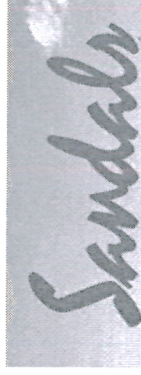


Terms of Reference (TOR)
for
Environmental Impact Assessment (EIA) for
Sandals Montego Bay
(OVER WATER VILLAS)



PREPARED FOR:



Prepared By:



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February 13, 2023



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TERMS OF REFERENCE

The purpose of this document is to establish the Terms of Reference (TOR) for the Environmental Impact Assessment (EIA) for the construction of Sandals Montego Bay Overwater Villas. The TOR outlines the aspects of an EIA, which, when thoroughly addressed, will provide a comprehensive description of the proposed project and evaluation of the site's physical, ecological and archeological aspects, as well as potential impacts and proposed mitigation measures.

All findings must be presented in the EIA report and must reflect the headings in the body of the TOR, including relevant references. GPS coordinates should be provided where applicable. One hard copy and an electronic copy must be submitted to NEPA for review and approval.

The report should include appendices with items such as maps, site plans, the study team and their individual qualifications, and other relevant information. All of the preceding documents should be properly sourced and credited.

The EIA report must be produced in accordance with the approved TOR.

Where the need arises to modify the TOR, the required amendments/modifications are to be made and submitted to the Agency. Approval for the TOR must be obtained from the Agency, in writing, prior to the commencement of the EIA study.

The National Environment and Planning Agency and the Natural Resources Conservation Authority reserves the right to reproduce, transfer and disclose all contents contained in the submitted Environmental Impact Assessment report without the written consent of the proponent, consultants, and/or its agents.

1. Executive Summary

Provide a brief statement on the content of the EIA report. The executive summary should provide a comprehensive overview and objectives for the project proposal, natural resources, justification for the project, etc. In addition, it should include relevant background information and provide a summary of the main findings, including but not limited to main impacts and mitigation measures, analyses, and conclusions in the report.

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2. Introduction

The introduction should provide the background, context, and need for the project and the EIA and give a profile of the project proponent. In addition, a brief profile on the implementing organization, project consultants, etc. should be provided. The delineation and justification of the boundary of the study area, general methodology, assumptions, and constraints of the study should be completed.

The study area shall include at least the area within a 1 km radius of the boundaries of the proposed site to the south, west, and east, and shall extend from the northern boundary to the coastline and the adjoining marine environment.

3. Legislation and Regulatory Consideration

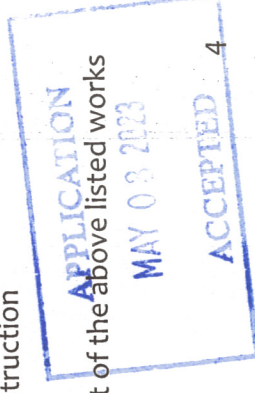
Outline the pertinent regulations, standards, government policies, and legislation governing environmental quality, safety and health, protection of sensitive areas, endangered species, siting, and land use control at the national and local levels. The examination should include legislation and any Regulations promulgated under any Act, Development Orders and Plans, and all appropriate international conventions/protocols/treaties where applicable.

The examination of the legislation should include at a minimum the Natural Resources Conservation Authority Act 1991, Natural Resources Conservation Regulations 1996, amended 2015, Natural Resources Conservation (Wastewater and Sludge) Regulations, 2013, Beach Control Act, Jamaica National Heritage Trust Act, Wild Life Protection Act, Fisheries Act 2018, National Solid Waste Management Authority Act, the Town and Country Planning Act, Building Act and Codes and Standards promulgated thereunder, Planning Guidelines – Overwater Structures, Development Orders and Plans and all appropriate international convention/protocol/treaty where applicable. Describe traditional land use and advise of any prescriptive rights including public access rights.

