and structures (e.g. entry gates) will be evaluated as part of operation plan reviews, in Airport Safety and Security plan(s);

- Review emergency response plans and seek opportunities to improve safety and resiliency.

One important physical modification to the airports will be the improved and rehabilitated drainage systems. These stormwater drains at the UVF will have sediment and debris traps that will minimize the transport of materials at the boundary of the airport property, to avoid affecting nearby sensitive coastal areas or mangroves. These traps or devices must be cleaned and maintained regularly during operations. Debris and trash collected from these drains and traps should be disposed of according to the waste management plan for the airports.

Finally, continued use of the access roads for periodic maintenance of the ADS-B antennae, as well as the need for future repairs to such roads, may be considered as a continued impact depending on the location and condition of the facilities. This will be assessed in the detailed design phase and the ESA and ESMPs will be updated accordingly.

7.4 Public Information and Community Outreach

Providing adequate information to stakeholders, the public, affected communities, and individuals, is a continuous process that spans across the design, construction, and operation phases of the project. The project will utilize the Stakeholder Engagement Plan (SEP) and Grievance Redress Mechanism (GRM) prepared for the project to ensure transparency and effectiveness in public information and community outreach activities, as described in the following sections.

7.4.1 Stakeholder Engagement Plan (ESS10)

The SLASPA has prepared a Stakeholder Engagement Plan (SEP) that outlines:

a. who the key stakeholders are;
b. how they are to be engaged;
c. how often engagement will occur throughout the project;
d. how feedback will be solicited, recorded and monitored over the project life cycle;
e. who will oversee or responsible for this engagement; and,

f. timeline for this engagement.

The SEP also describes the measures that will be used to remove obstacles to participation, and how the views of differently affected groups will be captured.

The main stakeholders are Government workers and officials as well as the nearby communities and the general public who will make use of airport transportation services. Agencies that will be involved are, among others, the:

- Ministry of Finance, Economic Growth, Job Creation, External Affairs and the Public Service
- Ministry of Infrastructure, Ports, Energy and Labor
- Ministry of Economic Development, Housing, Urban Renewal, Transport and Civil Aviation
- Ministry of Agriculture, Fisheries, Physical Planning, Natural Resources and Co-operatives
- Ministry of Health and Wellness
- Ministry of Education, Innovation, Gender Relations and Sustainable Development
- Department of Tourism, Information and Broadcasting
- Saint Lucia Air and Sea Ports Authority (SLASPA)
- Eastern Caribbean Civil Aviation Authority (ECCAA)
- Chamber of Commerce

7.4.2 Grievance Redress Mechanism (ESS10)

As part of the SEP, the Borrower has prepared a project-wide Grievance Redress Mechanism (GRM) to receive and facilitate the resolution of concerns and grievances. The nature of eligible grievances under the GRM will be described as part of the SEP. The SLASPA will adapt GRMs in place for other World Bank financed projects and that serve as a basis for the project GRM.

Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond.

For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

8 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS (ESMPs)

This chapter provides information on the ESMPs for the project civil works. The ESMPs detail the measures to be taken during the implementation and operation of a project to eliminate or offset adverse environmental and social impacts, or to reduce them to acceptable levels; and, the actions needed to implement these measures. The roles and responsibilities of contractors and agencies, structure and management of supervision teams, monitoring and reporting, and training are addressed. Summary matrix tables in Appendix A are provided as specific ESMPs for works at UVF, SLU, and the ADS-B antenna locations.

The ESMPs provided in this chapter will be updated at the detailed design phase by the Environmental Specialist to be staffed by the PIU. They will form the base for a Construction ESMP (C-ESMP) that must be prepared by the contractor and approved by the PIU before beginning any physical works. In this sense the information provided in this ESA is a therefore a guideline that will be used to inform the bidding and contracting documents and that will be updated as detailed information becomes available. The contractor is also to include costs for implementing the C-ESMP within the context of the bid pricing and include any necessary items in the Bill of Quantities (BQO) that are not part of standard practice. Finally, the C-ESMP and associated bidding and contracting documents must ensure that environmental and social risks are adequately and appropriately addressed consistent with the purpose of this ESA document.

8.1 Mitigation Measures

The Environmental and Social Management Plans (ESMPs) for each airport and the locations for the ADS-B antennae reference the risks and potential impacts identified in chapter 5 of this ESA, the alternatives discussed in chapter 6, and the mitigation measures described in chapter 7. These ESMPs include protocols for debris management, construction practice, health and safety issues, and incorporate standard mitigation procedures, and where necessary, draws on international good practices and expertise in the aviation sector. The ESMPs also include site specific issues such as controlling sedimentation and erosion where necessary. The ESMPs are presented in three summary tables in Appendix A.

8.2 Roles and Responsibilities of Contractors and Agencies

Contractors will be required, as a condition of their contracts, to implement/comply with the ESMPs. Contractors would be expected to include site-specific management plans that would guide the management of environmental and social risks.

Considering the limited experience of the implementing agency (SLASPA) in environmental and social risk management, an Environmental and Social Specialist will be contracted by the PIU. Further to that, there will be a separate Supervision Consultant specializing in environmental and social management to ensure the ESMPs are followed.

8.3 Structure of Management and Supervision Teams

The project will be supervised by the Contactor, supervision consultant, staff of the SLASPA and other relevant government agencies.

The Ministry of Infrastructure, Ports, Energy and Labor (MIPEL) has interfaced with the World Bank on numerous infrastructure projects and therefore has some familiarity with the World Bank safeguards policy requirement. However, they do not have a dedicated unit or staff on environmental and social issue management since the safeguard support on those projects was provided through specialists of the PCU. On the other hand, the Saint Lucia Air and Sea Ports Authority (SLASPA) has no prior experience in implementing World Bank funded projects. A new PIU, the SLASPA will hire the service of an Environmental and Social Specialist within 30 days of project effectiveness. The Specialist will responsible for necessary updating of documents, contribute in the bidding document preparation on environmental and social aspects, environmental and social monitoring and reporting. This will ensure that the contractor(s) follow the environmental and social requirements under the contracts and implement the ESMPs for the duration of the work.

8.4 Monitoring and Reporting Plan

Monitoring during project implementation provides information about key environmental and social aspects of the project, particularly the environmental and social impacts of the project and the effectiveness of mitigation measures. This allows the Project to evaluate the success of mitigation as part of project supervision and allows corrective action to be taken when needed.

A Monitoring Plan in table form is provided in Appendix B and identifies monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed in the environmental and social assessment and the mitigation measures described in the ESMP. This includes soil testing to determine presence or absence of any residual petroleum hydrocarbon contamination in areas that will be excavated.

8.5 Training Plan

During construction the contractor(s) will be required to provide training on environmental and social mitigation measures, as well as for occupational health and safety to their staff and workers. Bidding and contracting documents will require that associated plans be provided for review and approval by the Government, and these must include appropriate training. The following aspects need to be covered in the training:

- Airport Access, Security and Safety
- Environmental Awareness
- Traffic Safety
- Stakeholder Engagement
- Occupational Health and Safety
- Community Health and Safety
- Grievance Redress Mechanism
- Waste Management
- Hazardous Material Control
- Biodiversity Conservation

These ESMPs consider potential impacts from the improved operations and will be integrated into overall capacity-building efforts. Support for PIU core functions will include the addition of environmental and social specialist(s) or existing personnel trained in these issues and tasked with implementing best-practices and oversight of operational environmental and social issues. Establishing a basic environmental and social risk management system will be considered part of ensuring improved standards for civil aviation operations.

8.6 Budget and Schedule

The table below summarizes the estimated costs and schedules for the items associated with each of the ESMPs. These will be updated by the contractor during bid preparation and subject to clearance by SLASPA and World Bank.

Table 8.1Estimated Costs and Schedules of ESMPs and associated items

Item	Schedule	Cost
Revise ESA and ESMPs based on final design	First year of project implementation	USD$20,000
Implement ESMPs	During construction	No additional cost (included in Contractor's bids)
Supervise Contractor Performance	Part-time during construction (est.24 months input)	USD$96,000
Implement ESMPs	During operations	No additional cost (included in Operations Procedures)

The updating of the ESA and ESMPs will take place once details become available during the design phase. The costs associated with the implementation of the ESMPs are not likely to change because the measures are part of good construction and operation practice. The updating of the ESA and ESMP may however require the services of an external consultant, for which a budget of USD$20,000 is estimated. The TOR for the updating should include the following tasks:

- Review and evaluate detailed design plans at both airports;
- Identify any major change in project design and assess the potential environmental and social risks and impacts associated with updated activities;
- Screen proposed ADS-B antenna sites and access road;
- Sample and analyze soils in areas to be excavated for petroleum hydrocarbons;
- Update the estimate on total and types of labor required;
- Review the work schedule and assess the additional security requirement;
- Revise ESA as needed to include new design, new schedule, update of construction procedures and/or operations plans;
- Revise ESMPs as needed to mitigate any newly identified impacts or risks;
- Prepare the following plans as required:
    - ✓ Waste Management Plan (WMP)
    - ✓ Hazardous Materials Control Plan (HMCP)
    - ✓ Resource Efficiency and Pollution Management Plan (REPMP)
    - ✓ Emergency Response Plan (ERP)
    - ✓ Traffic and Road Safety Plan (TRSP)
    - ✓ Community Health and Safety Plan (CHSP)
    - ✓ Security Plan (SP), if required
    - ✓ Storm water, sediment and erosion control plan (SWSECP)
    - ✓ Biodiversity Conservation Plan (BCP), if required

Supervision of the contractor's performance will be done by the PIU's Environmental and Social Specialist. A budget of USD$96,000 is considered for this task of 24 months input over 36 months.

9. STAKEHOLDER ENGAGEMENT AND CONSULTATIONS

This draft ESA document is being shared with the relevant stakeholders in order to inform them of project activities, identify any additional relevant concerns or issues, and thereby improve the quality and usefulness of the Final ESA document.

The ESA contains measures to mitigate the potential risks and impacts that are included in the Environmental and Social Management Plans (ESMPs) which form part of the ESA. This ESA also includes a Labor Management Procedure (LMP) to mitigate any risks and impacts associated with the labor force. These documents are also being published to solicit stakeholder input.

Finally, a Stakeholder Engagement Plan (SEP) and Grievance Redress Mechanism (GRM) have also been prepared to address potential project related concerns and claims from workers and the general public. All these documents are being disclosed on the Government's website in draft form as part of the consultation process.

9.1 Disclosure

Evidence of stakeholder input includes public attendance record sheets, links to published documents, screen image of publication of ESA requesting public comment, notification in newspapers, and/or e-mails to key organizations or individuals.

9.2 Public meetings

There will be two public meetings held in Saint Lucia: one in the capital city of Castries (near SLU) and the other in the town of Vieux Fort (by UVF). Results will be included in the updated ESA.

9.3 Revision/Disclosure of Final ESA

The draft ESA will be revised to incorporate relevant stakeholder comments.

The draft final versions of the ESA will be published on the Government website as well as on the World Bank website.

10. ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK FOR CERC

This chapter provides the environmental and social framework for Component 4, the Contingent Emergency Response Component (CERC). This component would finance the implementation of emergency works, rehabilitation and associated assessments, at the Government's request in the event of a disaster. The framework will help to guide the environmental and social risk management in the emergency response component. This framework may require updating based on the activites to be supported under the emergency response situation.

10.1 Potential Activities that the CERC Could Finance

The activities to be supported under the component are not known at this stage. However, it is anticipated that the component may support goods, service and works such as debris removal. The location of the contingency work will depend on the affected areas of the disaster and it can be any part of the country.

It is important to mention that the activities or subprojects that will be financed by the CERC Component, should avoid activities or subproject with complex environmental and social aspects (for example resettlement), because the CERC objective is to support immediate priority activities (less than 18 months). The subprojects with more environmental and social complexity, could be financed with other specific sources of financing. Table 10.1 below provides possible list of activities can be supported under the component.

Table 10.1: Positive list of goods, services and works

Item
Goods
• Medical equipment and supplies • Non-perishable foods, bottled water and containers • Tents for advanced medical posts, temporary housing, and classroom/daycare substitution • Equipment and supplies for temporary housing/living (gas stoves, utensils, tents, beds, sleeping bags, mattresses, blankets, hammocks, mosquito nets, kit of personal and family hygiene, etc.) and school • Gasoline and diesel (for air, land and sea transport) and engine lubricants • Spare parts, equipment and supplies for engines, transport, construction vehicles • Lease of vehicles (Vans, trucks and SUVs) • Equipment, tools, materials and supplies for search and rescue (including light motor boats and engines for transport and rescue) • Tools and construction supplies (roofing, cement, iron, stone, blocks, etc.) • Equipment and supplies for communications and broadcasting (radios, antennas, batteries) • Water pumps and tanks for water storage • Equipment, materials and supplies for disinfection of drinking water and repair/rehabilitate of black water collection systems • Equipment, tools and supplies for agricultural, forestry, and fisheries • Feed and veterinary inputs (vaccines, vitamin tablets, etc.) • Construction materials, equipment and industrial machinery • Water, air, and land transport equipment, including spare parts • Any other item agreed to between the World Bank and the Recipient (as documented in an Aide-Memoire or other appropriate formal Project document)

• Temporary toilets • Groundwater boreholes, cargos, equipment to allow access to site, storage units
Services
• Consulting services related to emergency response including, but not limited to urgent studies and surveys necessary to determine the impact of the disaster and to serve as a baseline for the recovery and reconstruction process, and support to the implementation of emergency response activities • Feasibility study and technical design; • Works supervision • Technical Assistance in developing TORs, preparing Technical Specifications and drafting tendering documents (Bidding Documents, ITQ, RFP). • Non-consultant services including, but not limited to: drilling, aerial photographs, satellite images, maps and other similar operations, information and awareness campaigns • Non-consultant services to deliver the activities described in the "Goods" section of this table (e.g., debris removal, dump trucks, drones survey)
Works
• Repair of damaged infrastructure including, but not limited to: water supply and sanitation systems, dams, reservoirs, canals, roads, bridges and transportation systems, energy and power supply, telecommunication, and other infrastructure damaged by the event • Re-establishment of the urban and rural solid waste system, water supply and sanitation (including urban drainage) • Repair of damaged public buildings, including schools, hospitals and administrative buildings • Repair, restoration, rehabilitation of schools, clinics, hospitals • Removal and disposal of debris associated with any eligible activity.
Training
• Conduct necessary training related to emergency response including, but not limited to the Implementation of EAP. • Training on rapid needs assessment and other related assessments.
Emergency Operating Costs
• Incremental expenses by the Government for a defined period related to early recovery efforts arising as a result of the impact of an eligible emergency. This includes but is not limited to: costs of staff attending emergency response, operational costs and rental of equipment.

10.2 Potential Environmental and Social (ES) Risks

The proposed works and other activities (Table 10.1) are small and medium-scale works, or the provision of essential goods and services. The potential negative impacts are expected to be moderate, localized, and temporary that can be mitigated through the implementation of the existing safeguards instruments of the Project and close supervision by the field engineer or supervision consultant. The required mitigation measures will be included as part of the Environment and Social Management Plan (ESMP) to be prepared when and if a specific subproject is identified.

In terms of social impacts, activities that will result in the involuntary taking of land, relocation of households, loss of assets or access to assets that leads to loss of income sources or other means of

livelihoods, and interference with households' use of land and livelihoods should not be supported. Therefore, every effort should be made to eliminate activities that may result in such impacts.

In addition, workers contracted to conduct civil or other works for contingency activities, will have to sign a worker's code of conduct, which covers issues such as preventing gender-based violence, as well as sexual assault and abuse. In addition, construction works or uses of goods and equipment involving forced labor, child labor, or other harmful or exploitative forms of labor are prohibited. The project LMP with necessary adjustment will be applied to the CERC.

Table 10.2 below identifies potential impacts of the proposed activities/subprojects. Due consideration will be given to ensure compliance with the WB's Environmental, Health and Safety (EHS) Guidelines (General and Specific)[31].

Table 10.2. Potential impacts of possible activities under Component 4 (CERC)

No	Subprojects/Activities (nationwide)	Potential ES impact issues (risks)	Expected Significance
1	Repair of damaged infrastructure including, but not limited to: water supply and sanitation systems, dams, reservoirs, canals, roads, bridges and transportation systems, energy and power supply, telecommunication, and other infrastructure damaged by the event;	Increase dust, noise, water pollution, solid/hazardous/ Toxic wastes, waste oil/fuels, public health and safety; possible use of asbestos-contaminated as construction materials and land acquisition; and impacts on ethnic and vulnerable groups.	Moderate
2	Re-establish of the urban and rural solid waste system, water supply and sanitation (including urban drainage);	Same as (1) above	Moderate
3	Repair of damaged public buildings, including schools, hospitals and administrative buildings;	Same as (1) above	Moderate
4	Repair, restoration, rehabilitation of schools, clinics, hospitals;	Same as (1) above	Moderate
5	Removal and disposal of debris associated with any eligible activity	Waste management and disposal	Moderate
6	Disposal to medical wastes (at camp site, small clinic/hospitals), asbestos-based materials, other toxic/hazardous wastes	Increase health risks, need management of medical waste, toxic materials, asbestos-contaminated debris	Moderate
7	Temporary toilets	Hygiene, waste management	Moderate

[31]https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines"

10.3 Negative list of Activities

This component will not support any activities, which may have substantial or high risks according the World Bank Environment and Social Framework. The Table 10.3 provides a list of prohibited activities for CERC.

