

Environmental Impact Assessment Solid Waste Incinerator - Sangster International Airport

TERMS OF REFERENCE

INTRODUCTION

The Airports Authority of Jamaica (AAJ) proposes to install a new incinerator to dispose of solid waste generated at the MBJ Airport that is currently being expanded. Because of the potential for pollution from incinerator emissions, the AAJ is has been requested by the NEPA to undertake EIA of the proposed works to determine whether there are potential environmental impacts and to recommend necessary mitigation measures.

This document presents the terms of reference (TOR) for conducting an Environmental Impact Assessment (EIA). The EIA will evaluate the incinerator installation project and the planned operations so as to establish potential impacts within the context of the existing environmental conditions.

The EIA will document the existing environmental conditions at the airport and its environs including physical, biological and socio-economic aspects. The nature of expected emissions from the proposed incinerator type will be determined and the quantity and likely distribution of pollutants established.

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1. **Introduction** – Describe the incinerator installation project to be assessed and outline the need for the project.
2. **Background Information** - Briefly describe the major components of the proposed project, the implementing agent, along with a brief history of the project. Provide examples of similar installations, specifically referring to the incinerator at the Norman Manley International airport. Briefly outline the experience with previous solid waste disposal practices at the SIA/MBJ.
3. **Study Area** – Describe the location of the project site and indicate the area around the site that will be considered as part of the study area for the EIA. Define a radius of influence around the sites that will circumscribe a suitable airshed for the conduct of detailed air dispersion modelling.

4. **Scope of Work** - The EIA will include but not necessarily be limited to the following tasks:

Task 1. Description of the Proposed Project

Describe the setting in which the incinerator will be installed including its location, plant layout and its position in relation to surrounding airport facilities using maps and drawings where appropriate. Characterize the nature of the solid waste to be incinerated including the type and volume of material. Describe the intended operational framework including general procedures, safety provisions, residue disposal, and schedule of operation. Indicate the project life span and plans for providing utilities and support services.

Describe the type of incinerator plant to be installed including manufacturer's specifications, performance characteristics and drawings. Provide manufacturer's operational guidelines specifically outlining safety and emission control procedures as well as recommended maintenance practices.

Characterize the nature of emissions likely to be produced including the composition, volumes, expulsion height, ejection velocity and temperature.

Task 2. Description of the Environment - Assemble, evaluate and present baseline data on the study area, including the following:

- a) **Physical environment:** Summarise the physical setting of the incinerator site including topography, general geotechnical characteristics and drainage. Describe the topography and climate of the airshed. Assess existing air quality within the airshed identifying existing sources of pollution.
- b) **Biological environment:** Describe in general the terrestrial flora, and fauna within the airshed.
- c) **Socio-economic environment:** Describe in general the population and the nature of the main economic activities within the airshed.

Task 3. Legislative and Regulatory Considerations - Outline the pertinent policies, regulations and standards governing project location, land use, environmental quality, and public health and safety.

Task 4. Determination of Potential Impacts – Identify the major issues of environmental concern and indicate their relative importance to the design of the project. Distinguish construction and post-construction phase impacts, significant positive and negative impacts, and direct and indirect impacts. Identify impacts that are cumulative, unavoidable or irreversible. Special attention should be paid to:

Site preparation and construction phase:

- Clearance of site (originally used for burning airport garbage) and disposal of burnt garbage.
- Construction phase impacts including sourcing, transport and storage of earth materials, building construction methods, construction site management, noise, fugitive dust, solid waste disposal, traffic and employment, taking into consideration terminal construction activities currently underway.

