

Compliance with Terms of Reference Issued by the Maldives Environmental Protection Agency for the Conduct of EIA for the WTE Plant.

| Scope of work — The EIA shall include but not necessarily be limited to the following tasks: | Compliance |
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| Task 1. Description of the Proposed Project | |
| <ul style="list-style-type: none"> • Describe the RWMF (incinerator & ash disposal cells) and associated infrastructure (harbor, fuel storage, power supply etc.) to be developed including location, plant layout and its position using maps and drawings where appropriate. • Describe the current operational condition of Thilafushi, including the tonnage of waste received, method of waste management, operator of the facility, number of staff employed, and difficulties faced. • Describe the need and justification for the proposed facility and the methodology employed. • Provide detailed description of the proposed facilities. Describe the level of waste treatment that will occur. • Describe the methodology for air quality measurement. • Describe how hazardous waste are going to be processed. • Describe how electronic waste is going to be processed. • Describe how plastic is going to be processed. • Describe how all organic and inorganic waste is going to be processed. • Describe the steps involved from waste collection to transport to delivery to final location. • Describe the lessons learnt that was adopted from current operations at regional waste management facility at Vandhoo. • Describe the operations of the RWMF including waste catchment area to be serviced by the facility, and waste type, volumes and composition to be received at the facility. Indicate the project life span, • Identify the emission releases likely to be of concern and the environmental aspects of the project area which may potentially be impacted by the proposal. • Describe the type of incinerator plant to be installed including specifications, performance characteristics and operational flow diagrams. Provide details of the ash disposal cells including capacity, dimensions, design specifications and phased development plans. • Describe the lifetime of the sanitary landfill site, for how many years is the sanitary landfill designed. • Provide requirements for new infrastructure to service the project such as water supply and sewerage infrastructure. Describe details of all equipment and vehicles that are going to be procured for the new operations. • Provide details of the amount of energy that will be generated from the waste to energy component and how it will be utilized. | <p>Task 1 refers to various requirements covered under Phase 1 and Phase 2, including rehabilitation of the existing dumpsite.</p> <p>The draft EIA is intended to be submitted for the ADB approval process. Therefore, Section I and Section II of the draft EIA report discuss items related to the WTE Plant only. The draft EIA does not include detailed discussions on the activities under Phase 1 and rehabilitation of the existing dumpsite (although background information is included).</p> <p>Since the project will be awarded as a DBO contract, many of detailed information required are not completely described.</p> <p>In a separate submission to Maldives EPA, Ministry of Environment may submit additional document that would discuss compliance with the other</p> |

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| <ul style="list-style-type: none"> • Describe the model of management that will be adopted for the operations. • Justify the final elevation of structures (including as ash disposal cells) with reference to the height above the mean high tide, highest annual tides and risk of flood inundations during seasonal high tide regimes. • Describe the existing condition of the site and how Thilafushi is going to be restored. • Describe all project inputs and outputs. Including equipment and resources required both for construction and operational phase. Provide a detailed schedule of the project. • Describe how this project facilitates to achieve the 3R concept of waste management. That is reduce, reuse and recycle concept. | <p>required items under Task 1.</p> |
| <p>Task 2. Description of the Environment - Assemble, evaluate and present baseline data on the relevant environmental characteristics of the study area, focused on the marine, terrestrial and air environment. Aspects of the environment shall be described to the extent necessary for assessment of the environmental impacts of the proposed development. The extent and quality of the available data shall be characterized indicating significant information deficiencies and any uncertainties associated with the prediction of impacts.</p> <p>This section should provide details of the environment in the vicinity of the proposed development site. Data collection methodology used to describe the existing environment shall be detailed. All survey locations, sampling points, reef transects, vegetation transects, manta tows and soil sampling sites shall be referenced with Geographic Positioning System (GPS). All marine water samples shall be taken at a depth of 1m below the mean sea level or mid water depth for shallow areas. Baseline data collection shall focus on key issues needing to be examined for the EIA Consideration of likely monitoring requirements shall be borne in mind during survey planning, so that the data collected is suitable for use as a baseline for impacts monitoring.</p> <p>All available data from previous studies, if available shall be presented. Information required includes the following:</p> <p><u>Physical environment:</u></p> | <p>Compliance in Section V.</p> |