4. Project Description

Based on the various applications, the nature of the proposed works, their proximity and relationship to each other, in order to allow for the assessment of the cumulative impacts of the overall development, the scope of the EIA should include the overall project. In addition to the proposed construction of overwater rooms, the report should also include:

- Proposed hotel construction (construction of villa style units)
- Proposed wetland modification to facilitate the hotel construction
- Proposed coastal modification works
- Any ancillary facilities or activities to be undertaken as part of the above listed works



Prepare a detailed description of the project. This section will provide information on the proposed project and should include:

- History and background of the project
- Location maps at a scale of 1:50,000 and 1:12,500 (or an appropriate Google image scaled accordingly)
- The total area of the site
- Overall master plan for the site, including current, proposed, and future use of the lands showing the various components and design elements of the proposed development
- A site layout plan showing the various components and design elements of the proposed development
- Details of the design concept, design components, material(s) to be used, total number, size, and types of guest rooms/suites; boardwalk or means of access to the rooms; design height of structures above sea level Estimated duration of the project for construction; maintenance schedule (where applicable);
- Total area of land to be utilised and amenities to serve the proposed development. Design elements to promote sustainability, green concepts and SMART design concepts will be outlined.
- Expected project components and alternatives that the developer may consider
- Schematic plans
- Details of proposed access(es) to the site to be used for pre-construction, during construction, and operational phases
- Details of infrastructure development, including design plans, method of treatment or disposal, and expected volume of waste
- Details for the provision of utilities specifically additional information relating to the source of potable water and electricity
- A Waste Management Plan, which clearly outlines expected types and quantities of construction waste during the construction phase, general waste arising from the workforce's material consumption, and the expected waste during the operational phase, should be completed. Details should also be provided for any central disposal area(s) under consideration for the proposed development. This section should include but not be limited to the treatment/disposal of sewage effluent during the proposed construction phase as well as details of the piping for the disposal/treatment/conveyance of the sewage effluent from the proposed overwater structures.
- A detailed list of equipment and machinery, how these will be mobilized, and areas to be used for storage of machinery and material should be clearly indicated

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- All phases of the project should be clearly defined, the relevant time schedules provided along with maps, diagrams, and appropriate visual aids included in the EIA report
- The study area should be delineated and georeferenced. Considering the types of resources located in the area and the magnitude of the associated potential impacts, the study area should be large enough to include all valued resources that might be significantly disturbed by the project.
- Details of the design concept, design components, material(s) to be used, total number, size, and types of guest rooms/suites; boardwalk or means of access to the rooms; design height of structures above sea level; estimated duration of the project for construction; maintenance schedule (where applicable).
- Detailed description of all activities and features which will introduce risks or generate an impact (positive or negative) on the environment including but not limited to corals, seagrass, and/or mangroves (if applicable); collection, transfer and disposal of waste (solid waste and sewage).
- Details of the construction methods, equipment, and machinery to be employed to undertake each aspect of the project including coral/seagrass relocation, dredging/excavation (if applicable), transportation of material, disposal of spoils (if applicable), storage of material, installation of pylons, construction of units, installation of required infrastructure and secondary activities such as refueling of vessels, proposed location(s) for equipment storage (staging area) and establishment of a site office (if applicable).
- Detailed drainage report for construction and operational phase of development.
- Details of any required decommissioning of the works and/or facilities

5. Description of the Environment

A comprehensive description of the proposed development site will form the basis against which project impacts will be assessed.

The following aspects should be described in this section:

- Physical Environment
- Biological Environment
- Natural Hazards
- Socio-economic Environment
- Cultural Heritage

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5.1 Physical Environment

This section should provide a complete description of the study area, including geographical boundaries and methodologies used to collect baseline data. The report should describe: water quality, coastal dynamics, noise and geotechnical characteristics of the site.