Table 10.3 Prohibited Activities for CERC

1	Activities that would lead to conversion or degradation of critical forest areas, critical natural habitats, and clearing of forests or forest ecosystems
2	Activities affecting protected areas (or buffer zones thereof), other than to rehabilitate areas damaged by previous natural disasters.
3	Land reclamation (i.e., drainage of wetlands or filling of water bodies to create land)
4	Land clearance and leveling in areas that are not affected by debris resulting from the eligible crisis or emergency
5	River training (i.e., realignment, contraction or deepening of an existing river channel, or excavation of a new river channel)
6	Activities that will result in the involuntary taking of land, relocation of households, loss of assets or access to assets that leads to loss of income sources or other means of livelihoods, and interference with households' use of land and livelihoods.
7	Construction of new roads, realignment of roads, or expansion of roads, or rehabilitation of roads that are currently located on communal lands but will be registered as government assets after rehabilitation.
8	Construction works, or the use of goods and equipment on lands abandoned due to social tension / conflict, or the ownership of the land is disputed or cannot be ascertained
9	Construction works, or the use of goods and equipment to demolish or remove assets, unless the ownership of the assets can be ascertained, and the owners are consulted
10	Construction works, or the uses of goods and equipment involving forced labor, child labor, or other harmful or exploitative forms of labor
11	Construction works, or the uses of goods and equipment for activities that would affect indigenous peoples, unless due consultation and broad support has been documented and confirmed prior to the commencement of the activities
12	Construction works, or the uses of goods and equipment for military or paramilitary purposes.
13	Construction works, or the uses of goods and equipment in response to conflict, in any area with active military or armed group operations
14	Activities related to returning refugees and internally displaced populations
15	Activities which, when being carried out, would affect, or involve the use of, water of rivers or of other bodies of water (or their tributaries) which flow through or are bordered by countries other than the Borrower/Recipient, in such a manner as to in any way adversely change the quality or quantity of water flowing to or bordering said countries.
16	Use of asbestos-based construction materials for reconstruction works

10.4Environmental and Social Management Framework process

When the CERC component is activated, the relevant government agencies with a coordination mechanism with PIU, SLASPA will carry out the following steps:

Step 1: *Application of the ES Screening Form.* Use of screening form (Appendix K) to screen the subprojects from the ES point of view. The prohibited activities for CERC in Table 10.3 will also be applied. Given that the CERC objective is to support immediate priority activities, the activities or subprojects with resettlement issues will be avoided. The form also includes overall evaluation of the screening exercise.

- ***Step 2:*** *Identification of ES issues and preparation of mitigation plans.* Based on the results from Step 1, the implementing agency will prepare an ESMP for the CERC subprojects describing the works/activities and mitigation measures to be conducted during detailed design, bidding/ contract, repair/restoration, and closure plans, considered the magnitude, scope, and nature of the emergency. In addition to the issues identified in the Table 10.2, the CERC ESMP will also address waste management issues following the guidelines provided in Appendix L. The contractor will be required to ensure that all hazardous wastes are safely and appropriately managed during the implementation of the subproject. Consultation with local authorities and communities will be made during this stage.

- ***Step 3:****WB clearance and GOSL approval.* The screening and management plan will require appropriate government and the World Bank clearance (pre or post). It will be further reviewed when CERC will be triggered.

- ***Step 4****: Implementation and M&E.* The approved ESMP will be implemented according to the agreed implementation arrangement. The implementing agency will monitor the implementation on the ground and report the results to PIU. Consultation with stakeholders will be made during the process.

- ***Step 5****: Completion and Evaluation.* Once the CERC subproject has been completed, the implementing agency will monitor and evaluate the results before closing the contract. Any pending issues and/or grievance must be solved before the subproject is considered fully completed. The implementing agency will submit the completion report describing the compliance of safeguard performance and submit it to WB when required.

The Appendix-M provides the general rules for Contractors for CERC.

Technical Annexes

Appendix A Table 1. ESMP for project civil works at Hewanorra International Airport (UVF)

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[32]	EXECUTING AGENCY	SUPERVISING AGENCY
ENVIRONMENTAL AND SOCIAL ASSESMENT (ESS1)					
Update ESA and ESMPs	Review and evaluate detailed design plans at both airports, screen proposed ADS-B antennae sites and access roads and identify any new potential impacts. Revise ESA as needed to include new design, new schedule, update of construction procedures and/or operations plans; and, revise ESMPs as needed to mitigate any newly identified impacts or risks. Redisclose ESA and ESMPs.	All sites	USD$15,000	Contractor	PIU
Prepare bidding and contracting documents with ESMPs	Include ESMPs as requirements within bidding and contracting documents. Ensure that proposals and contracts include the ESMPs and any other environmental and social requirements.	All sites	Included in bid and contract estimates	Contractor	PIU
LABOR MANAGEMENT (ESS2)					
Sanitation facilities for workers	Provide and maintain sanitation facilities. Sanitation treatment system (e.g. compost or proprietary treatment system) is to be approved by the SLASPA, DIPE and DSD prior to implementation.	At work site	Included in construction costs	Contractor	SLASPA
Occupational Health and Safety	Ensure there are basic medical facilities on site. First aid training to be provided as required to site workers with basic first aid services to be provided by Contractor e.g. stretcher, vehicle transport to hospital. Provide appropriate Personal Protective Equipment (PPE). Provide hazard specific personnel protective equipment to workers directly involved in handling hazardous substances (e.g. chemical or heat resistant clothing, gloves). Post and sign information to inform workers of key rules and regulations. Construction lay down area to be fenced to prevent access by unauthorized personnel.	All locations	Security included in construction cost Included in construction costs	Contractor	SLASPA

[32]Costs are estimates only and will be calculated during the detailed engineering design.

	Only personnel trained in asbestos handling may be involved in any demolition works involving hazardous materials. Full PPE to be used when handling the material ready for transport.				
Unfair or illegal treatment of workers	Follow the Labor Management Plan (LMP) included in this ESA. Operate the Worker Grievance Redress Mechanism (WGRM) as described in the LMP.	All locations	Included in construction costs	Contractor	SLASPA
WASTE MANAGEMENT (ESS3)					
Solid waste planning	Contractor to develop Waste Management Plan	All locations	Included in construction costs	Contractor	SLASPA
WASTE MANAGEMENT (ESS3)					
Solid waste generation	Allow for re-use of as much material as possible either by the Project contractor, other projects, or for community use. The Saint Lucia Solid Waste Management Authority (SLUSWMA) should be consulted for approval to receive material that cannot be recycled or reused at the Vieux Fort Landfill. When planning the construction lay down area ensure temporary waste dump areas are allowed for and approved waste disposal sites / methodologies identified for removal of all solid waste.	All locations	Minimal (part of standard design and construction practices).	Design Consultant and Contractors	SLASPA
Waste disposal	Ensure all construction waste material is reused, recycled or packed up for transport to the Vieux Fort Landfill. Ensure areas for waste collection, recycling and off-site disposal are clearly marked/sign posted. Segregate waste to avoid cross contamination, such as with contaminated material (hazardous substance). Install waste collection facilities at construction lay down area to allow for collection and packing of waste. Strictly no dumping of rubbish. Include awareness training in general environmental training. Maintain records of volumes, frequencies, types and disposal destination of all wastes.	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA
Debris safety	Store all wastes at least 1,000 meters from the runway until collection and disposal. Conduct inspections before, during and after all activities to ensure runway is free of FOD (foreign object debris).	All locations	Included in construction costs	Contractor	SLASPA

HAZARDOUS MATERIALS MANAGEMENT (ESS3)					
Water and soil pollution	Minimize risk to groundwater and surrounding soil by developing a spill response plan and provide training to all contract workers on how to implement the spill response plan. Ensure bunded areas and hard stands are allocated at construction lay down area for the storage of fuel, lubricants and other potential substances required for the project. Water tight bunds to be able to contain 110% of volumes being stored or 25% if total volume greater than 1,000L. Ensure wash down areas with respective collection and treatment systems are designated within the construction camp (e.g. settling pond or tank and concrete slurry treatment) prior to works commencing. Include oil-water separators in drain designs. Zones for preliminary accumulation of wastes are designated in areas that will cause no damage to the vegetation cover or leach into groundwater (e.g. within construction lay down area on hard surface).	All components	Minimal (part of standard design and construction practices).	Design Consultant	SLASPA
HAZARDOUS MATERIALS MANAGEMENT (ESS3)					
Hazardous materials management	Where possible fuel shall be obtained from local commercially available sources. Prior arrangement regarding quantity and type will need to be organized (SLASPA to provide details of providers). Confirm the absence of asbestos containing material on any buildings to be demolished; otherwise, develop an asbestos management plan addressing the necessary EHS and disposal arrangements (Vieux Fort Landfill) to deal with demolition and transport. Lubricants shall be collected and recycled or disposed of according to Saint Lucian regulations. Used oil to be collected and taken to an approved facility (for disposal or cleaning) at completion of works if no on island disposal or recycling facility available material is to be taken off island and disposed of at an approved facility. Spill response plan training completed for all construction workers. Spill kits and training of use to be provided to all workers during toolbox meetings. Spill kits to contain personal protective equipment (PPE) gear for the spill clean-up (e.g. gloves and overalls), material to contain the spill and absorbent pads, and a heavy-duty rubbish bag to collect absorbent pads or material. Store bitumen and asphalt in bunded areas on impermeable surfaces.	All locations	Minimal (part of mobilization and construction planning).	Contractors	SLASPA

	Store paints, solvents, and other chemicals in safe containers with appropriate information labeling. Complete list, including material safety data sheet (MSDS) for each chemical stored or used shall be accessible at all times. Signage to be posted in storage areas identifying all chemicals present. Use pesticides only through approved licensed subcontractors.				
HAZARDOUS MATERIALS MANAGEMENT (ESS3)					
Legacy contamination	Verify that sampling and analysis has been done for any soils for petroleum hydrocarbon contamination in areas that will be excavated. The area around the fuel hydrant pipes on the apron has potential to be contaminated with hydrocarbons. While excavation of the apron in the vicinity of the fuel hydrant system is not required any material encountered which has a PID reading of 10 ppm shall be treated as contaminated fill and must be disposed of at an approved facility able to deal with contaminated fill (e.g. Vieux Fort Landfill with approval from the SLUSWMA). Train workers on how to identify and report possible petroleum hydrocarbon contamination and presence of AFFF (firefighting foam) compounds in soils or water.	All locations	Included in construction costs	Contractor	SLASPA
WATER CONSERVATION AND ENERGY EFFICIENCY (ESS3)					
Energy use	Use LED bulbs in Instrument Landing System (ILS).	Runway	Minimal (part of standard design).	Design Consultant	SLASPA
Water use	Spray surfaces and grounds for dust control as needed. Mix concrete off-site.	All locations	Included in construction costs	Contractor	SLASPA
AIR, DUST AND NOISE CONTROL (ESS3)					
Dust/Air Pollution	Identify and locate waste disposal sites, stockpile sites and equipment (e.g. bitumen plant) to minimize impacts on the environment and nearby population. Ensure all equipment is serviced and issued with warrant of fitness (as required). Any machinery deemed to be polluting the air must be replaced (or fixed) on instruction by the SLASPA. Ban on open burning of any trash or other materials.	Construction camp	Minimal (part of standard design practices).	Design Consultant	SLASPA
AIR, DUST AND NOISE CONTROL (ESS3)					
Generation of dust	Use closed/covered trucks for transportation of construction materials. Any vehicle which is overloaded (exceed designed load limit) or is not covered properly shall be refused entry to the construction lay down	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA

	area or material shall be refused delivery (if not to the construction lay down area). Cover stockpiles containing fine material (e.g. sand and topsoil) when not actively being used. Keep work areas clean with regular sweeping. Due to freshwater supply constraints large scale water sprinkling should be kept to a minimum and only as required. Only small areas should be cleared of vegetation at any one time and revegetation should occur as soon as practicable. Dust masks and personnel protective equipment must be available for workers during dust generating activities (e.g. pavement milling). Asphalt mix plant to be fitted with a dust scrubber. Spray dry road surfaces, material stockpiles, pneumatic drill sites, and other areas as needed with water to reduce dust. No excessive idling of vehicles.				
AIR, DUST AND NOISE CONTROL (ESS3)					
Noise and vibration disturbances	Minimize nuisance from noise, especially closer to residential areas, through establishment and communication to affected parties of standard working hours (07:00 to 18:00, Monday to Friday) and avoid increase of noise and number of work equipment at peak hours. Any work outside prescribed hours of operation require approval by the SLASPA and notice to affected peoples provided at least one week prior to out of schedule works starting. Work on Sunday is restricted and is likely to only be approved in emergency situations. Regularly check and maintain machinery, equipment and vehicle conditions to ensure appropriate use of mufflers, etc. Workers in the vicinity of sources of high noise shall wear necessary protection gear rated for the situation they are being used. Signage to outline complaints procedure and contact details of recipient of complaints (e.g. phone number, physical address and email). The WB/IFC EHS Guidelines[33] section 1.7 Noise Management shall be applied (if no local limits are prescribed). Noise impacts should not exceed an increase in background levels of 3 dB at the nearest receptor location off-site (e.g. residential house).	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA

[33]International Finance Corporation, Environmental Health and Safety Guidelines, General Guidelines: Noise Management

COMMUNITY HEALTH AND SAFETY (ESS4)					
Unauthorized access to facilities or work sites	Maintain perimeter fences and conduct security checks.	All locations	Minimal (part of mobilization and construction planning).	Contractors	SLASPA
COMMUNITY HEALTH AND SAFETY (ESS4)					
Road traffic incidents or accidents	Provide for Traffic Management Plan (TMP) to be developed by Contractor, to include signage, flag operators, personnel protective equipment (e.g. high visibility vest), and specific actions to be implemented around sensitive receptors (e.g. residential dwellings, schools, hospital). TMP to include vehicle and pedestrian traffic. Include transport of materials and equipment from the Port and quarry to construction lay down area (located at the airport) in the TMP e.g. covering of loads, maximum speed, designated travel times and notification of police and other required departments (e.g. hospital and schools).	From port to airport (delivery of equipment). To and from the construction lay down area and the quarry.	Minimal (requirement of bidding documents)	Design Consultant and Contractors	SLASPA
Aviation traffic incidents or accidents	Each investment within an operational airport is to have a Methods of Works Plan (MOWP) which is to be included in all bid and contract documents. The Contractor is to develop a Safety Management Plan as an addendum to the MOWP. The MOWP will include details of site works scheduling around known flight timetables and procedures for emergency response for all workers.	Operational airports	Minimal (requirement of bidding documents and standard construction practices)	Design Consultant	SLASPA
Traffic (vehicle and pedestrian) and construction safety	Implement the traffic management plan (TMP) to ensure smooth traffic flow and safety for workers, passing vehicles and pedestrian traffic. Where appropriate, employ flag operators on the road to prevent traffic accidents. The workers shall have relevant safety equipment.	Route from quarry and port to airport	Safety equipment included in construction cost.	Construction Contractors	SLASPA
Accident risks/Impacts on traffic safety	Arrange necessary measures for pedestrian and passer-by safety and all means of transportation safety (e.g. establish protection zones, bypass these areas during transportation of materials, etc.) Relevant safety elements such as guardrails, road signs and delineators, pavement markings, barricades and beams, warning lights shall be installed. In some cases a flag operator or traffic control supervisor could be engaged around the specific work site.	All locations	Safety equipment included in construction cost. Minimal (part of standard construction practice).	Construction Contractors	SLASPA
EMERGENCY RESPONSE (ESS4)					
Accident response plan	Contractor to develop Procedures for accident and near-miss reporting and notification.	All locations	Included in construction costs	Contractor	SLASPA

	Health and Safety Plan to include investigation and root cause analysis of accidents and incidents.				
EMERGENCY RESPONSE (ESS4)					
Extreme weather events	Contractor to maintain security and integrity of work sites and materials by securing site and associated equipment and facilities to protect from damages in case of extreme rainfall or flooding. Contractor to maintain erosion control, waste storage, and other facilities and equipment.	All locations	Included in construction costs	Contractor	SLASPA
Hazardous substances and safety and pollution	Store and handle hazardous substances in bunded, hard stand or designated areas only. Bunded areas to drain to an oil water separator which will need to be constructed or a mobile proprietary unit imported specifically for use on the Project. Bunds to contain 110% of total volume required to be stored or, 25% of total volume if total volume is over 1,000L.	All locations	Safety equipment included in construction cost as part of standard construction practice).	Construction Contractors	SLASPA
BIRD HAZARD AND WILDLIFE MANAGEMENT (ESS6)					
Bird strikes and animal incursions	Implement the Bird and Wildlife Control Program.	Areas within airport perimeter	Minimal (part of standard operations).	SLASPA	SLASPA
Landscape degradation	Restoration of landscape after completion of rehabilitation works; restore the vegetation cover in accordance with the surrounding landscape and any required design (e.g. grass land or shrubs). Use plant species characteristic for the landscape in the course of restoration of the vegetation cover.	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA
Loss of biodiversity	If during course of construction work, particularly vegetation clearance and excavations, any bird, reptile or mammal species is identified as being potentially impacted (e.g. nesting bird in area of proposed vegetation clearance) work is to stop in the specific location of the find and the DSD and SLASPA notified immediately for instruction to proceed.	All locations	No marginal cost	Contractors	SLASPA
STORMWATER EROSION, RUNOFF AND SEDIMENT CONTROL (ESS6)					
Runoff of pollutants in drains	Excavations are bunded to prevent ingress of water runoff and clean water diversion (e.g. sand bags, clay bund, or shallow trenches) are used to direct overland flow away from active work and storage areas. Sediment laden runoff from excavations or stockpiles must be directed to a settling area (e.g. pond or decant pond to be sized for area covered) or collected for dust suppression provided the runoff is not contaminated with any chemicals (e.g. fuel).	All locations	No marginal cost	Contractors	SLASPA

Soil erosion	Minimize time and size of ground disturbing activities to workable size at any one time. Vegetation to be removed manually, strictly no use of herbicides/ pesticides. Stockpiles are to be positioned on impermeable surfaces (e.g. geotextile or concrete hard stand). Keep construction vehicles on defined tracks. Revegetate disturbed areas that are not being paved as soon as practicable (loosen ground; apply topsoil; seed or plant as necessary).	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA
Soil erosion	Minimize erosion and design erosion protection measures according to international good practice standards, including incorporation of effective drainage systems (soakage pits) and consideration of surface flow paths. Schedule earthworks and construction activities during dry season (January to mid-April).	All locations	Minimal (part of standard design practices).	Design Consultant	SLASPA
STORMWATER EROSION, RUNOFF AND SEDIMENT CONTROL (ESS6)					
Quarry and sand sourcing impacts	Ensure aggregate is sourced from an approved/ permitted quarry and are operating in accordance with the Saint Lucian law. If the quarry is to be operated by the Project contractor, they are responsible for seeking operating and environmental permits as required. As a minimum the IFC Environmental, Health, and Safety Guidelines for Construction Material Extraction should be adopted. Materials extraction is likely to begin prior to construction on site to ensure enough material is available for the works. If the quarry in Vieux Fort is to be mined, ensure fencing is installed to define the boundary if necessary. Safety and traffic controls on connecting roads must be included in Traffic Management Plan. Site runoff and wastewater is prohibited from being discharged directly to the coast. Site processing and stockpiles should be located inland.	All components	Minimal (part of standard design and construction practices).	Contractor	SLASPA
PHYSICAL CULTURAL RESOURCES (ESS8)					
Loss of archaeological artefacts or sites	Chance find procedure: work to stop in specific location of unearthed artefacts or site. Fence the area to limit access and notify SLASPA and Saint Lucia Archeological and Historical Society (SLAHS) immediately for instruction to proceed.	All locations	No marginal cost	Construction Contractors	SLASPA

Appendix A Table 2. ESMP for project works at George F. L. Charles Airport (SLU)

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[34]	EXECUTING AGENCY	SUPERVISING AGENCY
ENVIRONMENTAL AND SOCIAL ASSESMENT (ESS1)					
Update ESA and ESMPs	Review and evaluate detailed design plans at both airports, screen proposed ADS-B antennae sites and access roads and identify any new potential impacts. Revise ESA as needed to include new design, new schedule, update of construction procedures and/or operations plans; and, revise ESMPs as needed to mitigate any newly identified impacts or risks. Redisclose ESA and ESMPs.	All sites	Included in work for UVF Airport (see corresponding ESMP)	Contractor	PIU
Prepare bidding and contracting documents with ESMPs	Include ESMPs as requirements within bidding and contracting documents. Ensure that proposals and contracts include the ESMPs and any other environmental and social requirements.	All sites	Included in bid and contract estimates	Contractor	PIU
LABOR MANAGEMENT (ESS2)					
Sanitation facilities for workers	Provide and maintain sanitation facilities. Sanitation treatment system (e.g. compost or proprietary treatment system) is to be approved by the SLASPA, DIPE and DSD prior to implementation.	At work site	Included in construction costs	Contractor	SLASPA
Occupational Health and Safety	Ensure there are basic medical facilities on site. First aid training to be provided as required to site workers with basic first aid services to be provided by Contractor e.g. stretcher, vehicle transport to hospital. Provide appropriate Personal Protective Equipment (PPE). Provide hazard specific personnel protective equipment to workers directly involved in handling hazardous substances (e.g. chemical or heat resistant clothing, gloves). Post and sign information to inform workers of key rules and regulations. Construction lay down area to be fenced to prevent access by unauthorized personnel.	All locations	Security included in construction cost Included in construction costs	Contractor	SLASPA

[34]Costs are estimates only and will be calculated during the detailed engineering design.