Incinerator operation phase:

- Solid waste management during post-construction phase, with particular reference to waste collection, transport, sorting, loading, and disposal of incinerator ash.
- Characteristics of any hazardous materials resulting from or involved in the project, indicating appropriate management strategies (e.g. handling, storage, treatment, disposal). Based on the foregoing include any risk assessment and risk management of hazardous materials.
- Detailed air dispersion modelling to estimate the effect of the expected emissions from the proposed incinerator on ambient air quality within the airshed. The air dispersion modelling exercise will evaluate the extent and concentration of following pollutants which are typical constituents of solid waste combustion.:- sulphur dioxide, nitrogen oxides (as nitrogen dioxide), TSP, PM₁₀, dioxins, and furans. Potentially sensitive receptor sites will be evaluated.
- Occupational health and safety issues that could result directly from the operation of the proposed incinerator.
- Based on the model results and other available information, prepare an environmental monitoring and reporting plan for the proposed incinerator.

Reference should be made to the extent and quality of the available data and any information deficiencies, and uncertainties associated with the prediction of impacts should be clearly identified.

Task 5. Analysis of Alternatives - Indicate project alternatives (other types of incinerators and no action) including a comparison of the technologies and methods used to control the release of dioxins and furans and other air pollutants and the management of ash from the incinerator facilities. Include a comparison

of the performance of incinerator technologies especially with respect to the formation of dioxins and furans based on stack testing.

Task 6. Mitigation and Management of Negative Impacts - Summarise the potential environmental impacts (air quality, water and land) of the project. Develop any required mitigation measures and identify any residual impacts that may exist after mitigation.

Task 7. Development of a Monitoring Plan - Prepare a plan for monitoring the implementation of mitigating measures and the impacts of the project during construction and post-operation phases.

REPORT

The environmental assessment report will be concise and limited to significant environmental issues. The main text will focus on findings, conclusions and recommended actions supported by summaries of the data collected. The environmental assessment report will be organized according to the outline below.

- Executive Summary
- Policy, Legal and Administrative Framework
- Description of Proposed Project
- Description of the Environment
- Significant Environmental Impacts
- Analysis of Project Alternatives
- Impact Mitigation Management Plan
- Environmental Monitoring Plan

Information Required from Client:

The client will be required to provide the following information:

- Stack test data from similar facilities at NMIA (if operational)
- Source characteristics for the proposed incinerator:
 - Stack height
 - Stack diameter
 - Stack exit velocity
 - Stack flow rate
 - Stack exit temperature
 - Emission rates for sulphur dioxide, nitrogen oxides (as nitrogen dioxide), TSP, PM 10, dioxins, furans
- Airport characteristics (re incinerator) .
 - Site drawing showing:
 - Property boundary

- Location of incinerator and associated buildings, as well as the heights and dimensions for each tier in the building
- Airport emissions and source (other than incinerator) characteristics
 - Runway and taxiway layout
 - Numbers of aircraft landings and takeoffs (L TO) by aircraft type and aircraft engine type (for most recently available calendar year of data)
 - Hourly runway activity (typical % of activity for each hour of the day)
 - Average taxi-in and taxi-out times for aircraft
 - For ground side traffic:
 - Capacities of the parking lots at the airport
 - Include location of roadways and parking lots in the maps/drawings for the airport
 - Estimate of the daily volume of traffic into the airport
- Airport Ground Support Equipment (GSE) .
 - Numbers of GSE by type and fuel

Scope of Work:

The specific tasks to be undertaken are:

- Literature review (stack tests and other relevant performance measures for alternatives considered)
- Data acquisition – baseline data collection /field work
- Data acquisition - emission source characteristics (other sources in the model domain)
- Data acquisition - Land use data
- Air dispersal model runs
- Air dispersal model analysis
- Design of ambient monitoring program
- Meetings (initiation meeting and public meeting)
- Report preparation

Deliverables:

- 1) EIA report incorporating air dispersal modeling results.

COSTING

Payment Schedule:

The Schedule of payments for the project is outlined below. Inputs and feedback from the public hearing will be incorporated in the final report.

Mobilization	30%	US\$ 6,225.00
Draft Report Presentation	50%	US\$10,375.00
Final Report Presentation	20%	<u>US\$ 4,150.00</u>
TOTAL	100%	<u>US\$20,750.00</u>