A. Water Quality

- i. Baseline water quality should include the study area and a control site to identify any possible source(s) of pollutants in the area. *(Sampling stations and the resulting WQ data should be georeferenced).*
- ii. Water quality should include the following parameters:

Chemical

Dissolved oxygen
Nitrates
pH
Phosphates

Physical

Conductivity
Salinity
Temperature
Total Dissolved Solids
Total Suspended Solids
Turbidity

Biological

BOD
Faecal Coliform

- iii. Water quality data should be compared to local and international water quality standards.
- iv. Monthly water quality monitoring and sampling conducted for a period of six months covering the wet and dry seasons (a total of six sets of samples at minimum). Minimum three sets of samples collected monthly in the wet season and another three sets of samples collected monthly in the dry season. Samples should include a control site in addition to sites in the impact zone. Historical data from other sources may be used to supplement (not replace) the monthly data and this data should be no more than five years old.

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B. Coastal Dynamics

The main threat to the integrity of the overwater units comes from uplift forces on the floor level from wave motion during periods of elevated water levels (e.g., during. Minimum floor levels, and horizontal forces on the piles should be calculated).

The following parameters should be analyzed:

- i. Wave climate
- ii. Baseline sediment transport and circulation patterns.
- iii. Modeling of the nearshore wave field under various energetic and water level conditions
- iv. Numerical modeling should be conducted at appropriate scales to assess the impacts of the proposed development on neighboring coastlines.
- v. Sediment plume dispersal modeling for the construction phase should be conducted.
- vi. Wave modeling should be based on the results of Natural Hazard analysis in terms of energetic wave heights and elevated water level.
- vii. The energetic conditions should be applied to calculate the horizontal wave forcing on the pilings.
- viii. Potential seabed scour around the piling should be evaluated. Mitigation measures associated with seabed scour should be evaluated.
- ix. The estimated elevated water level and the energetic wave conditions should be applied to calculate the potential uplift forcing on the bottom of the units. Well-established empirical formulas should be used to calculate the uplift forcing. The calculation will be conducted using various water levels and wave height. The calculated vertical (uplifting) forcing will be used to design and confirm the elevation of the base level of the overwater units. Uplift forcing from waves crashing at the bottom of the base, in addition to buoyancy forcing, play a crucial role in the stability of the overwater units. The base of the units should be high enough to avoid excessive uplift forcing and buoyancy.

- C. Noise levels of undeveloped site and the ambient noise in the area of influence
- D. Sources of existing pollution.
- E. Results of a Geotechnical Assessment for the site.

5.2 Biological Environment

Description of habitats, existing flora and fauna, including a comprehensive species list; commentary on the ecological health, associated ecosystem services, threats and conservation significance.

Coastal/Terrestrial Assessment:

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Benthic surveys should be conducted with emphasis on seafloor areas (e.g., seagrass) which will be impacted by the proposed development. The benthic survey should include the size class and species name of all coral colonies within the project footprint.

- i. Coastal surveys should be conducted in order to describe the plant and animal community present within the project/impact areas - including temporary staging, equipment and material storage areas. The ecosystems and habitats identified within the impact areas should be described and mapped. This should include but not be limited to the seagrass beds, corals and other ecologically important habitats and or species. The benthic survey should include the size class and species name of all coral colonies within the project footprint.

- a) a species list should highlight rare, threatened, endangered, endemic, protected, invasive and economically or nationally important species found in the study area.
- b) A description of the different ecosystems should detail species dominance, species dependence, habitat/niche specificity, community structure and diversity, as well as possible biological loss or habitat fragmentation. Ecological surveys must be carried out according to internationally (scientific) acceptable standards, and should include a photographic inventory of flora and fauna identified during site surveys.
- ii. Any crocodile, turtle or bird nests observed in or around the project area should be recorded and mapped. Information pertaining to existing crocodile and sea turtle nesting sites, and habitat usage by migratory species should also be presented.
- iii. Habitat map of the study area should include the spatial extent of the existing seagrass beds, and identify seagrass areas likely to be impacted by the proposed overwater development.
- iv. Carbon sequestration should be estimated for seagrasses in the project area, in suitable sediment types.
- v. A qualitative and quantitative assessment of ecologically sensitive marine habitats in and around the proposed project site and the areas of impact
- vi. Shape files used to generate maps depicting all sensitive resources within the study area should be submitted.
- vii. Where applicable, the location of threatened and endemic flora and fauna species should be georeferenced and displayed on a site overlay map in relation to the footprint of the development.