	Only personnel trained in asbestos handling may be involved in any demolition works involving hazardous materials. Full PPE to be used when handling the material ready for transport.				
Unfair or illegal treatment of workers	Follow the Labor Management Plan (LMP) included in this ESA. Operate the Worker Grievance Redress Mechanism (WGRM) as described in the LMP.	All locations	Included in construction costs	Contractor	SLASPA
WASTE MANAGEMENT (ESS3)					
Solid waste planning	Contractor to develop Waste Management Plan	All locations	Included in construction costs	Contractor	SLASPA
WASTE MANAGEMENT (ESS3)					
Solid waste generation	Allow for re-use of as much material as possible either by the Project contractor, other projects, or for community use. The Saint Lucia Solid Waste Management Authority (SLUSWMA) should be consulted for approval to receive material that cannot be recycled or reused at the Vieux Fort Landfill. When planning the construction lay down area ensure temporary waste dump areas are allowed for and approved waste disposal sites / methodologies identified for removal of all solid waste.	All locations	Minimal (part of standard design and construction practices).	Design Consultant and Contractors	SLASPA
Waste disposal	Ensure all construction waste material is reused, recycled or packed up for transport to the Vieux Fort Landfill. Ensure areas for waste collection, recycling and off-site disposal are clearly marked/sign posted. Segregate waste to avoid cross contamination, such as with contaminated material (hazardous substance). Install waste collection facilities at construction lay down area to allow for collection and packing of waste. Strictly no dumping of rubbish. Include awareness training in general environmental training. Maintain records of volumes, frequencies, types and disposal destination of all wastes.	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA
Debris safety	Store all wastes at least 1,000 meters from the runway until collection and disposal. Conduct inspections before, during and after all activities to ensure runway is free of FOD (foreign object debris).	All locations	Included in construction costs	Contractor	SLASPA
HAZARDOUS MATERIALS MANAGEMENT (ESS3)					

Water and soil pollution	Minimize risk to groundwater and surrounding soil by developing a spill response plan and provide training to all contract workers on how to implement the spill response plan. Zones for preliminary accumulation of wastes are designated in areas that will cause no damage to the vegetation cover or leach into groundwater (e.g. within construction lay down area on hard surface).	All components	Minimal (part of standard design and construction practices).	Design Consultant	SLASPA
HAZARDOUS MATERIALS MANAGEMENT (ESS3)					
Hazardous materials management	Spill response plan training completed for all construction workers. Spill kits and training of use to be provided to all workers during toolbox meetings. Spill kits to contain personal protective equipment (PPE) gear for the spill clean-up (e.g. gloves and overalls), material to contain the spill and absorbent pads, and a heavy-duty rubbish bag to collect absorbent pads or material. Store paints, solvents, and other chemicals in safe containers with appropriate information labeling. Complete list, including material safety data sheet (MSDS) for each chemical stored or used shall be accessible at all times. Signage to be posted in storage areas identifying all chemicals present. Use pesticides only through approved licensed subcontractors.	All locations	Minimal (part of mobilization and construction planning).	Contractors	
AIR, DUST AND NOISE CONTROL (ESS3)					
Dust/Air Pollution	Ensure all equipment is serviced and issued with warrant of fitness (as required). Any machinery deemed to be polluting the air must be replaced (or fixed) on instruction by the SLASPA. Ban on open burning of any trash or other materials.	All locations	Minimal (part of standard design practices).	Design Consultant	SLASPA
Generation of dust	Keep work areas clean with regular sweeping. Due to freshwater supply constraints large scale water sprinkling should be kept to a minimum and only as required. Dust masks and personnel protective equipment must be available for workers during dust generating activities (e.g. pavement milling). No excessive idling of vehicles.	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA
AIR, DUST AND NOISE CONTROL (ESS3)					
Noise and vibration disturbances	Minimize nuisance from noise, especially closer to residential areas, through establishment and communication to affected parties of standard working hours (07:00 to 18:00, Monday to Friday) and avoid increase of noise and number of work equipment at peak hours. Any work outside prescribed hours of operation require approval by the SLASPA and notice to affected peoples provided at least one week	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA

	prior to out of schedule works starting. Work on Sunday is restricted and is likely to only be approved in emergency situations. Regularly check and maintain machinery, equipment and vehicle conditions to ensure appropriate use of mufflers, etc. Workers in the vicinity of sources of high noise shall wear necessary protection gear rated for the situation they are being used. Signage to outline complaints procedure and contact details of recipient of complaints (e.g. phone number, physical address and email).				
COMMUNITY HEALTH AND SAFETY (ESS4)					
Unauthorized access to facilities or work sites	Maintain perimeter fences and conduct security checks.	Operational airports	Minimal	SLASPA	SLASPA
Road traffic incidents or accidents	Provide for Traffic Management Plan (TMP) to be developed by Contractor, to include signage, flag operators, personnel protective equipment (e.g. high visibility vest), and specific actions to be implemented around sensitive receptors (e.g. residential dwellings, schools, hospital). TMP to include vehicle and pedestrian traffic.	From port to airport (delivery of equipment). To and from the construction lay down area.	Minimal (requirement of bidding documents)	Design Consultant and Contractors	SLASPA
COMMUNITY HEALTH AND SAFETY (ESS4)					
Aviation traffic incidents or accidents	Each investment within an operational airport is to have a Methods of Works Plan (MOWP) which is to be included in all bid and contract documents. The Contractor is to develop a Safety Management Plan as an addendum to the MOWP. The MOWP will include details of site works scheduling around known flight timetables and procedures for emergency response for all workers.	Operational airports	Minimal (requirement of bidding documents and standard construction practices)	Design Consultant	SLASPA
Traffic (vehicle and pedestrian) and construction safety	Implement the traffic management plan (TMP) to ensure smooth traffic flow and safety for workers, passing vehicles and pedestrian traffic. Where appropriate, employ flag operators on the road to prevent traffic accidents. The workers shall have relevant safety equipment.	Route from port to airport	Safety equipment included in construction cost.	Construction Contractors	SLASPA
Accident risks/Impacts on traffic safety	Arrange necessary measures for pedestrian and passer-by safety and all means of transportation safety (e.g. establish protection zones, bypass these areas during transportation of materials, etc.) Relevant safety elements such as guardrails, road signs and delineators, pavement markings, barricades and beams, warning lights	All locations	Safety equipment included in construction cost. Minimal (part of standard	Construction Contractors	SLASPA

	shall be installed. In some cases a flag operator or traffic control supervisor could be engaged around the specific work site.		construction practice).		
EMERGENCY RESPONSE (ESS4)					
Accident response plan	Contractor to develop Procedures for accident and near-miss reporting and notification. Health and Safety Plan to include investigation and root cause analysis of accidents and incidents.	All locations	Minimal(part of standard construction practice).	Construction Contractors	SLASPA
Extreme weather events	Contractor to maintain security and integrity of work sites and materials by securing site and associated equipment and facilities to protect from damages in case of extreme rainfall or flooding. Contractor to maintain erosion control, waste storage, and other facilities and equipment.	All locations	Minimal(part of standard construction practice).	Construction Contractors	SLASPA
BIRD HAZARD AND WILDLIFE MANAGEMENT (ESS6)					
Bird strikes and animal incursions	Implement the Bird and Wildlife Control Program.	Areas within airport perimeter	Minimal (part of standard operations).	SLASPA	SLASPA
PHYSICAL CULTURAL RESOURCES (ESS8)					
Loss of archaeological artefacts or sites	Chance find procedure: work to stop in specific location of unearthed artefacts or site. Fence the area to limit access and notify SLASPA and Saint Lucia Archeological and Historical Society (SLAHS) immediately for instruction to proceed.	All locations	No marginal cost	Construction Contractors	SLASPA
Disturbance to Choc Cemetary	Coordinate with operators of cemetery to schedule activities at appropriate times (e.g. to avoid conflicting traffic and noise impacts to memorial services). If any works are to generate significant vibration, inspect and document condition of nearby structures before and after works. Monitor during works to minimize damage to structures from vibration and restore any damages afterwards.	SLU	No marginal cost	Construction Contractors	SLASPA

Appendix A Table 3. ESMP for project civil works at ADS-B sites

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[35]	EXECUTING AGENCY	SUPERVISING AGENCY
ENVIRONMENTAL AND SOCIAL ASSESMENT (ESS1)					
Update ESA and ESMPs	Review and evaluate detailed design plans at both airports, screen proposed ADS-B antennae sites and access roads, and identify any new potential impacts. Revise ESA as needed to include new design, new schedule, update of construction procedures and/or operations plans; and, revise ESMPs as needed to mitigate any newly identified impacts or risks. Redisclose ESA and ESMPs.	All sites	Included in work for UVF Airport (see corresponding ESMP)	Contractor	PIU
Prepare bidding and contracting documents with ESMPs	Include ESMPs as requirements within bidding and contracting documents. Ensure that proposals and contracts include the ESMPs and any other environmental and social requirements.	All sites	Included in bid and contract estimates	Contractor	PIU
LABOR MANAGEMENT (ESS2)					
Sanitation facilities for workers	Provide and maintain sanitation facilities. Sanitation treatment system (e.g. compost or proprietary treatment system) is to be approved by the SLASPA, DIPE and DSD prior to implementation.	At work site	Minimal (part of standard construction practice).	Construction Contractors	SLASPA
Occupational Health and Safety	Ensure there are basic medical facilities on site. First aid training to be provided as required to site workers with basic first aid services to be provided by Contractor e.g. stretcher, vehicle transport to hospital. Provide appropriate Personal Protective Equipment (PPE). Provide hazard specific personnel protective equipment to workers directly involved in handling hazardous substances (e.g. chemical or heat resistant clothing, gloves). Post and sign information to inform workers of key rules and regulations.	All locations	Security included in construction cost Included in construction costs	Contractor	SLASPA

[35]Costs are estimates only and will be calculated during the detailed engineering design.

	Construction lay down area to be fenced to prevent access by unauthorized personnel.				
Unfair or illegal treatment of workers	Follow the Labor Management Plan (LMP) included in this ESA. Operate the Worker Grievance Redress Mechanism (WGRM) as described in the LMP.	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA
WASTE MANAGEMENT (ESS3)					
Solid waste planning	Contractor to develop Waste Management Plan	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA
WASTE MANAGEMENT (ESS3)					
Solid waste generation	When planning the construction lay down area ensure temporary waste dump areas are allowed for and approved waste disposal sites / methodologies identified for removal of all solid waste.	All locations	Minimal (part of standard design and construction practices).	Design Consultant and Contractors	SLASPA
Waste disposal	Ensure all construction waste material is reused, recycled or packed up for transport to an authorized landfill. Ensure areas for waste collection, recycling and off-site disposal are clearly marked/sign posted. Segregate waste to avoid cross contamination, such as with contaminated material (hazardous substance). Install waste collection facilities at construction lay down area to allow for collection and packing of waste. Strictly no dumping of rubbish. Include awareness training in general environmental training. Maintain records of volumes, frequencies, types and disposal destination of all wastes.	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA
HAZARDOUS MATERIALS MANAGEMENT (ESS3)					
Water and soil pollution	Minimize risk to groundwater and surrounding soil by developing a spill response plan and provide training to all contract workers on how to implement the spill response plan. Zones for preliminary accumulation of wastes are designated in areas that will cause no damage to the vegetation cover or leach into groundwater (e.g. within construction lay down area on hard surface).	All components	Minimal (part of standard design and construction practices).	Design Consultant	SLASPA

HAZARDOUS MATERIALS MANAGEMENT (ESS3)					
Hazardous materials management	Lubricants shall be collected and recycled or disposed of according to Saint Lucian regulations. Used oil to be collected and taken to an approved facility (for disposal or cleaning) at completion of works if no on island disposal or recycling facility available material is to be taken off island and disposed of at an approved facility. Spill response plan training completed for all construction workers. Spill kits and training of use to be provided to all workers during toolbox meetings. Spill kits to contain personal protective equipment (PPE) gear for the spill clean-up (e.g. gloves and overalls), material to contain the spill and absorbent pads, and a heavy-duty rubbish bag to collect absorbent pads or material. Store paints, solvents, and other chemicals in safe containers with appropriate information labeling. Complete list, including material safety data sheet (MSDS) for each chemical stored or used shall be accessible at all times. Signage to be posted in storage areas identifying all chemicals present. Use pesticides only through approved licensed subcontractors.	All locations	Minimal (part of mobilization and construction planning).	Contractors	SLASPA
WATER CONSERVATION AND ENERGY EFFICIENCY (ESS3)					
Water use	Spray surfaces and grounds for dust control as needed.	Construction site	Minimal (part of standard design practices).	Design Consultant	SLASPA
AIR, DUST AND NOISE CONTROL (ESS3)					
Dust/Air Pollution	Identify and locate waste disposal sites, stockpile sites and equipment to minimize impacts on the environment and nearby population. Ensure all equipment is serviced and issued with warrant of fitness (as required). Any machinery deemed to be polluting the air must be replaced (or fixed) on instruction by the SLASPA. Ban on open burning of any trash or other materials.	Construction site	Minimal (part of standard design practices).	Design Consultant	SLASPA

AIR, DUST AND NOISE CONTROL (ESS3)					
Generation of dust	Use closed/covered trucks for transportation of construction materials. Any vehicle which is overloaded (exceed designed load limit) or is not covered properly shall be refused entry to the construction lay down area or material shall be refused delivery (if not to the construction lay down area). Cover stockpiles containing fine material (e.g. sand and topsoil) when not actively being used. Keep work areas clean with regular sweeping. Due to freshwater supply constraints large scale water sprinkling should be kept to a minimum and only as required. Only small areas should be cleared of vegetation at any one time and revegetation should occur as soon as practicable. Dust masks and personnel protective equipment must be available for workers during dust generating activities (e.g. pavement milling). Spray dry road surfaces, material stockpiles, pneumatic drill sites, and other areas as needed with water to reduce dust. No excessive idling of vehicles.	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA
AIR, DUST AND NOISE CONTROL (ESS3)					
Noise and vibration disturbances	Minimize nuisance from noise, especially closer to residential areas, through establishment and communication to affected parties of standard working hours (07:00 to 18:00, Monday to Friday) and avoid increase of noise and number of work equipment at peak hours. Any work outside prescribed hours of operation require approval by the SLASPA and notice to affected peoples provided at least one week prior to out of schedule works starting. Work on Sunday is restricted and is likely to only be approved in emergency situations. Regularly check and maintain machinery, equipment and vehicle conditions to ensure appropriate use of mufflers, etc. Workers in the vicinity of sources of high noise shall wear necessary protection gear rated for the situation they are being used. Signage to outline complaints procedure and contact details of recipient of complaints (e.g. phone number, physical address and email). The WB/IFC EHS Guidelines[36] section 1.7 Noise Management shall be applied (if no local limits are prescribed). Noise impacts should not	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA

[36] International Finance Corporation, Environmental Health and Safety Guidelines, General Guidelines: Noise Management

	exceed an increase in background levels of 3 dB at the nearest receptor location off-site (e.g. residential house).				
COMMUNITY HEALTH AND SAFETY (ESS4)					
Unauthorized access to facilities or work sites	Maintain perimeter fences and access controls at work sites.	All locations	No marginal cost	Contractors	SLASPA
Road traffic incidents or accidents	Provide for Traffic Management Plan (TMP) to be developed by Contractor, to include signage, flag operators, personnel protective equipment (e.g. high visibility vest), and specific actions to be implemented around sensitive receptors (e.g. residential dwellings, schools, hospital). TMP to include vehicle and pedestrian traffic.	From port to airport (delivery of equipment). To and from the construction lay down area.	Minimal (requirement of bidding documents)	Design Consultant and Contractors	SLASPA
COMMUNITY HEALTH AND SAFETY (ESS4)					
Traffic (vehicle and pedestrian) and construction safety	Implement the traffic management plan (TMP) to ensure smooth traffic flow and safety for workers, passing vehicles and pedestrian traffic. Where appropriate, employ flag operators on the road to prevent traffic accidents. The workers shall have relevant safety equipment.	Route from port to airport	Safety equipment included in construction cost.	Construction Contractors	SLASPA
Accident risks/Impacts on traffic safety	Arrange necessary measures for pedestrian and passer-by safety and all means of transportation safety (e.g. establish protection zones, bypass these areas during transportation of materials, etc.) Relevant safety elements such as guardrails, road signs and delineators, pavement markings, barricades and beams, warning lights shall be installed. In some cases a flag operator or traffic control supervisor could be engaged around the specific work site.	All locations	Safety equipment included in construction cost. Minimal (part of standard construction practice).	Construction Contractors	SLASPA
EMERGENCY RESPONSE (ESS4)					
Accident response plan	Contractor to develop Procedures for accident and near-miss reporting and notification. Health and Safety Plan to include investigation and root cause analysis of accidents and incidents.	All locations	No marginal cost	Contractors	SLASPA
Extreme weather events	Contractor to maintain security and integrity of work sites and materials by securing site and associated equipment and facilities to protect from damages in case of extreme rainfall or flooding. Contractor to maintain erosion control, waste storage, and other facilities and equipment.	All locations	No marginal cost	Contractors	SLASPA

Hazardous substances and safety and pollution	Store and handle hazardous substances in bunded, hard stand or designated areas only.	All locations	Safety equipment included in construction cost as part of standard construction practice).	Construction Contractors	SLASPA
NATURAL HABITAT AND BIODIVERSIT (ESS6)					
Landscape degradation	Restoration of landscape after completion of rehabilitation works; restore the vegetation cover in accordance with the surrounding landscape and any required design (e.g. grass land or shrubs). Use plant species characteristic for the landscape in the course of restoration of the vegetation cover.	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA
Loss of biodiversity	If during course of access road use or construction work, particularly vegetation clearance and excavations, any bird, reptile or mammal species is identified as being potentially impacted (e.g. nesting bird in area of proposed vegetation clearance) work is to stop in the specific location of the find and the DSD and SLASPA notified immediately for instruction to proceed.	All locations	No marginal cost	Contractors	SLASPA
STORMWATER EROSION, RUNOFF AND SEDIMENT CONTROL (ESS6)					
Runoff of pollutants in drains	Excavations are bunded to prevent ingress of water runoff and clean water diversion (e.g. sand bags, clay bund, or shallow trenches) are used to direct overland flow away from active work and storage areas. Sediment laden runoff from excavations or stockpiles must be directed to a settling area (e.g. pond or decant pond to be sized for area covered) or collected for dust suppression provided the runoff is not contaminated with any chemicals (e.g. fuel).	All locations	No marginal cost	Contractors	SLASPA
Soil erosion	Minimize time and size of ground disturbing activities to workable size at any one time. Vegetation to be removed manually, strictly no use of herbicides/ pesticides. Stockpiles are to be positioned on impermeable surfaces (e.g. geotextile or concrete hard stand). Revegetate disturbed areas that are not being paved as soon as practicable (loosen ground; apply topsoil; seed or plant as necessary). Minimize erosion and design erosion protection measures according to international good practice standards, including incorporation of effective drainage systems (soakage pits) and consideration of surface flow paths. Schedule any earthworks and construction activities during dry season (January to mid-April).	All locations	Minimal (part of standard construction practice).	Construction Contractors	SLASPA

STORMWATER EROSION, RUNOFF AND SEDIMENT CONTROL (ESS6)					
Runoff from access road improvements (if necessary)	Select ADS-B antenna sites with existing, adequate access roads if feasible that require minimal or no improvements. Provide detailed plans for any road improvements that are needed to access the site for construction of the towers if new alternative sites are proposed. Include erosion protection measures according to international good practice standards, including incorporation of effective drainage systems (road drains) and consideration of surface flow paths and erosion point protections (energy dissipators). Schedule earthworks and construction activities during dry season (January to mid-April). Preserve any removed topsoil for use in revegetation. Revegetate and stabilize roadsides immediately after improvements are completed.	Access roads to ADS-B sites	Minimal (part of standard design practices).	Design Consultant	SLASPA
PHYSICAL CULTURAL RESOURCES (ESS8)					
Loss of archaeological artefacts or sites	Chance find procedure: work to stop in specific location of unearthed artefacts or site. Fence the area to limit access and notify SLASPA and Saint Lucia Archeological and Historical Society (SLAHS) immediately for instruction to proceed.	All locations	No marginal cost	Construction Contractors	SLASPA

Appendix A Table 4. ESMP for operations phase at all facilities and locations*

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[37]	EXECUTING AGENCY	SUPERVISING AGENCY
WASTE MANAGEMENT (ESS3)					
Wastewater management	Septic systems of the terminal to be cleaned regularly and sludge disposed or treated in accordance with requirements of WASCO/SLUSWMA. Sludge can be disposed of at designated landfills.	Terminal	No marginal cost for current practice of disposal.	TBU Management	SLASPA
Solid waste management	Explore possible improvements including instituting a recycling program, managing food catering waste as per local regulations, and maintaining records of volumes, frequencies, types and disposal destination of all wastes.	All locations	Minimal (part of standard practice).	TBU Management	SLASPA
HAZARDOUS MATERIALS MANAGEMENT (ESS3)					
Water and soil pollution	Inspect and clean oil-water separators in drains as needed. Dispose of recovered oil and sludge as described above.	All locations	No marginal cost (standard operating procedure).	TBU Management	SLASPA
WATER CONSERVATION AND ENERGY EFFICIENCY (ESS3)					
Energy use	Measure, meter and track energy use. Research strategies and methods to reduce waste and conserve energy.	All locations	Minimal (part of standard practice).	TBU Management	SLASPA
Water use	Measure, meter and track water use. Investigate fixtures, equipment, and strategies to reduce water use.	All locations	Minimal (part of standard practice).	TBU Management	SLASPA
EMERGENCY RESPONSE (ESS4)					
Extreme weather events or natural disasters	Apply relevant sections of ESMPs to CERC actions or emergency response civil works.	All locations	Minimal (part of construction documents)	SLASPA	SLASPA

[37]Costs are estimates only and will be calculated during the detailed engineering design.

BIRD HAZARD AND WILDLIFE MANAGEMENT (ESS6)					
Bird strikes and animal incursions	Continue to implement the Bird and Wildlife Control Program.	Areas within airport perimeter	No marginal cost (standard operating procedure).	SLASPA	SLASPA
STORMWATER EROSION, RUNOFF AND SEDIMENT CONTROL (ESS6)					
Maintenance of drainage and soakage systems	Drainage systems shall be periodically cleared of sediment and organic matter builds up to ensure appropriate flows and soakage. Material to be disposed at approved site (e.g. landfill or used as clean fill) or composted if organic. Vegetation to be cleared from drainage channels and soakage pits and composted through a designated landfill.	All locations	No marginal cost (standard operating procedure).	TBU Management	SLASPA

*** Note:** "All locations" refers to all areas at UVF and SLU which will be impacted by the Project activities, namely the airport (runway, ARFFS building), sites for ADS-B antennae, the road corridor (transport of materials), the port (for delivery of equipment and material), and the construction lay down area.

Appendix B Construction Monitoring Plan

Appendix B Construction Monitoring Plan for all facilities and locations*

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
DETAILED DESIGN/PRE-CONSTRUCTION				
Traffic Safety	Design documents	Ensure TMP is in place.	Prior to sign off of final designs	Design Consultant
Aviation safety	Design documents	MOWP complete with details of flight schedules and emergency procedures.	Prior to sign off of final designs	Design Consultant
Soil Erosion	Design documents	Construction scheduled for between May and December. Designs include erosion protection measures.	Prior to sign off of final designs	Design Consultant
Quarry operations	Quarry	Upon confirmation of which quarry is to supply arrogate verify quarry operations to ensure any required permits or approvals are in place. Ensure TMP is included in procurement documentation for transport of materials from the quarry to the airport.	Prior to contract award	Design Consultant
Importation of equipment and materials	Importation permits	Ensure inclusion in design and material specifications that material and equipment to be fumigated and free of contamination. Approval to import material and equipment is given prior to material and equipment leaving country of origin.	Contractor to organize prior to export from country of origin.	Contractors
CONSTRUCTION/REHABILITATION				
Agreement for waste disposal	Construction Contractor's records	Permits and/or agreements with local waste disposal providers (e.g. Vieux Fort Landfill) and licensed recycling operators. Inspection of disposal sites.	Documentation viewed prior to construction works starting. Weekly as applicable to schedule of works.	SLASPA
Soil erosion	Areas of exposed soil and earth moving	Inspections at sites to ensure silt fences, diversion drains etc. are constructed as needed. Inspection to ensure replanting and restoration work completed.	Weekly inspection as applicable to schedule of works and after site restoration.	SLASPA
Waste disposal	At construction sites	Inspection to ensure waste is not accumulating and evidence waste has been stockpiled for removal to licensed landfill (Deglos or Vieux Fort Landfills). Inspection to ensure waste streams are sorted for re-use, recycling or waste to landfill.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	SLASPA

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
CONSTRUCTION/REHABILITATION				
Water and soil pollution	At construction sites	Inspection of sites to ensure waste collection in defined area; spill response plan in place and workers trained. Complete spill kits available where hazardous substances sorted and handled. Results from groundwater sampling are submitted to SLASPA and DSD with remedial action points if background/baseline conditions are exceeded. Any encounters with potentially or confirmed contaminated soil (based on PID readings) are reported to SLASPA.	Weekly inspection as applicable to schedule of works and on receipt of any complaints	SLASPA
Dust	At construction sites and adjacent sensitive areas	Site inspections. Regular visual inspections to ensure stockpiles are covered when not in use and trucks transporting material are covered and not overloaded.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	SLASPA
Noise	At work sites and sensitive locations	Site inspections to ensure workers wearing protective equipment when required. Measurement of noise level with hand-held noise meter not to exceed 70dB. Public signage detailing complaints procedure and contact people/person on display. Noisy machinery is replaced or fixed as soon as problem arises or on instruction by SLASPA.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	SLASPA
Air pollution	At work sites	Site inspections to ensure equipment and machinery operating without excessive emissions. If an issue is reported the contractor is responsible for replacing or fixing the equipment to the satisfaction of SLASPA.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	SLASPA
Storage of fuel, oil, bitumen, etc.	At work sites and construction camp. Contractors training log.	Regular site inspections to ensure material is stored within bunded area and spill response training for workers completed. Visual inspection of spill kit for completeness and accessibility.	Weekly as applicable to schedule of works and on receipt of any complaints.	SLASPA
Vehicle and pedestrian safety	At and near work sites	Regular inspections to check that TMP is implemented correctly (e.g. flags and diversions in place) and workers wearing appropriate personnel protective gear.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	SLASPA

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
CONSTRUCTION/REHABILITATION				
Construction workers and staff safety (personal protective equipment)	At work sites	Inspections to ensure workers have access to and are wearing (when required) appropriate personnel protective equipment (e.g. for handling hazardous materials). WB/IFC Guidelines have been implemented.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	SLASPA
Community safety	At work sites	Inspections to ensure signs and fences restricting access are in place and pedestrian diversion routes clearly marked (whether for access to a building or home or particular route).	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	SLASPA
Materials supply	Quarry and work sites	Inspections to ensure permits in place for transporting loads over 3 tonnes (if applicable). Evidence that trucks are not overloaded and loads are covered (e.g. complaints register, evidence of debris on the road).	Weekly visual inspection as applicable to schedule of works and on receipt of any complaints	SLASPA
OPERATION				
Accidents with hazardous materials or wastes	Airport sites	Accident report	Immediately after accident	SLASPA
Wastewater management	Terminal, control tower and ARFF	Proper maintenance of septic system, no reports of odor or seepage	Quarterly inspection (observation) at connection to septic system.	SLASPA
Solid waste collection and disposal (non-hazardous)	Terminal and control tower	Solid waste being collected and taken to approved disposal site (e.g. landfill)	To be arranged with Waste Authority Limited as required	SLASPA
Drainage system operational with reduced flooding incidences	Runway	Clean out of soakage pits documented and inspection of grass swales after mowing shows grass height in swale is higher than surrounds.	Soakage pit – after storm events to clear blockages and annually to remove sediment. After grass mowing.	SLASPA

*** Note:** "All locations" refers to all areas at UVF and SLU which will be impacted by the Project activities, namely the airport (runway, ARFFS building), sites for ADS-B antennae, the road corridor (transport of materials), the port (for delivery of equipment and material), and the construction lay down area.

Appendix C Flight Schedule for UVF

SLASPA
SAINT LUCIA AIR AND SEA PORTS AUTHORITY

Hewanorra International Airport

Aircraft Movement For the Month of August 2019

FLIGHT	ETA/ETD	A/C TYPE	ROUTING	REMARKS
SUNDAY				
American Airlines 1335/1550	1222/1322	B 738	MIA –UVF -MIA	Until August 19th
Jet Blue 881 / 882	1248 / 1408	A 320	JFK – UVF – JFK	August 1st Only ETA 1256 ETD 1408
Virgin Atlantic 97	1330 / 1430	A 330	LGW – UVF – TAB	
British Airways 2159	1345 / 1445	B 777	LGW – UVF – POS	
American Airlines 823/818	1421 / 1518	A 320	CLT – UVF - CLT	Until August 19th
Delta 339/349	1427 / 1527	B 737	ATL – UVF – ATL	
West Jet 2626/2627	1451 / 1545	B 737	YYZ – UVF – YYZ	
American Airlines 2295	1455 / 1557	B 757	MIA – UVF - MIA	
Air Canada Rouge 1878/1879	1800 / 1900	A 319	YYZ – UVF – YYZ	
Virgin Atlantic 98	1805 / 1915	A 330	TAB – UVF - LGW	
British Airways 2158	1835 / 1935	B 777	POS – UVF – LGW	
MONDAY				
American Airlines 1335/1550	1222/1322	B 738	MIA –UVF-MIA	Until August 19th
Jet Blue 881/882	1448 / 1408	A 320	JFK – UVF – JFK	
Virgin Atlantic 89	1305 / 1420	A 330	LGW – UVF – GND	
British Airways 2159	1345 / 1445	B 777	LGW – UVF – POS	
American Airlines 823/818	1417 / 1511	A 320	CLT – UVF - CLT	Until August 19th
Delta 339/349	1427 / 1527	B 737	ATL – UVF – ATL	Eff. August 12th ETA 1433 ETD 1533
American Airlines 2295	1455 / 1557	B 737	MIA – UVF - MIA	
Virgin Atlantic 90	1800 / 1915	A 330	GND – UVF – LGW	
British Airways 2158	1835 / 1935	B 777	POS – UVF – LGW	
TUESDAY				
Amerijet 6821	0715/0815	B 767	MIA – UVF – SVD	
American Airlines 1335/1550	1222/1322	B 738	MIA –UVF-MIA	Until August 19th
Jet Blue 881/882	1248 / 1408	A 321	JFK – UVF – JFK	
American Airlines 2295	1340 /1440	B 737	MIA – UVF - MIA	Eff. August 20th ETA 1451 ETD 1553
British Airways 2159	1345 / 1445	B 777	LGW – UVF – POS	
American Airlines 823/818	1421/ 1518	A 320	CLT – UVF - CLT	Until August 19th
Delta 339/349	1427/ 1527	B 737	ATL – UVF – ATL	
Thomson Airways024/025	1440/1655	B 787	LGW-UVF-LGW	
British Airways 2158	1835 / 1935	B 777	POS – UVF – LGW	
WEDNESDAY				
American Airlines 1335/1550	1222/1322	B 738	MIA –UVF-MIA	Until August 19th
Jet Blue 881/882	1248/ 1408	A 321	JFK – UVF – JFK	
British Airways 2159	1345 / 1445	B 777	LGW – UVF – GND	
American Airlines 823/818	1421/ 1518	A 320	CLT – UVF - CLT	Until August 19th
Delta 339/349	1427 / 1427	A 320	ATL – UVF – ATL	
American Airlines 2295	1455 /1557	B 737	MIA – UVF - MIA	
British Airways 2158	1755/ 1855	B 777	GND – UVF – LGW	
THURSDAY				
American Airlines 1335/1550	1222/1322	B 738	MIA _UVF MIA	Until August 19th
Jet Blue 881/882	1248 / 1408	A 321	JFK – UVF – JFK	August 1st OnlyETA 1256 ETD 1408
British Airways 2159	1345 / 1445	B 777	LGW – UVF – POS	
American Airlines 823/818	1417 /1511	A 320	CLT – UVF -CLT	Until August 19th
Delta 339/349	1427 / 1527	B 737	ATL – UVF – ATL	
American Airlines 2295	1455 / 1557	B 737	MIA – UVF – MIA	
British Airways 2158	1835 / 1935	B 777	POS – UVF – LGW	
FRIDAY				
American Airlines 1335/1550	1222/1322	B 738	MIA _UVF MIA	Until August 19th
Jet Blue 881/882	1248 / 1408	A 321	JFK – UVF – JFK	August 2nd OnlyETA 1248 ETD 1408
Virgin Atlantic 89	1305/1420	A 330	LGW –UVF-GND	
British Airways 2159	1345 / 1445	B 777	LGW – UVF – POS	
American Airlines 823/818	1417 /1511	A 320	CLT – UVF - CLT	Until August 19th
Delta 339/349	1427 / 1527	B 737	ATL – UVF – ATL	
American Airlines 2295	1455 /1557	B 737	MIA – UVF - MIA	
Virgin Atlantic 90	1800/1915	A 330	GND – UVF -LGW	
British Airways 2158	1835 / 1935	B 777	POS – UVF – LGW	
SATURDAY				
Jet Blue 881/882	1220 1345	A 321	JFK – UVF – JFK	
American Airlines 1335/1550	1222/1322	B 738	MIA _UVF MIA	Until August 19th
Delta 329/315	1246 / 1350	B 738	ATL – UVF – ATL	Until August 10th
United Airlines 1642/1643	1325 / 1425	B 737	EWR – UVF – EWR	Until 17th August
British Airways 2159	1345 / 1445	B 777	LGW – UVF – GND	
American Airlines 823/818	1417 /1511	A 320	CLT – UVF – CLT	Until August 19th
Delta 339/349	1427 / 1527	B 737	ATL – UVF – ATL	Eff. August 17th ETA 1433 ETD 1553
Air Canada Rouge 1878/1879	1440 / 1540	A 319	YYZ – UVF – YYZ	
American Airlines 2295	1455 /1557	B 757	MIA – UVF - MIA	
British Airways 2158	1755 / 1855	B 777	GND – UVF – LGW	