5.3 Natural Hazards

A risk assessment of natural hazards should include:

- i. Potential impacts of Tropical Storms, Hurricanes, Tsunamis
- ii. Climate change projections.

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5.4 Socio-economic Environment

This section should provide details on the demography, regional setting, location assessment, current and potential land-use patterns (of neighbouring properties); description of existing infrastructure such as should be explored; and other material assets of the area. There should also be an assessment of the present and proposed uses of the site and surrounding areas, including any land acquisition needs, prescriptive or public access rights, and impacts on current users of the area during and post-development. Effects on socio-economic status such as changes to public access and recreational use, impacts on existing and potential economic activities, public perception, contribution of development to national economy and development of surrounding communities.

Describe surrounding area to include a general overview of existing land uses and land cover. Where no use exists, indicate as vacant lot and represent spatially (in similar format as a location map).

A socio-economic survey to determine public perception of the project (both negative and positive) should also be completed, including potential impacts on social, aesthetic, and historical/cultural values. The assessment may vary with community structure and may take multiple forms such as public meetings or questionnaires. The methodology for conducting the survey should be included in the EIA report.

5.5 Heritage

An assessment of artifacts, archaeological, and cultural features of the site should be undertaken, and if required, it should be conducted in collaboration with the Jamaica National Heritage Trust.

6. Public Participation

Describe the public participation methods, timing, type of information provided and collected from public and stakeholder target groups meetings. The instrument used to collect the information must be included in the appendix. It may be useful and necessary to hold stakeholder meetings to inform the public of the proposed development and the possible impacts. This will also gauge the feeling/response of the public toward the development. The issues identified during the public participation process should be summarized and public input that has been incorporated or addressed in the EIA should be outlined.

Public Meetings should be held in accordance with the Guidelines for Conducting Public Presentation at a time and location signed off by the National Environment and Planning Agency (NEPA). A public meeting will be held to present the findings of the EIA ~~once the EIA~~ is completed and submitted for consideration. All relevant documents are required to be made available to the public. In addition, any material change to the design of the project will

require a further public meeting to be undertaken by the developer and all changes made to the document should be clearly outlined to the public.

7. Impact Identification and Analysis

A detailed analysis of the project components should be carried out to:

- Identify the major potential environmental, health, safety and socio-economic impacts of the project
- Distinguish between levels of impact, significance of impact (a ranking from major to minor/significant to insignificant should be developed), positive and negative impacts, duration of impacts (long term or short term or immediate), direct and indirect and impacts, reversible or irreversible, long term and immediate impacts and identify avoidable impacts.

Cumulative impacts should be evaluated, including previous developments and any proposed developments in the immediate vicinity of the project site. I Magnitude of potential impacts should be characterized, and any major concerns pertaining to environmental and public health issues identified. The quality of available data should highlight significant information deficiencies and uncertainties associated with potential impacts. Project activities and impacts should be listed, assessed and ranked as major, moderate and minor, and presented in separate matrices for all project phases (i.e., preconstruction, construction, operational and decommissioning/closure).

The impacts to be assessed should include but not be limited to the following:

7.1 Physical Environment

- Impacts of coastal modification and/or construction activities such as:
 - Dredging related impacts
 - Shoreline modification
 - Removal/relocation of seagrass and corals, shading
 - Sediment plume dispersal
 - Reef modification
 - Modification of waves and current patterns
 - Water quality (pollution of potable, coastal, surface, and groundwater)
 - Geotechnical and engineering requirements
 - Spoil disposal
- Impacts on coastal morphodynamics
- Impacts of construction activities such as:
 - Encroachments
 - Occupational health and safety
 - Beach access
- Impacts of potential spills (such as oil and chemical spills)

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- Impacts on water quality (during construction and operation)
- Impacts of climate change
- Noise
- Operation and maintenance – provision of and demand requirements for potable water and electricity, waste disposal, sewage treatment and disposal, communication and other utility requirements
- Impacts on aesthetics, landscape and seascape

7.2 Biological Environment

A list of the direct and indirect impacts of the project on the ecology of the marine habitat/environment should be provided with emphasis on rare, endemic, threatened, protected, endangered, invasive, and economically important species. Impacts should include habitat loss and fragmentation, loss of species and natural features, and the effect of noise and vibration on fauna.

Assessment of impacts on other marine resources including but not limited to corals and seagrass for each stage of the development.

Where coral and seagrass are to be impacted then the criterion for relocation site(s) selection should be included. Relocation sites should be proposed based on spatial features (satellite imagery, proximity to project site etc.) and physio-chemical characteristics (depth and water quality).

7.3 Natural Hazards

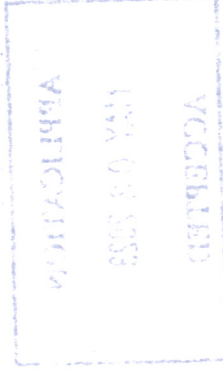
Potential impact of natural hazards including earthquakes, tropical storms, hurricanes and tsunamis

7.4 Human/Social/Cultural

Effects of the proposed development on socio-economic status changes in resource use, public access, prescriptive rights, existing recreational use, impacts on existing and potential economic activities; public perception; and the contribution of development to the national economy and development of surrounding communities should be identified.

Include assessment/survey of other watercrafts that use the area that may be impacted by, or impact the proposed development.

Assessment of the possible impact the proposed development may have on the activities of Civil Aviation and Airports Authority of Jamaica.



8. Impact Mitigation

This section should outline mitigation measures that avoid, reduce or remedy potential negative impacts, and enhance positive impacts identified. Mitigation and abatement measures should be developed for each potential negative impact identified and shall include a fugitive dust emission control plan. This will include mitigation measures against the pollution of the aquatic /marine environment if sewage disposal and treatment infrastructure should be compromised.

A detailed implementation plan of the proposed mitigation measures should be provided, including details on the scheduling/timelines, source of materials, location and responsible parties, as appropriate. Maps and diagrams should also be used to illustrate areas where proposed mitigation measures are to be implemented. In addition, an emergency evacuation plan should be included to address susceptibility to natural hazards. Proposals to compensate for the unavoidable loss of natural resources should be included.

9. Natural Resource Valuation

An Ecosystem Service valuation (ESV) and Natural Resource Valuation (NRV) shall be conducted of the marine and coastal resources within the study site for the proposed development. This should include wetland areas for proposed hotel expansion, site of beach enhancement works and overwater suites.

There shall be an identification of in situ ecosystem services and where feasible monetary values assigned to them. The study will include but not limited to the following:

- Economic Valuation of Ecosystem Services using the benefit transfer method
- Economic Value of Carbon
- Damage Cost Avoided Approaches
- Market Based Approaches

The following tasks shall be conducted:

- Conduct policy analysis and review of supporting studies for the site and study area (proposed project)
- Conduct a comprehensive review of the relevant economic valuation literature
- Based on literature review conduct benefit or value transfer analysis and where possible provide economic value for the key ecosystems (mangroves, seagrasses, coral reefs) associated with the site
- Provide a discussion of the likely loss in economic value based on negative impacts of development (irreversible habitat loss) associated with proposed activities and suggestions for possible mitigation of the economic costs of the development action.

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10. Identification and Analysis of Alternatives

A minimum of three alternatives to the proposed development/project including the no-action alternative should be examined. These should be assessed according to the physical, ecological and socio-economic parameters of the site. The assessment of alternatives should incorporate the historical use of the study site and its immediate surroundings. Alternatives should also address specific aspects of the project including methods proposed in the execution of the project (works) that have been identified as the underlying causes of major impacts.