SLASPA
SAINT LUCIA AIR AND SEA PORTS AUTHORITY

Hewanorra International Airport

Aircraft Movement For the Month of September 2019

FLIGHT	ETA/ETD	A/C TYPE	ROUTING	REMARKS
SUNDAY				
Jet Blue 881/882	1248/1408	A 321	JFK-UVF-JFK	
Virgin Atlantic 97	1330/1430	A 332	LGW-UVF-TAB	
British Airways 2159	1345/1445	B 777	LGW-UVF-POS	
American Airlines 2295	1404/1507	B 757	MIA-UVF-MIA	1 SEP ONLY; ETA1451 ETD 1553 A/C A320
West Jet 2628/2627	1411/1505	B 737	YYZ-UVF-YYZ	
Delta 339/348	1430/1530	B 738	ATL-UVF-ATL	
Air Canada Rouge 1878/1879	1440/1540	A 319	YYZ-UVF-YYZ	1 SEP ONLY; ETA 1800 ETD 1900
Virgin Atlantic 98	1805/1915	A 332	TAB-UVF-LGW	
British Airways 2158	1835/1935	B 777	POS-UVF-LGW	
MONDAY				
Jet Blue 881/882	1248/1408	A 321	JFK-UVF-JFK	
Virgin Atlantic 89	1305/1430	A 332	LGW-UVF-GND	
British Airways 2159	1345/1445	B 777	LGW-UVF-POS	
American Airlines 2295	1404/1507	B 757	MIA-UVF-MIA	02 SEP ONLY; ETA 1451 ETD453 A/C A320
Delta 339/349	1430/1530	B 738	ATL-UVF-ATL	
Virgin Atlantic 90	1800/1915	A 332	GND-UVF-LGW	
British Airways 2158	1835/1935	B 777	POS-UVF-LGW	
TUESDAY				
Jet Blue 881/882	1248/1408	A 320	JFK-UVF-JFK	
British Airways 2159	1345/1445	B 777	LGW-UVF-POS	
American Airlines 2295	1404/1507	B 757	MIA-UVF-MIA	03SEP ONLY; ETA 1451 ETD 1553 A/C A320
Thomson Airways 24/25	1440/1655	B 787	LGW-UVF-LGW	
British Airways 2158	1835/1935	B 777	POS-UVF-LGW	
WEDNESDAY				
Jet Blue 881/882	1248/1408	A 321	JFK-UVF-JFK	
British Airways 2159	1345/1445	B 777	LGW—UVF-GND	
American Airlines 2295	1404/1507	B 757	MIA-UVF-MIA	
British Airways 2158	1755/1855	B 777	GND-UVF-LGW	
THURSDAY				
Jet Blue 881/882	1248/1408	A 321	JFK-UVF-JFK	
American Airlines 2295	1404/1507	B 757	MIA-UVF-MIA	
British Airways 2159	1415/1515	B 777	LGW-UVF-POS	
Delta 339/349	1430/1530	B 738	ATL-UVF-ATL	
British Airways 2158	2020/2120	B 777	POS-UVF-LGW	
FRIDAY				
Jet Blue 881/882	1248/1408	A321	JFK-UVF-JFK	
British Airways 2159	1345/1445	B 777	LGW-UVF-POS	
American Airlines 2295	1408/1507	B 757	MIA-UVF-MIA	
Virgin Atlantic 89	1410/1510	A 332	LGW-UVF-GND	
Delta 339/349	1430/1530	B 738	ATL-UVF-ATL	
British Airways 2158	1835/1935	B 777	POS-UVF-LGW	
Virgin Atlantic 90	1840/1950	A 332	GND-UVF-LGW	
SATURDAY				
Jet Blue 881/882	1342/1507	A 321	JFK-UVF-JFK	
British Airways 2159	1345/1445	B 777	LGW-UVF-GND	
American Airlines 2295	1412/1512	B 738	MIA-UVF-MIA	
Delta 339/349	1430/1530	B 738	ATL-UVF-ATL	
Air Canada Rouge 1878/1879	1440/1540	A 319	YYZ-UVF-YYZ	
British Airways 2158	1755/1855	B 777	GND-UVF-LGW	

Appendix D Selected visitor statistics (2007 to 2017)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016r	2017pre	Change in 2017
Total Visitor Arrivals, of which:	**931,803**	**946,743**	**1,014,761**	**1,015,645**	**986,370**	**931,239**	**960,617**	**1,034,332**	**1,097,213**	**1,011,019**	**1,114,756**	**10.30%**
Cruise Passengers	610,345	619,680	699,306	670,043	630,304	571,894	594,118	641,452	677,394	587,421	669,217	**13.90%**
Stay-Over Arrivals	287,518	295,761	278,491	305,937	312,404	306,801	318,626	338,158	344,908	347,872	386,127	**11.00%**
Yacht Arrivals	26,163	22,422	31,997	32,052	33,139	42,173	39,646	47,196	65,831	63,243	50,197	**-20.60%**
Excursionists	7,777	8,880	4,967	7,613	10,523	10,371	8,227	7,526	9,080	12,483	9,215	**-26.20%**
Paid Bednights (in millions)	**2.1**	**2.14**	**2.09**	**2.26**	**2.13**	**2.22**	**2.35**	**2.46**	**2.4**	**2.31**	**2.56**	**11.00%**
Tourist Expenditure ($EC M) *	**1,439.00**	**1,233.00**	**1,122.00**	**1,500.00**	**1,554.00**	**1,602.40**	**1,763.70**	**2,015.30**	**2,070.90**	**1,971.00**	**n/a**	**-**
Stay-over	1,364.00	1,175.00	1,059.00	1,442.00	1,500.00	1,553.40	1,712.70	1960.23	2012.7	1914.5	n/a	**-**
Cruise	75	58	63	58	54	49	51	55.1	58.2	56.5	n/a	**-**
Average Hotel Occupancy	**64.9**	**61.6**	**53.3**	**58.7**	**58.3**	**62.3**	**64.6**	**68.4**	**70**	**61.7**	**n/a**	**-**
All Inclusive	**62.8**	**67.2**	**54**	**67**	**63**	**74**	**78.6**	**77.8**	**78**	**74.6**	**n/a**	**-**
Semi-inclusive hotels **	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**-**
European Plan	**59.9**	**60.2**	**55**	**55**	**57**	**59**	**63.1**	**68.8**	**72**	**60.2**	**n/a**	
Small Properties	**72.1**	**57.4**	**51**	**54**	**55**	**54**	**52.1**	**58.5**	**60**	**59.9**	**n/a**	
Average Length of Stay	**9**	**8.9**	**8.9**	**8.6**	**8.9**	**8.5**	**8.9**	**8.8**	**8.7**	**8.5**	**8.4**	**-1.50%**
Cruise Ship Calls	**314**	**315**	**397**	**380**	**351**	**336**	**341**	**386**	**388**	**383**	**423**	**10.40%**

r=revised

pre=preliminary

* For 2000 - 2003, the cruise component of total expenditure was revised downwards to reflect an average disembarkation ratio of 80.5% while a ratio of 82.34% was applied for 2004; cruise excluded in 2008 and 2009

** Based on the new classification, this category comprises hotels which are conventional but offer all-inclusive packages as well.

Source: Economic and Social Review 2017, Ministry of Finance

Appendix E Annual passenger arrivals by airport entry (2014 – 2018)

PORT AND TOTAL FOR YEAR	TYPE OF PASSENGER Visitors			Not Stated	MONTH TOTALS		% Change
	Tourists	Same Day	Residents		Current Year	Previous Year	
TOTAL 2014	319844	7490	49452	273	377059	359974	4.75
Not Stated	398	7	27	0	432	570	-24.21
George F. L. Charles Airport	52825	2789	24599	200	80413	89749	-10.40
Hewanorra International Airport	266621	4694	24826	73	296214	269655	9.85
TOTAL 2015	320116	8828	53130	372	382446	376985	1.45
Not Stated	740	28	72	1	841	432	94.68
George F. L. Charles Airport	53376	2761	26301	270	82708	80413	2.85
Hewanorra International Airport	266000	6039	26757	101	298897	296140	.93
TOTAL 2016	320024	12039	54427	379	386869	382654	1.1%
Not Stated	884	23	183	2	1092	1037	5.30
George F. L. Charles Airport	52188	3727	27380	234	83529	82710	.99
Hewanorra International Airport	266952	8289	26864	143	302248	298907	1.12
TOTAL 2017	345295	9042	11951	312	366600	386869	-5.24%
Not Stated	577	18	9	0	604	1092	-44.69
George F. L. Charles Airport	57809	1054	196	152	59211	83529	-29.11
Hewanorra International Airport	286909	7970	11746	160	306785	302248	1.50
TOTAL 2018	350250	9389	17450	187	377276	366842	2.84%
Not Stated	539	31	2	0	572	604	-5.30
George F. L. Charles Airport	56917	1402	46	104	58469	59453	-1.66
Hewanorra International Airport	292794	7956	17402	83	318235	306785	3.73

Appendix F Labor Management Procedures (LMP)

1. OVERVIEW OF LABOR USE ON THE PROJECT

Number of Project Workers

The table below describes the total number of workers to be employed on the project, and the different types of workers: direct workers, contracted workers and community workers. Where numbers are not yet firm, an estimate should be provided.

Type of Project Workers	No. of Workers	No. of Local Residents	No. of Foreign Workers	No. of Female Workers	Timing of Labor Requirements	Type of Job/Skill
PMU Staff	8	5	3	NA	Q1 2020-Q4 2021	Financial and Technical Staff (e.g. Procurement Specialist, E&S Specialist), Project Coordinator
Consultant's Staff	4	1	3	NA	Q1 2020-Q4 2021	Technical Staff: Project Manager (Resident Engineer), Engineers
SLASPA's Staff	NA	NA	NA	NA	Q1 2020-Q4 2021	Community Liaison Officer/Communications Specialist
Contractor's Staff	40-55	35-40	5-15	NA	Q1 2020-Q4 2021	Skilled/Unskilled Labor and Technicians/Engineers

The Project does not intend to make use of community workers and therefore this section is not relevant.

Characteristics of Project Workers

This section, to the extent possible, provides a description and an indication of the likely characteristics of the project workers (e.g. local workers, foreign workers, female workers, workers between the minimum age of and 18. Some information is available in the table in 1.1 above.

Details of female workers to be hired under this Project are not available at this stage.

Workers under the age of 18 will not be permitted in the implementation of this Project.

Timing of Labor Requirements

The table below shows the timing and sequence of labor requirements in terms of numbers, locations, types of jobs and skills required.

Activities	Schedule	Workforce
Runway resurfacing at UVF, inclusive of shoulders	Q1-Q2 2021	Contractor
Construction of code 4E turning bay on south side runway 10	Q1-Q2 2021	Contractor
Construction of runway end safety areas (RESAs) at UVF	Q1-Q2 2021	Contractor
Installation of up-to-date airfield ground lighting system at UVF	Q3-Q4 2021	Contractor
Rehabilitation of storm water drainage system at UVF	Q3-Q4 2020	Contractor
Installation of instrument landing system (ILS) at the UVF	Q3-Q4 2021	Contractor
Erection of ground station (receiver antenna) for ADS-B system for UVF	Q1-Q2 2020	Contractor
Erection of ground station (receiver antenna) for ADS-B system for SLU	Q1-Q2 2020	Contractor
Installation of ADS-B monitor at UVF	Q1-Q2 2020	Contractor
Installation of ADS-B monitor at SLU	Q1-Q2 2020	Contractor
Remodelling and renovation of aerodrome rescue and firefighting (ARFF) facility at the UVF	Q1-Q2 2021	Contractor
Updating aeronautical charts and procedure design for all approaches and departures at UVF	Q1-Q2 2020	Contractor
Training all air traffic control (ATC) staff and other personnel relevant to new equipment installations and procedural designs	Q1-Q2 2020	Contractor

Contracted Workers

The Project will engage one main Contractor for carrying out the overall implementation of the works with subcontractors for the supply and installation of materials and various equipment. The estimated number of contracted workers to be employed by the Contractor will be in the order of 40 to 55. About 35 to 40 local skilled and unskilled labor will be engaged by the Contractor and subcontractors for carrying out the construction activities and another 5 to 15foreign staff will be engaged as technicians and engineers.

Migrant Workers

It is not likely that any migrant workers will be engaged under this Project. This is to be distinguished from technical specialists with international backgrounds, referred to in this document as foreign workers.

2. ASSESSMENT OF KEY POTENTIAL LABOUR RISKS

Project Activities

The Project Development Objective (PDO) of the CATCOP is to improve air transport safety through compliance with international and regional standards and enhance resilience of airport infrastructure to natural disasters. The proposed project comprises four (4) components which complement each other to achieve the PDO.

The first component is aimed at improving the resilience and operational safety of the runway at the UVF. This comprises:

- runway resurfacing
- construction of a code 4E turning bay on south side runway 10 (RWY 10)
- installation of an up-to-date airfield ground lighting system
- rehabilitation of the storm water drainage
- addition of runway shoulders and runway end safety areas (RESAs)

The second component focuses on improving air traffic safety and efficiency. It includes the:

- installation of an instrument landing system (ILS) at the UVF
- introduction of the automatic dependent surveillance-broadcast (ADS-B) which requires installation of ADS-B receiver antenna and monitors to support both airports
- updating of the UVF's aeronautical charts, including procedure design for all approaches and departures
- training of all air traffic control (ATC) staff and other personnel relevant to new equipment installations and procedural designs

The third component deals with institutional strengthening and project management. This is specific to the management and oversight of the air transport sector, by the Saint Lucia Air and Sea Ports Authority (SLASPA) and Department of Civil Aviation respectively, and will be accomplished through:

- a broad organizational and operational review to determine the areas with greatest opportunities for improvement, with focus on safety and security as well as compliance with the International Civil Aviation Organization standards
- an aerodrome rescue and firefighting service (ARFFS) operational and organizational audit
- upgrading of the control room at the ARFFS located at the UVF which will be completed in the context of the earlier audit

The fourth component is a Contingency Emergency Response Component (CERC) in the event of natural disaster. To comply with World Bank Safeguards requirements, the activities identified for financing under the CERC will be subject to an expedited review by safeguards specialists to determine if they are eligible under the safeguard policies and compliance procedures. Further, the ESA and its ESMP contain procedures for debris removal and disposal, which should encompass the majority of CERC activities with potential for negative environmental impact.

The scope of this project is specific, and its activities are in no way related to the current UVF Redevelopment Project.

Key Labor Risks

This section sets out the **key aspects** of national labor legislation with regards to the term and conditions of work and how national legislation applies to different categories of workers identified in Section 1. The

overview focuses on legislation which relates to the items set out in ESS2, paragraph 11 (i.e. wages, deductions and benefits).

The key labor risks which may be associated with the project activities could include:

- Lack of awareness of occupational health and safety requirements such as the use of personal protective equipment (PPE) and safe workplace practices.
- The conduct of hazardous work, such as use of heavy machinery and hazardous materials, resulting in:
    i. air emissions from vehicle exhaust and machinery operations;
    ii. dust from excavation and material hauling;
    iii. noise and vibration from construction activities; and
    iv. fumes from hazardous materials.
- Possible accidents due to the use of rotating and moving equipment.
- Electrical safety due to the use of faulty electrical devices such as cable plugs, cords, and hand tools.

3. BRIEF OVERVIEW OF LABOUR LEGISLATION: TERMS AND CONDITIONS

This section sets out the **key aspects** of national labor legislation with regards to the term and conditions of work and how national legislation applies to different categories of workers identified in Section 1. The overview focuses on legislation which relates to the items set out in ESS 2, paragraph 11 (i.e. wages, deductions and benefits).

The Labor Act (No. 37 of 2006) of the Government of Saint Lucia (GoSL) will apply to all Project Workers. Under Part III (Terms and Conditions of Continued Employment), the following is addressed:

- Contracts of Employment
- Continuity of Employment
- Hours of Work
- Wages
- Minimum Wages
- Sick Leave and Benefits
- Vacation Leave
- Public Contracts
- Employment of Children and Young Persons
- Termination of Employment
- Termination of Benefits

Part II of the Code under Fundamental Principles of Employment number 7 states that “an employer shall not discriminate against any employee on the grounds of race, color, sex, religion, national extraction, social origin, ethnic origin, political opinion or affiliation, age, disability, serious family responsibility, pregnancy, marital status or HIV\AIDS, in respect of recruitment, training, work facilities or service, promotion, terms and conditions of employment or benefit arising out of the employment relationship”. The Code also makes provision on how the matter of discrimination can be addressed.

Part III (Terms and Conditions of Continued Employment) of the Labor Act, under Wages, speaks to, among others:

- Wages to be paid in legal tender
- Payment of wages by cheque
- Wages to be paid directly to employees
- Employee's right to recover
- Pay periods
- Employer to fix pay days
- Wages to be paid on completion of contract
- Wages to be paid on termination of contract
- Interest on advances prohibited
- Advances by way of loans
- Recovery of advances and excess in payment of wages
- Payment of outstanding balance advances and excess in payment of wages
- Deductions of payment in respect of fines restricted
- Deductions for obtaining employment prohibited
- Deductions authorized in certain cases
- Remuneration other than wages
- Employees in the employment of contractors
- Employers to issue details of wage payments
- Deduction for provident or pension funds

The same part of the Act, under Hours of Work, speaks to, among others:

- Duration of working week
- Weekly rest
- Maximum ordinary work day
- Split shifts and occasional shifts
- Meal intervals
- Overtime
- Prohibition of work on public holidays
- Pay for public holidays for daily paid workers
- Employees may opt to perform night work
- Reasonable alternative for discontinuing night work

Although provisions are made for the adoption of a minimum wage in the above-mentioned Act, there is currently no legislation on minimum wages for employment in Saint Lucia. However, pursuant to Statutory Instrument on the Minimum Wage Order (2006), No. 132, item: Fixing of Minimum Wage states that "the minimum wage applicable to construction workers is fifty-five dollars for each working day of eight hours."

4. BRIEF OVERVIEW OF LABOUR LEGISLATION: OCCUPATIONAL HEALTH AND SAFETY

This section sets out the key aspects of the national labor legislation with regards to occupational health and safety, and how national legislation applies to the different categories of workers identified in Section 1.

Under the provisions of the Labor Act (No. 37 of 2006) of the Government of Saint Lucia, the employer at a construction site must ensure, among others, that:

- measures and procedures prescribed by the Act and the Regulations are carried out on the construction site
- he or she and every employee performing work on the construction site complies with the Act and the Regulations
- the safety and health of employees on the construction site are protected
- a safe, sound, healthy and secure working environment is provided and maintained as far as is reasonably practicable
- keep and maintain accurate records of the handling, storage, use and disposal of chemicals, physical agents or biological agents as prescribed
- every employee is provided training on the safe and healthy manner of carrying out his or her work
- an inventory of all hazardous chemicals and all hazardous physical agents that are present in the workplace is kept and maintained
- written notice is given to the Department of Labor and the committee, safety and health representative or trade union, if any, and the National Insurance Corporation, where any accident arising out of, and in the course of the employment of an employee occurs and causes loss of life or disablement

Part IV (Occupational Health and Safety) of the Act has four (4) Divisions. They are as follows:

- ❖ Division 1. Registration and Requirements of Industrial Establishments
- ❖ Division 2. Hazardous Chemicals, Physical Agents and Biological Agents
- ❖ Division 3. Notification of Accidents and Occupational Diseases
- ❖ Division 4. Duties of Employers, Workers and Other Persons

Division 1 contains a number of sections relating to, among others, instructions on use of machines, protective clothing and devices, contravention of safety, drinking water, meals and lunchrooms, changing facilities, dangerous fumes and dust or other impurities, cleanliness, disposal of wastes, sufficient lighting, noise, sanitary and washing facilities, first aid, medical examinations, certification for fire safety, and safety provisions in case of fire.

Division 2 speaks to, among others, prohibition of certain chemicals and appeals against prohibition orders, notice of new chemicals or biological agents, inventory of chemicals and physical agents, labeling of chemicals, copy of inventory to be made available, assessment of chemicals, information from manufacturers, and participation in training.

Division 3 has sections relating to, among others, requirement to give notice of accidents, notification of occupational diseases and other diseases, and inquest in case of death.

Division 4 speaks to, among others, general duties of employers, duty to pregnant workers, reports and records, duties of employees, duties of owners at construction sites, duties of suppliers, and refusal to work on safety and health grounds.

5. RESPONSIBLE STAFF

The table below identifies the functions and/or individuals within the Project responsible for (as relevant):

- Engagement and management of project workers
- Engagement and management of contractors/subcontractors
- Occupational health and safety
- Training of workers
- Addressing worker grievances

In some cases, this section may identify functions and/or individuals from contractors or subcontractors, particularly in projects where project workers are employed by third parties.

Role	Responsibility
Management, Saint Lucia Air and Sea Ports Authority (SLASPA)	• Responsible for the engagement of the Project Management Unit (PMU) staffing, their Consultants' staff and Contractors.
The Project Coordinator, SLASPA	• Responsible for the overall management of the PMU staff, their Consultants' staff, and the Contractors.
Senior Manager, Human Resources, SLASPA	• Responsible for all labor relations of the PMU staff.
Environmental and Social (E&S) Specialist, PMU	• Responsible for overseeing implementation of the occupational health and safety (OHS) aspects of the Project (awareness); and • Addressing workers' grievances for the SLASPA.
Contractor's Environmental, Social, Health and Safety (ESHS) Specialist	• Responsible for occupational health and safety (OHS) of the Contractor's workers during implementation of the Project; • Training of these workers; and • Addressing workers' grievances for the Contractor.
Community Liaison Officer (CLO) or Communication Specialist, PMU	• Responsible for addressing workers' grievances for the SLASPA.

6. POLICIES AND PROCEDURES

This section sets out information on OHS, reporting and monitoring and other general project policies. Where relevant, it may also identify applicable national legislation.

The obligations of the project under the OSH policy includes the following:

- Compliance with all national and international OSH legislation that are applicable to Saint Lucia and the World Bank
- Compliance with the Environmental and Social Safeguards of the World Bank
- Prevention of discrimination and harassment on the work place, and of gender discrimination and gender pay gap
- Prevention of injury and ill health of all project workers
- Establishment of safety systems, processes and performance
- Continuous improvement of Safety Systems
- Management and mitigation of adverse environmental and social impacts
- Prevention of use of faulty equipment or sub-standard equipment

The project will commit to safety considerations in the conduct of all of its activities and that of contractors and sub-contractors.

The project will provide systems, processes, procedures, the necessary safety equipment and gears, and training for all project employees so that all activities are conducted in a safe environment.

Employees will be responsible, subject to their roles, for the maintenance of a safe environment including the assessment of risks and actions to mitigate minimize and manage risks to the safety of the work environment.

The project will follow and implement, processes, policies, and services that are national and international in compliance with national and international legal requirements including industry standards and best practices in relation to safety.

Employees at all levels have the authority to stop any activity they consider to be a danger to themselves or other workers, the public or the environment. The project is committed to non-retaliation to stop-work actions by project workers.

The Environment and Social Specialist of the project is responsible for the implementation and monitoring of the safety management systems of the project. The ESS will develop sub-policies, guidelines, procedures, instructions and training and awareness materials to support this policy.

Dissemination and Awareness:

The OSH policy, described here, will be disseminated to all project workers and stakeholders. The information will be disseminated in various formats including an adapted and summarized version.

Age of Employment:

Labor Contracts Act Chapter 89:04:

With regards to the age of employment, several structures regulate the employment of minors. According to Section 7 of the Labor Contracts Act Chapter 89:04:

Section 7. (l) “Every person of the full age of eighteen years or more shall Capacity. have the capacity to enter into a labor contract pursuant to this Act.

Section 7 (2)"Subject to the Employment of Children Prohibition Act and the Employment of Women, Young Persons and Children Act, a person under the age of eighteen years may enter into a labor contract only with the written consent of a parent or guardian of the person or, where that person has no parent or guardian, the written consent of the Labor Commissioner or the police officer in charge of the district in which the labor contract is to be made or performed."

Employment of Women, Young Persons, And Children Act, Chapter 90:06

Additionally, the Employment of Women, Young Persons, And Children Act, Chapter 90:06 states:

Section 4. (1) "No child shall be employed or work in any public or private Prohibition of industrial undertaking, or in any branch thereof, other than an undertaking in which only members of the same family are employed, and any person who employs any child or permits him to work in contravention of this section is guilty of an offence.

Section 4 (2) "This section shall not apply to the exercise of manual labor by any child under order of detention in a reformatory or industrial school, or by any child receiving instruction in manual labor in any school, provided that the work is approved and supervised by public authority."

7. AGE OF EMPLOYMENT

a. The minimum age for employment on this Project is eighteen (18) years.
b. The Government issued Identification Cards or individuals' passports will be used to verify the age of project workers.
c. If underage workers are found working on the Project, the SLASPA will provide immediate notification to the Contractors and the Labor Department to ensure immediate termination of the employees by the Contractors.
d. If the SLASPA is fined by local authorities because a Contractor employed a minor (under the age of 18), the SLASPA will transfer the cost of that fine to the Contractor and, the Contractor will be required to terminate the minor immediately.

8. TERMS AND CONDITIONS

Specific Wages, Hours and Other Provisions That Apply to the Project

To ensure continued service to valued customers and stakeholders, a significant amount of the project works will be undertaken during periods between 10:00 pm and 10:00 am daily.

Wages, hours of work, and other provisions relating to this Project will be in accordance with the provisions of the Labor Act (No. 37 of 2006) of the GoSL.

The main Contractor shall pay at least the minimum wage or the appropriate prevailing wage, whichever is higher, comply with all legal requirements on wages, and provide any fringe benefits required by law or contract.

Maximum Number of Hours That Can Be Worked on the Project

The main Contractor shall not require workers to work more than the regular and overtime hours allowed by the law of St. Lucia. All overtime work shall be consensual. The contractor shall not request overtime on a regular basis and shall compensate all overtime work at a premium rate. Other than in exceptional circumstances, the sum of regular and overtime hours in a week shall not exceed the national labor allowable limits.

Collective Agreements That Apply to the Project

There is no collective agreement relating to the Project at this time. The main Contractor shall recognize and respect the right of employees to freedom of association and collective bargaining.

Other Specific Terms and Conditions

Construction Labor

Construction Labor monitoring will be required to play a key role in ensuring that the project follows national and international requirements that protect the workforce, promote respectful work relationships, and provide safe and healthy working and living conditions. The works contract will require the contractor to uphold Labor rights and tenets of fair treatment, non-discrimination and equal opportunity. Awareness of Labor rights and requirements will be built into the main contract. The works contract will therefore include the project emphasis on upholding Labor rights in tender documentation and emphasized during contract negotiation discussions. The main Contractor will be required to provide easy-to-read summaries of the national Labor law or project Labor statement to append to subcontractor agreements and to use in toolbox talks or on notice boards. All work is to be carried out in accordance with the St. Lucia Standards for Health, Safety and the Environment and current Workplace, Health and Safety and Environmental Legislation, which will take precedence over the contractor's health and safety plan if a lower standard is stated within the plan.

Employment Relationship

The main Contractor shall adopt and adhere to rules and conditions of employment consistent with the Labor laws of St. Lucia and ensure that the work conditions respect workers and, at a minimum, safeguard their rights under national and international Labor and social security laws and regulations.

Nondiscrimination

The main contractor will ensure that no person is subject to any discrimination in employment, including hiring, compensation, advancement, discipline, termination or retirement, on the basis of gender, race, religion, age, disability, sexual orientation, nationality, political opinion, social group or ethnic origin.

Harassment or Abuse

Every employee shall be treated with respect and dignity. No employee shall be subject to any physical, sexual, psychological or verbal harassment or.

Forced Labor

There shall be no use of forced labor, including prison labor, indentured labor, bonded labor or other forms of forced labor.

Child Labor

No person shall be employed under the age of 18 or under the age for completion of compulsory education, whichever is higher.

9. WORKERS GRIEVANCE REDRESS MECHANISM

This section sets out details of the grievance mechanism that will be provided for direct and contracted workers and describes the way in which these workers will be made aware of the mechanism.

The SLASPA has a separate, public Grievance Redress Mechanism (GRM) in place to receive concerns and grievances from key stakeholders and the public affected by the Project. That GRM is described briefly in section 7.4.2 of the ESA, and more fully in the Stakeholder Engagement Plan (SEP) for the project. The public GRM is distinct and different from the Workers Grievance Redress Mechanism described in this Labor Management Plan.

- The Grievance Mechanism for all Project Workers is as follows:
-
-

	Contractors and or Representatives (who they delegate) will be the point of contact for all Grievances. The contractor will designate a staff member who will be responsible to receive grievances
	Upon receipt of Grievances, the contractor staff / Permanent Secretary or Representative will notify the project manager and Environmental and Social Specialist (ESS). Grievances will be registered in a registry of complaint and all information related to the handling of the grievances will be recorded in the registry. In the case of issues with project management staff the Project Manager may be required to exclude her or himself it the compliant directly involves him or her.
	The contractor will attempt to address grievance within established time frame of 3 weeks upon receipt. In cases of timely or urgent matters a period of a minimum of 24 hours and a maximum of 15 days will be allotted for addressing a resolving the grievance. Grievances can be made in person, telephone call or writing. Grievances can be made anonymously. A dedicated email and telephone number will be provided for all Grievances. For grievances made via telephone or in person, grievances will be recorded. The Worker Grievance Redress Mechanism will be disseminated through brochures and training sessions and will be made know to the worker upon hiring.
	The staff member designed by the contractor will notify the Project Manager through a report of the successful resolution of any grievance. The complainant will also be informed via writing of the measures taken to address the grievance.

	If grievances are repeated, unresolved or submitted by several people, this should be brought to the attention of the Unions or Labour Department. The GRM should be broadly communicated to all SLASPA's staff.
	If issues cannot be resolved the issue will be referred to the Ministry of Labour for their action and pronouncement.
	The Ministry of Labor's ruling would be the final tier of the grievance mechanism.
	If unresolved, either party may seek redress in the courts of the Country.

- Anyone with a grievance is asked to contact the SLASPA Manager - Employee Relations, Amy Henry-DeMille, at Tel: 1 (758) 457 6104, Mobile: 1 (758) 718 9031 or via email at amy.henry-demille@slaspa.com.

In addition, the Contractor shall have a separate Grievance Redress Mechanism (GRM) in place, with its contact number, and to deal exclusively with those that involve workers employed by the Contractor for the construction activities. Contractors will be responsible for managing their GRMs. The SLASPA ensure and oversee that Contractors implement their GRMs.

10. CONTRACTOR MANAGEMENT

The SLASPA will make reasonable efforts to ascertain that the Contractor and their subcontractors hire the workers from legitimate Labor entities in the country. The SLASPA may also ask contractors to provide the following information:

Business licenses, registrations and permits of the local entities that supply Labor to the Contractor and its subcontractors;

Documents relating to a Labor management system, including OHS issues (for example: Labor management procedures);

Workers Payroll Records: Documentation of the number of hours work and pay received inclusive of all payments made on their behalf, for example payment made to the National Insurance Scheme and other entitlements regardless of the workers being engaged on a short- or long-term assign mentor fulltime or part time worker.

11. COMMUNITY WORKERS

The Project does not intend to make use of community workers and therefore this section is not relevant.

12. PRIMARY SUPPLY WORKERS

The SLASPA will not directly procure any primary supply contracts. The main Contractor who subcontract the supply of materials and equipment for implementation in the Project works will be responsible to include the same conditions and specifications on ESHS aspects to its subcontracting agreements.

Appendix G SLASPA Bird and Wildlife Control Program

The SLASPA, guided by the International Civil Aviation Organization (ICAO) procedures as per the provisions of the Airport Services Manual (Doc 9137, Part 3) and the Airports Council International (ACI) handbook on Bird and Wildlife Control, became fully engaged in bird and wildlife mitigation at the UVF in 2015.

With the assistance of a competent local Pest Control Agent and collaboration with the Department of Forestry in the Government of Saint Lucia, the SLASPA has over the years been able to observe and record data on bird activity and movement across Saint Lucia and at the UVF. Further, a wealth of knowledge has been gained as it relates to the types of birds which use the airport, their habitat, nesting areas/practices, attractants and what they feed on, thus enabling the dedicated airport team to be in a better position to know the correct control procedure to fit each bird species.

As part of the SLASPA's Bird and Wildlife Control Program, a Bird/Wildlife Control Committee was established, and Wildlife Control Assistants were assigned the responsibility for bird and wildlife mitigation.

Currently, the Committee is made up of persons from the SLASPA, Department of Forestry, Saint Lucia National Trust, a representative from the Airline Operators Committee and a reputable pest control company. The Committee has conducted field trips, most notably in the Coco Dan, Maria Islet, Mange and Airport perimeter areas, to assess habitat and flight paths of birds in relations to flight path of aircraft. It also meets regularly to discuss progress and analyze mitigation methods. Charts are plotted based on reports and guidance is provided to facilitate the work of the Wildlife Assistants in the field.

The Wildlife Assistants are trained, equipped and are required to carry out regular airfield inspections. Software is used to record bird and wildlife sightings and movement, location and times of such, feeding rituals, potential attractants and produce sounds to scare off birds or other creatures as necessary. Noteworthy is the use of fogging devices and material to disperse errant flocks at the airport. As a backup, the airports' grounds keepers are trained in the use of fogging devices. The assistants ensure that all bird strike reports are recorded and airline flight crews or personnel from affected airlines complete the relevant international bird strike reporting form. The assistants report daily and monthly on their findings and submit reports to Airport Management and the Chairperson of the Bird/Wildlife Control Committee.

The program has been viewed as a guarded success, since its inception in 2015, due to the fact that more recent reports of bird strikes have not resulted in large numbers of birds being destroyed in one strike or had a significant impact as far as damage to aircraft or causing delays, which both have financial implications. Proper fencing and security have also enabled the SLASPA to mitigate incursions of cows, goats and dogs by almost 100%.

In October 2015, the ACI conducted a review on the environmental impact on wildlife of the Saint Lucia Electricity Services Limited's (LUCELEC's) Solar Plant Project in the La Tourney area near UVF. In keeping with a recommendation from the ACI, an additional member is expected to join the Committee from the LUCELEC, which is viewed as a major stakeholder considering its solar plant project.

Appendix H Control of Work in Progress on the Movement Area

Chapter 8

Control of Work in Progress on the Movement Area and Precautions to be Taken

8.1 CONTROL

8.1.1 The Airport Operations Section is responsible for co-ordinating work on the movement area and for dictating the safety requirements. Further guidance is contained in the *Airport Services Manual*, Part 6 — Control of Obstacles, Chapter 3.

8.2 ROUTINE MAINTENANCE

8.2.1 Persons, or sections specially authorized in writing by airport operations, may enter active parts of the movement area subject to clearance from air traffic control or by the separate unit in charge of apron management services as appropriate by R/T or telephone for routine tasks such as light maintenance, grass cutting, etc. Individuals carrying out such duties must comply with local rules concerning the control of vehicles on the manoeuvring area.

8.3 MINOR CONSTRUCTION/ MAINTENANCE WORK

8.3.1 For minor work on active parts of the movement area a system of work permits should be established. The actual system employed at each airport should be jointly agreed between airport management and air traffic control. The objectives of the work permit are to ensure that:

a) no work takes place on the active movement area without the knowledge of airport operations staff and air traffic control;

b) permitted times of work are strictly followed; and

c) all individuals taking part in the work are briefed in detail on the following:

   1) precise areas in which work may be done;

   2) the routes to be followed to and from the working area;

   3) the R/T procedures to be used;

   4) the safety precautions to be observed, the maintenance of a listening watch and the use of look-outs; and

   5) the reporting procedure to be followed on completion of work.