11. Environmental Monitoring and Management

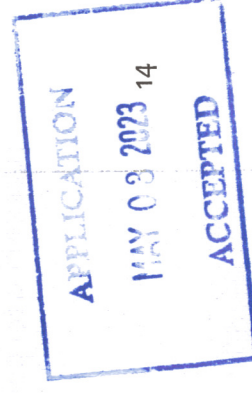
An environmental monitoring and management plan should outline the requirements for the construction, operational and decommissioning/closure phases of the project. The monitoring plan should include, but not be limited to training for staff, recommendations for the implementation of mitigation measures, and long term management of negative/chronic impacts.

A draft environmental monitoring programme should be included in the EIA, and a detailed version submitted to NEPA for approval after the granting of the permit, and prior to the commencement of the development.

At the minimum, the monitoring programme should include:

- Introduction outlining the need for a monitoring programme
- The operational activities to be monitored, pertinent parameters and reference standards
- monitoring methodology for seagrass, coral resources and other sensitive species
- Appropriate quantitative and qualitative success criteria should also be included for affected resources.
- The areas to be monitored (including a control site) and the recommended frequency for long-term monitoring.
- The name and qualifications of the person(s) proposed to undertake the monitoring programme
- Frequency of reporting to NEPA
- A template of the monitoring report that is to be submitted

The Monitoring report should include:



- Primary data collected and presented in tables and graphs as appropriate
- Discussion of results with respect to the development in progress, highlighting any parameter(s) which exceeds the expected standard(s).
- Recommendations

12. List of References

13. Appendices

The appendices should include but not be limited to the following documents:

- i. Reference documents
- ii. Photographs/ maps/Site plans
- iii. Data Tables
- iv. Glossary of Technical Terms used
- v. Final Terms of Reference
- vi. Profile of the project proponent and implementing organization
- vii. Composition of the consulting team, team that undertook the study/assessment, including name, qualification and roles of team members
- viii. Notes of Public Consultation sessions
- ix. Instruments used in community surveys

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ACTIVITIES

In order to effectively and efficiently conduct the Environmental Impact Assessment it will be necessary to carry out various activities which include:

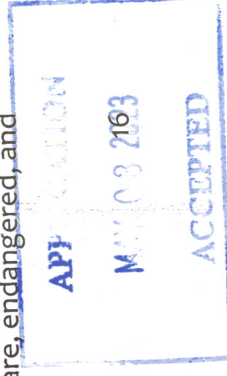
- **Documentation Review**
All documentation pertaining to the development will need to be reviewed. These should include, but not limited to, the project profile, site plan, drainage plan, vegetation clearance plan, landscape plan, applications made for financing or planning approval, and any technical and engineering studies that have been done.
- **Analysis of Alternatives**
Alternatives to the site location, project design and operation conditions will be analyzed including the “no-action” alternative. These alternatives will be assessed based on the physical, ecological and socio-economic parameters of the site identified. The physical, biological and sociological settings will provide the framework in which to assess the different project alternatives. This would clarify, for instance, whether the site could be used for other purposes as well as whether there are any particular aspects of the development that can be sited differently, operated differently, etc.

- **Impact Assessment**

The consultant should carry out a detailed impact assessment of the project components (preconstruction, construction, operational and decommissioning/closure stages) in order to identify the potential impacts (positive, negative and cumulative impacts) that will be associated with the project. The significance and magnitude (major, moderate and minor) of the impacts identified will also be evaluated through the use of a weighted matrix.

The impacts to be assessed should include but not be limited to the following:

- Effects of project design and engineering;
- Effects on visual aesthetics and landscape;
- Effect of noise and vibration;
- Effects of operation activities such as site clearance, , earthworks, access routes, transportation networks and spoil disposal;
- Effects of operation and maintenance activities such as waste disposal, traffic management, site drainage, sediment, sewage, public access and air quality; and
- Effects on terrestrial and marine habitats, with emphasis on any rare, endangered, and endemic species found at the study site.



- Effects on socio-economic status such as changes to public access, recreational use, existing and potential agricultural activities, contribution of development to national economy and development of surrounding communities.

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