8.3.2 At the conclusion of work, airport operations staff, or other appropriate staff, should inspect the working area to ensure that it has been left in a satisfactory condition.

8.4 MAJOR CONSTRUCTION/ MAINTENANCE WORK

8.4.1 *Liaison machinery.* Before the commencement of any substantial work on the movement area, liaison machinery comprising representatives from the Airport Operations Department, Air Traffic Control, Airport Maintenance Department, and contractors' agents should be established. The group should meet as often as considered necessary to review progress and consider the need for any change in working practices to meet operational requirements.

8.4.2 *Isolation of work area.* As far as is practicable working areas should be blocked off from the active parts of the movement area by the erection of physical barriers. This is to both warn pilots and preclude work vehicles inadvertently straying onto the movement area. Any barriers must be marked for day use and adequately lit by night. The lights of taxiways leading into working areas must be permanently "off". Guidance on the marking of unserviceable areas is contained in Annex 14, Chapter 7.

8.4.3 *General working rules.* Before work commences agreement should be established on:

a) the hours of work;

b) the authorized routes — preferably these should be marked with contractor's signs. At critical points controls should be established. Where there is real risk of conflict between aircraft and vehicles, control points should be manned. At less critical points controls may be effected by lights or warning signs;

c) the communications facilities to be used. Where direct control of vehicles is required each vehicle should either have R/T or be escorted by a suitably equipped vehicle. In some circumstances it may be sufficient to have direct communications with control points by R/T or by direct telephone lines to air traffic control;

d) the permitted heights of vehicles and equipment and the limitations to be placed on operating heights of crane jibs; and

e) any limitation to be placed on use of electrical equipment which might cause interference with navigational facilities or aircraft communications.

8.4.4 *Safety.* Contractors should be warned in writing of possible hazards to personnel working on airports, in particular the jet blast problem and noise. Where necessary, contractors should be briefed to provide look-out men. A distinctive jacket must be worn at all times. This can be of the waistcoat variety coloured day-glow red, reflective orange, or reflective yellow.

8.4.5 *Paved area cleanliness.* Where contractors work on or traverse aircraft pavement areas, these areas should be thoroughly inspected before they are opened again for aircraft use, with particular attention to the presence of debris and the general cleanliness of the surface. Where aircraft are constantly using areas open to contractors, inspection should be carried out at frequent intervals to ensure that the contractor has carried out any necessary cleaning.

8.4.6 *Marking and lighting.* Adequate marking arrangements should be insisted on for crane jibs when extra conspicuity is considered desirable. If work is of prolonged duration a constant watch should be maintained to ensure that the marking and lighting of obstacles and unserviceable areas does not degrade below acceptable limits. This is particularly important with marking and lighting arrangements to indicate a displaced threshold.

8.4.7 *Effect on operations limits.* The effect of tall cranes on ILS and radar will need to be considered in conjunction with those responsible for electronic landing aids and steps taken to reduce limitations to the minimum. Construction equipment may have adverse effects on obstacle clearance limits and dominant obstacle allowances and these should be considered and the appropriate authorities consulted when working arrangements are being planned.

Chapter 3

Airport Surface Inspections

3.1 FREQUENCY OF INSPECTION

3.1.1 Inspections of the movement area should be regular and as frequent as possible. In any event the minimum frequency should be:

a) *Runways* — Four inspections daily as described below:

Dawn inspection — A detailed surface inspection covering the full width of all runways should be undertaken. This should take approximately 15 minutes for each runway (two runs).

Morning inspection — All runways, normally carried out on an ON/OFF basis concentrating on the area between the runway edge lights.

Afternoon inspection — Same as the morning inspection.

Dusk inspection — This should cover all runways. It is designed to bridge the gap in runway inspections when the lighting inspection is not required until late in the evening, and should cover the whole runway surface.

b) *Taxiways* — daily for those in normal regular use.

c) *Aprons* — daily.

d) *Grass areas* — those areas that may be required to sustain aircraft should be inspected as frequently as the adjacent paved areas. Other grass areas should be inspected at intervals suitable to observe any deterioration of the surface.

3.2 METHOD OF INSPECTION

3.2.1 The areas and distances to be covered necessitate the use of vehicles for airport inspections. However, the higher the speed, the less effective the inspection; therefore, speeds should be kept as low as practicable. Detailed inspections of paved surfaces on foot will normally be completed by the Maintenance Department while other areas should be inspected by the relevant department. It will be necessary for airport operations to co-ordinate the programme to ensure that inspections are carried out at the correct frequency.

3.3 INSPECTION PROCEDURES

3.3.1 Before commencing any runway inspection, permission must be obtained from air traffic control. On entering the runway a positive entry call, e.g. "checker entering for inspection", must be made; on leaving the runway, air traffic control must be advised when the inspection vehicle is clear of the runway strip. Most inspections are carried out on an ON/OFF basis (i.e. where the inspection vehicle may be required to enter or leave the runway at short notice). The above calls must be made on each occasion that the inspection vehicle enters the runway.

3.3.2 It is essential to maintain a listening watch on the appropriate R/T channel during any runway inspection.

3.3.3 If, during an ON/OFF inspection, air traffic control requests the inspection team to clear the runway, the vehicle must move outside the runway strip before advising air traffic control that they are clear. They must then remain outside the runway strip while awaiting re-entry instructions.

Note.— Inspectors should never clear a runway by entering an ILS critical/sensitive area.

3.3.4 Clearance must be obtained before crossing any runway.

3.3.5 All runway inspections are carried out in the direction opposite to that being used for landing or taking off, primarily for safety reasons. In the case of the first-light runway inspection involving two runs in the same direction, the "back-tracking" must be done outside the

runway strip and can be utilized in inspecting the runway from a distance or the taxiways adjacent to the runway in question.

3.3.6 On final completion of a runway inspection the team should advise air traffic control of the fact and report the state of the runway.

3.3.7 The times of commencement and completion of the inspection must be noted and included in the Record of Inspection Log.

3.4 PAVED AREA INSPECTIONS

3.4.1 Attention should be paid to the following points:

a) general cleanliness with particular attention to material which could cause engine ingestion damage. This may include debris from runway maintenance operations or excessive grit remaining after runway gritting. Any build-up of tire rubber deposits should be noted;

b) signs of damage to the pavement surface including cracking and spalling of concrete, condition of joint sealing, cracking and looseness of aggregate in asphalt surfaces or break-up of friction courses. Damage or deterioration which could cause aircraft damage should be reported immediately for inspection by the Airport Maintenance Department and, if the damage is sufficiently serious, the area closed to aircraft pending the results of such an inspection;

c) after rain, flooded areas should be identified and marked, if possible, to facilitate later resurfacing;

d) damage of light fittings;

e) cleanliness of runway markings; and

f) the condition and fit of pit covers.

3.4.2 The extremities of the runway should be inspected for early touchdown marks; blast damage to approach lights, marker cones and threshold lights; cleanliness and obstacles in the runway end safety area.

3.5 GRASSED AREA INSPECTIONS

3.5.1 The following points should be observed:

a) the general state of ground cover vegetation ensuring in particular that excessive length is not obscuring lights, signs, markers, etc.;

b) any developing depressions should be noted and plotted;

c) any unreported aircraft wheel tracks should be carefully plotted and reported;

d) the condition of signs and markers should be noted and necessary repair work ordered;

e) the general bearing strength of grass areas, particularly those close to aircraft pavement surfaces, should be noted. A reasonable assessment can be made from the depth of vehicle wheel tracks. Any areas showing signs of persistent waterlogging should be reported. Any differences in levels between grass and paved areas should be noted and remedial action requested. Because of the hazard to aircraft engines particular note should be made of the general cleanliness of these areas. Signs of blast erosion should be noted and reported; and

f) waterlogged grass areas should be noted and reported particularly since they may be an attraction to birds.

3.5.2 The main object of grass cutting is to ensure that lights and markers are not obscured by tall vegetation. It should also be managed in such a fashion as to limit the attraction of the airport to birds and other wildlife (see Chapter 9). It will be necessary to ensure that mounds of grass cuttings are not left on areas where engine ingestion is possible.

3.6 OBSTACLES

3.6.1 A check should be made of all authorized obstacles for proper lighting and marking.

3.6.2 Any unauthorized obstacles must be reported to the designated persons or organizations immediately. Where possible, prompt removal of the obstacle should be carried out. If this is not possible immediate consideration must be given to whether aircraft operations should be restricted in any form and appropriate marking and lighting of the obstacle carried out.

3.7 REPORTING

3.7.1 If a dangerous unserviceability is discovered during a runway inspection (e.g. damaged pit covers or broken lights), the fact should be immediately reported by R/T in order that appropriate ATC action can be taken. In addition, airport operations should be informed. If the runway is closed as a result of such damage the

inspection team should continue their inspection whilst awaiting the arrival of airport maintenance support. The team should also be prepared to inspect any subsidiary runway if required.

3.7.2 If runway unserviceability of a type that will not affect its use is discovered the matter must be reported to the Airport Maintenance Department on the appropriate form stating the degree of urgency, date and time, etc.

3.7.3 Should aircraft parts or tire pieces be found during a runway inspection, then airport operations and air traffic control must be informed immediately so that tracing and notification action can be taken.

3.7.4 To assist in identifying the location of faults on a runway, reference plates should be installed outside the runway edge lights on one side of the runway.

Appendix J Chance Find Procedure

The project works could impact sites of social, sacred, religious, or heritage value. “Chance find” procedures would apply when those sites are identified during the design phase or during the actual construction period.

Cultural property includes monuments, structures, works of art, or sites of significant points of view, and are defined as sites and structures having archaeological, historical, architectural, or religious significance, and natural sites with cultural values. This includes cemeteries, graveyards and graves.

In the event of finding of properties of cultural value during construction, the following procedures for identification, protection from theft, and treatment of discovered artifacts should be followed and included in standard bidding document.

- Immediately stop the construction activities in the area of the chance find.
- Delineate the discovered site or area.
- Secure the site to prevent any damage or loss of removable objects.
- Notify the PIU who in turn will notify the responsible local authorities.
- Responsible local authorities and the relevant Ministry would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures.
- Decisions on how to handle the finding shall be taken by the responsible authorities and the relevant Ministry. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance), conservation, restoration and salvage.
- Implementation of the authority decision concerning the management of the finding shall be communicated in writing by the relevant Ministry of Cultural, Sport and tourist.
- Construction work could resume only after permission is given from the responsible local authorities and the relevant Ministry concerning safeguard of the heritage.
- The World Bank needs to be notified by PIU on the issues and actions taken.
- These procedures must be referred to as standard provisions in construction contracts. During project supervision, the PIU shall monitor the above regulations relating to the treatment of any chance find encountered.
- Relevant findings will be recorded in Progress Reports and the overall effectiveness of the project’s cultural property mitigation, management, and activities will be assessed.

Appendix K Environmental and Social Screening Form for CERC

INTRODUCTION

This Environmental and Social Screening Form (ESSF) has been designed to assist in the evaluation of planned construction and rehabilitation activities under CERC. The form will assist to identify environmental and social impacts and their mitigation measures, if any. It will also assist in the determination of requirements for further environmental and social work (such as environmental and social management plan) if necessary.

The form helps to determine the characteristics of the prevailing local bio-physical and social environment with the aim of assessing the potential impacts of the construction and rehabilitation activities on the environment by the sub-project.

Environmental and Social Screening Form for CERC Subprojects

Sub-project Name:	
Brief Description of the Sub-project:	
Key Activities of the Sub-project:	
Sub-Project Location:	
Name & Signature of Environment and Social Staff:	**Date of Field Screening:**

		Appraisal	Significance	*Potential Mitigation Measures*
		Yes/No	Low, medium, high	
1.0	**Environmental Screening**			
	Will the project generate the following impacts			
1.1	Loss of trees			
1.2	Soil erosion/siltation in the area			
1.3	Pollution to land-diesel,oils			
1.4	Dust emissions			
1.5	Solid and liquid wastes			
1.5	Spread of HIV/AIDS and other STI			
1.6	Borrow pits and pools of stagnant water			
1.7	Rubble/heaps of excavated soils			
1.8	Invasive tree species			
1.9	Long term depletion of water			
1.11	Reduced flow of water			
1.12	Nuisance from noise or smell			
1.13	Loss of soil fertility			
1.14	Incidence of flooding			
2.0	**Resettlement Screening**			
	Will the project generate the following negative social and economic impacts?			
2.1	Loss of land to households			
2.2	Loss of properties –houses, structures			
2.3	Loss trees, fruit trees by households			
2.4	Loss of crops by people			
2.5	Loss of access to river/forests/grazing area			

2.6	Impact cultural site, graveyard land			
2.7	Conflicts over use of local water resources			
2.8	Disruption of important pathways, roads			
2.9	Loss communal facilities			
2.10	Loss of livelihood system			
2.11	Spread of HIV/AIDS			
2.12	Blockages to footpath/roads			

Overall evaluation of Screening Exercises.

The results of the screening process would be either the proposed sub - projects would be exempted or subjected to further environmental and resettlement assessments. The basis of these options is listed in the table below:

Review of Environmental Screening	**Tick**	**Review of Resettlement Screening** **(OP 4.12)**	**Tick**
1. The project is cleared. No high or substantial risks and impacts. *(When all scores are "No" in form)*		1.The project is cleared. high or substantial risks and impacts *(Where scores are all "No", "few" in form)*	
2.There is need for further assessment. *(when some score are "Yes, High" in form)*		2.There is need for resettlement/compensation. *(When some score are "Yes, High" in form*	
Endorsement by Environmental and Social Officer			
Name			
Signature: Date			

Appendix L Waste Management for CERC

Waste categorization

Different type of wastes has different nature of composition and create different consequence to human health and environment. In case of natural disaster due to flood and landslides, mud, rocks, and other physical wastes such as broken trunks, trees, building/house structures, schools, hospitals, etc. may be expected. The identified wastes may fall into two main groups of waste types: non-hazardous wastes and hazardous wastes (see scope in Box 1). If practical, a *Waste Inventory* should be produced that covers disposal/treatment options which will be used to manage the wastes generated during construction and/or implementation of the subproject.

Box 1: scope of hazardous and non-hazardous wastes	
Hazardous/Toxic/Sanitary wastes are wastes with physical, chemical or biological hazards such as toxic chemicals (and their containers/packages), general medical wastes (used bandages, empty medication bottles, used syringes), hazardous (batteries, used oil, lamp, fluorescent, electrical products etc.), and other dangerous wastes (e.g. glass bottles, knife, pharmaceutical products, etc.). This amount of waste is expected to be small due to the emergency nature and low population in general. Nonetheless, these wastes need to be collected, stored, and disposed of safely. Sanitary wastes (such as toilet waste, food wastes, etc.) may be included in this category to reflect the need for special attention to avoid potential impacts on human health and local environment.	*Non-hazardous wastes:* This may include (a) durable wastes that will be in use/operation for years or decades (e.g., tractors, motorcycles, trucks, ambulances, boats, analytical equipment, computers, plastics, etc.). Many of these wastes can be recycled and reused with appropriate knowledge and understanding. This may include many types of general wastes/debris with inert chemical properties, no physical hazards (e.g., towels, aluminum cooking bowels, soap, blankets, etc.), trees, branches, wooden structure from building/house, bricks/cement, etc. With proper management, they can be reused as appropriate

Safe/Appropriate Collection, Storage, and Disposals.

Hazardous/Toxic wastes can be divided into medical waste, common hazardous waste, and waste with asbestos-contaminated. These wastes will be managed as follows:

- *Medical wastes:* Will be managed according to the national regulation. Medical waste will be incinerated as far as possible, and all remains safely disposed, again in a safely engineered and operated facility. Temporary storage in a facility deemed safe, until proper disposal can be found will be necessary. Sanitary wastes will be managed according to local regulations regarding sanitary waste and good hygienic practices.
- *Common hazardous/ noxious wastes (*such as oils, solvents, paints etc.) would have to be safely stored in suitable containers and disposed in a facility designed, constructed and operated for the safe disposal of hazardous wastes. Special facilities will be identified totreat

e.g. spent engine oils, or incinerate solvents, paints etc. Such facilities commonly include cement kilns, where organic solvents, oils, bitumen etc. can be incinerated safely under high temperature.

- *Asbestos-contamination wastes.* Use of asbestos or asbestos-based construction materials has been banned in most developed countries due to its effect to human health. However, in developing countries, they are often used as part of construction materials (such as panel/ceiling etc.) due to its low cost. For the subproject construction, asbestos-based construction materials will not be allowed, and this is included in the ineligibility list. Given the lack of knowledge on debris from construction structure, care will be required to ensure that the service provider can identify the debris/structure that may be contaminated and ensure proper disposal of these wastes.

A number of non-hazardous wastes could be generated resulting from the subproject activities. In summary the main non-hazardous construction wastes will include: metals (scrap metal); textiles (clothing, towels, tents); timber (packaging materials); containers (steel and plastic); waste paper, card and cardboard (packaging materials); plastics (packaging materials, tarpaulins, bottles); glass bottles. These wastes will be managed as follows:

- Metals will be provided to the local community (if required) for re-use or stored until an appropriate land fill has been established or recycled if a suitable facility is available. It is expected that the commercial value of scrap metal will facilitate recycling options.
- Timber, e.g., from redundant untreated wooden packaging will be provided to the local communities for firewood and re-use.
- In first instance, plastics materials (e.g., bottles) will be recycled. Plastics materials, which are unable to be recycled, will be transferred to a suitable land fill or for storage prior to the development of such landfill.
- Glass bottles will be segregated and returned to the supplier for reuse, as far as possible. Prime recyclables (e.g. paper, card, plastics) will, as far as is practicable, be segregated for recovery/recycling.Thesematerialswillbesuppliedtothelocalcommunity for reuse and recycling or to an approved third-party facility.
- The following options will be used to handle waste containers (which contained non-hazardous materials): re-used for storage (including waste storage if suitable); returned to supplier (if possible);supplied to the local community for re-use; disposed to landfill as last resort.

Reuse/Recycle

5. During the waste management process mentioned above, efforts will be made to reuse and recycle wastes. Special attention will be given not to give the asbestos-based materials to people for reuse and/or properly dispose them.

Reusable and Recyclable Wastes	
Waste	**Reuse/Recycle method**
Waste vegetable matter	Waste vegetable matter ONLY may be provided to the local community to be used as animal feed.
Waste paper, card and cardboard	Provided to local community for reuse or to approved recycling plant
Plastics	Either sent to recycling plant for chipping/and/or provided to local community for reuse.
Glass Bottles	Returned to supplier for reuse.
Lubricating Oil	Returned to supplier.
Timber	Timber packaging (which cannot be reused) will be made available for communities to use as firewood.
Metal	If possible, provided to local community for reuse or to a third-party company for export and recycling
Containers (metal and Plastic)	Reused by for storage, returned to supplier or provided to local community for reuse (non-hazardous materials ONLY).

Temporary Storage.

Due to the lack of safe and proper disposal of sanitary land, temporary storage may be the best options, but this will be allowed on a case by case basis, until suitable treatment and disposal facilities have been developed.

Training.

During the implementation, efforts will be made to provide basic knowledge to all staff and service providers regarding mishandling of toxic and hazardous to human health and environment and to ensure that they are aware of proper methods to handle them.

Appendix M Environmental and Social Rules for Contractors for CERC

These Environmental and Social Rules for Contractors are prepared for all the contractors to be engaged rehabilitation and reconstruction activities of projects under CERC. The guidelines include provisions for proper management of construction sites, safe storage of construction materials and safe disposal of wastes.

1.0 General Considerations

a) The contractor shall, in all his activities ensure maximum protection of the environment and the socio-economic wellbeing of the people affected by the project, whether within or outside the physical boundaries of the subproject area.

b) Before any construction works begin, the contractor shall ensure that the relevant environmental and land acquisition certificates of authorization for the works have been required under the national legislation.

c) In general, the contractor shall familiarize himself with the Environmental and Social Management Plans. Specifically, the contractor shall make every effort to follow and implement the recommendations and mitigation measures of the ESMP to the satisfaction of client and all relevant agencies.

d) The contractor shall work in cooperation and in coordination with the Project Management Team and/or any other authority appointed to perform or to ensure that the social and environmental work is performed according to the provisions of the Environmental and Social Screening and environmental management plans for sub-projects.

e) The contractor shall always keep on site and make available to Environmental Inspectors or any authorized persons, copies of the ESMPs for the monitoring and evaluation of environmental and social impacts and the level or progress of their mitigation.

2.0 Acquisition of Construction Materials

a) The contractor shall ensure that construction materials such as sand, quarry stone, soils or any other construction materials are acquired from approved suppliers and that the production of these materials by the suppliers or the contractor does not violate the environmental regulations or procedures on mining. Collection of sand by communities will be guided by local council's by-laws.

3.0 Movement and Transportation of Construction Materials

a) The movement and transportation of construction materials to and within the construction sites shall be done in a manner that generates minimum impacts on the environment and on the community, as required by the ESMPs.

4.0 Storage of Construction Materials and Equipment

Construction materials shall be stored in a manner to ensure that:

a) There is no obstruction of service roads, passages, driveways and footpaths;

b) Where it is unavoidable to obstruct any of the service paths, the contractor shall provide temporary or alternate by-passes without inconveniencing the flow of traffic or pedestrians;
c) There is no obstruction of drainage channels and natural water courses;
d) There is no contamination of surface water, ground water or the ground;
e) There is no access by public or unauthorized persons, to materials and equipment storage areas;
f) There is no access by staff, without protective clothing, to materials and equipment storage areas;
g) Access by public or unauthorized persons, to hazardous, corrosive or poisonous substances including asbestos lagging, sludge, chemicals, solvents, oils or their receptacles such as boxes, drums, sacks and bags is prohibited;
h) Access by staff, without the appropriate protective clothing, to hazardous, corrosive or poisonous substances including asbestos lagging, sludge, chemicals, solvents, oils or their receptacles such as boxes, drums, sacks and bags is prohibited.

5.0 Safe Disposal of Construction Waste

a) Construction waste includes but is not limited to combustion products, dust, metals, rubble, timber, water, waste water and oil. Hence construction waste constitutes solid, liquid and gaseous waste and smoke.

b) In performing his activities, the contractor shall use the best practical means for preventing emissions of noxious or offensive substances into the air, land and water. He shall make every effort to render any such emissions (if unavoidable) inoffensive and harmless to people and the environment.

c) The contractor shall comply with the regulations for disposal of construction/demolition wastes, waste water, combustion products, dust, metals, rubble and timber. Wastewater treatment and discharge will conform to the applicable regulations by the relevant Local Authority and Ministry of Irrigation and Water Development.

d) Asbestos wastes, PCBs and other hazardous wastes shall be treated and disposed of in conformity with the national regulations and where applicable, with the supervision of qualified personnel.

6.0 Occupational Health and Safety of Workers.

a) The contractor shall provide all necessary protective clothing for workers exposed to hazardous and dangers work activities.
b) All workers shall be regularly sensitized on safety regulations on the site.
c) The contractor shall be guided by and shall adhere to the relevant national safety cardinal rules on the site.
d) The construction shall maintain on the site first aid kits for male and female workers.
e) Workers shall be provided with clean potable water on the site and safety cooking places
f) Workers shall be provided with wash rooms and ventilated pit latrines.

7.0 HIV/AIDS Awareness and orientation for workers.

a) The contractor shall organize awareness and orientation program on HIV/AIDS for the construction workers to ensure their understanding of the relevant issues.
b) Appropriate IEC materials shall be distributed to workers on the site.

Appendix N: Response to Environmental, Social and Occupational Health and Safety Incidents for the World Bank Financed Projects

The following process should be followed immediately after an incident happens in any World Bank funded Investment Project.

Borrower needs to inform Bank and inform appropriate authorities in compliance with local regulations; secure the safety of workers, public, and provide immediate care.

The borrower initial communication should include the following information:

- *What was the incident? What happened? To what or to whom?*
- *Where and when did the incident occur?*
- *What is the information source? How did you find out about the incident?*
- *Are the basic facts of the incident clear and uncontested, or are there conflicting versions?*
- *What were the conditions or circumstances under which the incident occurred?*
- *Is the incident still ongoing or is it contained?*
- *Is loss of life or severe harm involved?*
- *How serious was the incident? How is it being addressed? How is the Borrower responding?*
- *What, if any, additional follow up action is required, and what are the associated timelines?*

Further to information provided on the incident, the Borrower prepares a report on the incident and shares to the Bank. The requirement to report should be defined in the Project's Operating Manual. As required by the contracts, the Contractor should report incidents to the Borrower – the Borrower should ensure that reporting obligations on compliance with ESHS requirements are incorporated into works and other relevant contracts. Borrower should monitor the reports for incidents.

The Borrower should ensure that incidents are investigated to determine what happened and why, so that processes and measures can be put in place to avoid reoccurrences and so that appropriate remedies are applied.

The extent of the investigation (RCA) carried out by the Borrower's Contractor should be proportionate to the severity of the incident. Suggested terms of References (ToRs) for engaging consultants for carrying out an RCA are provided. The RCA findings would be used by the Contractor and/or Borrower to develop a Safeguards Corrective Action Plan (SCAP) as a complement to existing project safeguards instruments. Suggested ToRs for use by the Borrower in case of need to recruit specialist consultants on Legal Advisory Services and Monitoring for Forced or Child Labor, if needed.

Responses and Remedies

Illustrative examples of responses and remedies available for different types of incidents prior to and during project implementation are set out in this section for guidance of task teams and management.

Health and Safety Examples

Examples of **potential responses** by the Borrower to worker occupational health and safety incidents of varying severity are presented in the following Table.

Health and Safety Issues	**Borrower's Role**
Severe Any fatality, permanent disability, or outbreak of life-threatening project-related communicable disease	• Improve barriers, alarms, signage, training, work processes and procedures • Address gaps in competence, expertise, numbers of project OHS team and/or project management team • Ensure that Health and Safety risk assessment has been conducted and appropriate management plans are put in place, implemented and enforced
Serious Major (non-fatal) accident or near-miss	• Review relevant sections of health and safety risk assessment for adequacy • Improve barriers, signage, training, working methods • Enforce use of personal protective equipment • Complement project Occupational Health and Safety (OHS) or management team/Project Implementation Unit (PIU) with adequate competencies and expertise
Serious Repeated observations of dangerous behavior or clear violations of safety protocols	• Improve use of grievance redress mechanism • Review relevant sections of health and safety risk assessment for adequacy • Implement (revised) OHS management plan, including training
Indicative Repeated failure to respond to notification to remedy safeguards issues (e.g., safety kit incomplete or not present)	• Remedy the outstanding issues • Repeat awareness training and messaging • Improve work process or procedure

Environmental & Social Examples

Examples of **potential responses** by the Borrower to worker occupational health and safety incidents of varying severity are presented in following Table.

Environmental and Social Issues	**Borrower's Role**
Severe (Social) Forced resettlement without due process or compensation	• Identify evicted people and provide compensation and support for identification of new housing/other facilities as relevant, in line with Bank safeguards requirements, including appropriate consultation • Clear instructions to project implementer(s) with respect to resettlement process, including sanctions for non-compliance with Borrower/Bank requirements; • Implement all measures identified in SCAP
Severe (Environmental) Poaching or trafficking in endangered species	• Engage with law enforcement to halt the poaching • Anti-poaching training for project workers and community members to make clear incentives and penalties • Include sanctions for inappropriate worker behavior, including poaching, in Contractors' contracts • Develop an alternative livelihoods program for communities around protected areas
Serious (Social) GRM not functioning	• Review GRM and address issues (upgrade, improve access, publicize GRM in community/ies, better organize response process) • Train PIU staff on GRM management and monitoring • Assign responsibility to qualified PIU staff
Indicative (Environmental) Hydrocarbon or chemical spills with low to medium environmental impact	• Improve work process or procedures as necessary • Train project staff on spills and associated procedures • Increase on-site monitoring if necessary • Review contract language for appropriate sanctions language

Suggested Terms of Reference10 for Borrower's Consultant to Carry Out a Root Cause Analyses for a Workplace Accident

This sample ToR will need to be adapted according to the specific situation at hand, in consultation with the Bank Environment and Social specialist(s) and/or Environmental and International Law Practice Group (LEGEN) lawyer, as appropriate.

Consultant normally would be retained by the Contractor.

Background

The Project was approved by the Bank's Board of Executive Directors in (…) and was effective in (…). Construction Works started on (…) and are currently ongoing. The project closing date is (…).
Environmental and Social Impact Assessments (ESIAs) (…) including Environmental and Social Management Plans (ESMPs) were prepared. All Safeguards documents included measures for mitigating Occupational Health and Safety (OHS) risks. The ESMP requires that workers should be trained to recognize potential hazards and use safe work practices (…).

The objectives of these TORs are to: 1) identify the root cause of the accident, 2) identify immediate measures to be taken to improve the safety at the site and at other Project sites throughout the Project area and 3) identify effective preventive measures to be implemented to reduce OHS risks.

Scope of work

Conduct root-cause analysis of the incident and identify the sequence of events and factual circumstances. The analysis should identify what failing(s) led to the accident, what safety measures were in place, and the risk information/training provided to workers on site. The level of supervision of unskilled labor should also be assessed.

Recommend actions to be taken to rectify the failure(s) that led to the incident.

Review the safety procedures at different sites and identify the health and safety measures to be taken to minimize the risks of future accidents both to workers and to local residents. Site visits should be carried out to a representative sample of construction sites, activities, regions and Contractors as applicable. Health and safety representatives of the Contractors and implementing agencies, as well as other technical counterparts as necessary should be interviewed to gain a comprehensive understanding about health and safety management.

Review the OHS measures in Safeguards instruments and plans in construction contracts and recommend enhancements as needed. The assessment should identify what the existing procedures for safe performance of construction activities (excavation, scaffolding, working at heights, welding, etc.) are and should recommend appropriate procedures should the existing ones have gaps.

Review the capacity of Contractors and supervision consultants to implement OHS standards. The assessment should review the training plans for skilled and unskilled labor for effectiveness and propose improvements to the training and communication program so that workers are adequately guided to safely perform their work.
Review the existing arrangements for recruiting labor and what type of insurance (life or injuries and occupational health risks) and compensations are provided.

Review compliance to the Labor Law and other international treaties by Contractors or Subcontractors.

Assess the sufficiency of the measures that the Contractors take to minimize risk on the local communities and communicate with them. Recommend improvements as necessary.

Outputs
The consultant shall prepare the following outputs:

A root-cause incident investigation report for the accident, including the recommended measures to improve OHS conditions at the site

A diagnostic analysis of OHS measures and recommended measures for improvements

Timing
The draft incident investigation and OHS diagnostic analysis reports should be submitted within (…) days from commencement. The final report should be submitted within (…) days of receipt of comments on the draft.

Confidentiality
All documents provided to the consultant for carrying out this task should be considered confidential except if otherwise indicated.

Suggested Terms of Reference: - Borrower's Legal Consultant (Labor) for an Incident or Accident
Background

The (…) Project was approved by the Bank's Board of Executive Directors in (…) and was effective in (…). The Project Development Objective is to (…). The project consists of (…) in (…). Construction Works started on (…) and are currently ongoing. The project closing date is (…).

An Environmental and Social Impact Assessment (ESIA) including Environmental and Social Management Plans (ESMPs), was prepared for each location (*adapt as necessary*). All Safeguards documents include measures for preventing and reducing Occupational Health and Safety (OHS) risks. The ESMP requires (*summarize relevant measures here*).

According to preliminary information, (*summarize what is known about the incident/accident*).

Objectives and activities
The objective of this consultancy is to provide the Borrower an overview of the local legal context and institutions, as relevant to the incident or accident, as well as recommendations to ensure adequate immediate response and longer-term adjustments to the Project's legal arrangements.
The Legal Consultant will be part of a team of independent consultants (*if applicable*). The Legal Consultant will review documents, and conduct site visits, interviews, and any other activities and research deemed necessary.

Key responsibilities of the Legal Consultant in relation to the incident or accident:

Identify key labor aspects and issues in the contracts between the Borrower or implementing agency and the Contractor, and between the Contractor and the Subcontractor(s), as applicable, and examine them against local laws. This must include, but should not be limited to, examining the employment agreements (nature of employment); wages; health; social, life and accident insurance for workers; age of workers; workers' qualifications against the needed tasks; and the information and training provided to skilled and unskilled workers to enable them to carry out the various tasks.

Examine the contract between the Borrower or implementing agency and the supervision engineer and identify any labor-related issues that the latter is mandated to follow up on.

Assess the adequacy of labor conditions of the workers and provide background information on local practices, laws and enforcement mechanisms (e.g., level of skills needed for the job, capacity for carrying out the job, contractual relationship, etc.)

Examine the sufficiency of the actions taken in response to the incident or accident and provide background information on local practice in similar situations (e.g., provision of compensation).

Provide any immediate recommendation(s) as needed in response for the case.

Key responsibilities in relation to the systematic analysis for the Project at large:
A systematic analysis should be conducted by the Legal Consultant for a representative sample of the contracts (e.g., different locations, different sizes, public and private contractor) to cover the first two key

responsibilities already stated earlier. The consultant should also verify what is stipulated in the contracts against the actual practices on the ground using different sources.

The consultant should provide analysis on the key findings, areas for improvement, and an action plan for the improvements to ensure that the contracts comply with the national laws.

Outputs
The consultant shall prepare the following outputs:
Report covering the legal aspects of the incident or accident
Report covering the systematic legal analysis of the project at large

Timing
The draft incident or accident legal report should be submitted within (…) days from commencement. The final report should be submitted within (…) days of receipt of comments on the draft.

The draft legal report covering the entire Project should be submitted within (…) weeks of commencement. The final report should be submitted within (…) weeks of receipt of comments.

Confidentiality
All documents provided to the consultant for carrying out this task are confidential unless clearance for disclosure is otherwise expressly provided.

Suggested Terms of Reference13 - For Independent Monitoring for Potential Forced or Child Labor

Background
The (…) Project was approved by the Bank's Board of Executive Directors in (…) and was effective in (…). The Project Development Objective is to (…). The project consists of (…) in (…). Construction Works started on (…) and are currently ongoing. The project closing date is (…).

An Environmental and Social Impact Assessment (ESIA) and associated Environmental and Social Management Plans (ESMPs) were prepared for Project Appraisal (*adapt as necessary*). All Safeguards documents include measures for preventing and reducing Environmental, Social and Occupational Health and Safety (OHS) risks, including the potential for forced adult, or child labor. The ESMP requires (*summarize relevant measures here*).

Description of issue or allegation as applicable.
Independent monitoring will be used to improve the development outcome of the project by providing timely and results-oriented information about project implementation to the World Bank. The objective is to monitor the project (or portfolio of projects) by regularly monitoring any issues related to the potential use of child or forced adult labor (as defined by international conventions and national legislation).

An independent firm or consultant will be engaged to periodically monitor any issues related to the potential use of child or forced adult labor in specific project areas. The consultant/firm will also design and manage a feedback system that will collect and scrutinize all reports on matters related to forced labor that might be associated with the project(s). The consultant or firm will prepare periodic reports and assessments to track any potential evidence of the use of forced labor in connection to the project(s) and provide recommendations on whether and how measures undertaken by the project(s) in this respect could be strengthened.

Activities
Preparation phase: (i) description of project activities including work site, recruitment, human resources function for the relevant work sites or project areas under consideration; (ii) diagnostic analysis of labor practices and recommended measures for improvement, including areas where forced adult or child labor practices may be of concern; (iii) develop detailed methodologies and materials that will be used to implement a monitoring program and gather feedback.

Robust staffing, including familiarity with country context, fluency in local languages, independence and knowledge of international standards.

Extensive experience of collaborating with a diverse range of stakeholders involved in development projects (including governmental authorities, local and international civil society, international development agencies etc.)

Outputs
The consultant shall prepare the following outputs:
A report the describes relevant project activities including work site, recruitment, human resources function for the relevant work sites or project areas under consideration.

A diagnostic analysis of labor practices and recommended measures for improvement, including the potential for forced adult or child labor

An appropriate monitoring program for forced adult and child labor in the project areas including a feedback mechanism

Regular reports based on feedback

Regular monitoring reports as requested by the Task Team Leader (TTL)

Timing
The draft reports should be submitted on the following timeline: (……).

Confidentiality
All documents provided to the consultant for carrying out this task should be considered confidential except if otherwise indicated.