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| <ul style="list-style-type: none"> • Describe the meteorology (rainfall, wind, waves and tides), sea currents, surface hydrology, climatic and oceanographic conditions in the area, and bathymetry of the hot-water outfall location. • Describe the existing air quality within project site at Thilafushi and at the nearest islands. Ambient Air Quality measuring the following parameters: Particulate matter (PM10, PM2), Sulphur dioxide (SO2), Oxides of nitrogen (NOx), Methane (CH4), Carbon monoxide (CO), Cadmium (Cd), Lead (Pb), Mercury (Hg), Hydrocarbons (HCs). Measurements should be made from all locations from which data was taken in 2011 ELA report. • Dispersion model for air pollution taking into account wind direction. • Describe noise sources contributing to ambient noise levels (day/night) at the nearest and adjacent islands. • Sensitive noise receptors adjacent to all project components shall be identified and typical background noise estimated based on surveys at representative sites. A justification for an ambient noise baseline (dBA) at the nearest and adjacent inhabited islands shall be provided. Ambient Noise should be measured from the facility location, harbor location and also from the waste transfer road location. • An indication of the quality and quantity of water resources in the vicinity of the project site should be given including spatial and temporal monitoring to accurately characterize baseline groundwater characteristics and present water uses. Groundwater quality measuring following parameters pH, color, odor, turbidity, Electrical Conductivity, nitrate, phosphate, chloride, total dissolved solids, mercury, lead, arsenic, manganese, cadmium, iron, Total Coliform and polyaromatic hydrocarbons. From all locations from which water quality was assessed in 2011 and from the reclaimed areas following 2011. • Marine water quality should be assessed. The following parameters needs to be investigated. This includes Temperature, pH, salinity, Total Suspended Solids (TSS), phosphate, nitrate, ammonia, sulphate, Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Arsenic and Total Coliform. Assessment should be undertaken at all waste transfer routes and from locations from which data was taken in 2011 report. • Currents data should be measured from the harbor and channel locations and from the lagoon. Comparisons should be made with the data collected from 2011 EIA report. Dispersion model of waste in water should be presented, taking into account currents. | |
| <p><u>Biological environment:</u></p> | |

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| <ul style="list-style-type: none"> • Description of the terrestrial environment of the site including current condition of the site, • Assessment of the marine environment should be undertaken from all locations from which data was taken in 2011 ELA report. This assessment should cover coral cover and fish census information. • Plankton Assessment from 5 different locations around Thilafushi. • Areas of special sensitivity including coral reefs and marine protected areas near Thilafushi shall be marked on a map and described. This shall include environmentally sensitive areas, protected areas and significant dive sites. | |
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| <u>Socio-cultural environment:</u> | |
| <ul style="list-style-type: none"> • Describe the natural features and landscapes of the project site which may have a cultural significance. • Describe the visual amenity from the nearest and adjacent islands to Thilafushi. • Describe any Structures on the project site which may have cultural or religious significance. • Provide details of the land use plan in Thilafushi. This shall refer to current and future envisioned development projects. | |
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| <u>Hazard Vulnerability</u> | |
| <ul style="list-style-type: none"> • Vulnerability of proposed project area to flooding and storm surges need be described. | |
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| <p>Task 3. Legislative and regulatory considerations — Identify the pertinent legislation, regulations and standards, and environmental policies that are relevant and applicable to the proposed project, and identify the appropriate authority jurisdictions that applies to the project. Outline the pertinent policies, regulations and standards governing project location, land use, environmental quality, and public health and safety. Relevant sections of the regulations need to be highlighted and how the project complies with these sections indicated. Specific attention needs to be given to the waste management regulation and waste policy and how the project complies with these documents and how the relevant approvals will be attained.</p> | Compliance in Section III. |
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| <p>Task 4. Determination of Potential impacts of proposed project — Identify the major issues of environmental and social concern and indicate their relative importance to the design of the project. Distinguish construction and postconstruction phase impacts, significant positive and negative impacts, and direct and indirect impacts. Identify impacts that are cumulative, unavoidable or irreversible. Particular attention shall be given to impacts associated with the following:</p> | Compliance in Section VI. |
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| <u>Site preparation, construction and commissioning:</u> | |
| <ul style="list-style-type: none"> • RWMF construction impacts including a description of the relevant parts and nature of the works, an indicative construction timetable, including expected commissioning and start-up dates and hours of operation, and a description of major work programs for the construction phase, including an outline of construction methodologies. • Commissioning impacts — including a description of the regional waste management facility commissioning process. | |
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| <u>Incinerator operation:</u> | |
| <ul style="list-style-type: none"> • Describe solid waste management activities during operations, with particular reference to waste collection, transport, sorting, incinerator 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). • Provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in 'CO₂ equivalent' terms. | |
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| <u>Air Quality:</u> | |
| <ul style="list-style-type: none"> • Characterize the nature of emissions to air likely to be produced during the incineration process including flue gas composition, volumes, expulsion height, ejection velocity and temperature. • Describe the pollution control equipment, techniques and the features of the incinerator designed to suppress or minimize emissions to air. • Air dispersion modelling outcomes which estimate the effect of the expected emissions from the proposed incinerator on ambient air quality within the air shed with particular reference to the nearest and adjacent islands. The air dispersion modelling exercise shall evaluate the extent and concentration of following pollutants which are typical constituents of solid waste combustion: sulfur dioxide, nitrogen oxides (as nitrogen dioxide), TSP, PM_{2.5} and PM₁₀. Air emissions shall be stated in respect stack and ground level concentrations, using a dispersion model. | |
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| <u>Ground Water</u> | |
| <ul style="list-style-type: none"> • Provide details of potential impacts on the quality of ground and marine waters. Reference shall be made to leachate from ash disposal, the potential of wastewater to contaminate ground and marine water, and impact on current and future potential groundwater usage from the Thilafushi. | |

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| <ul style="list-style-type: none"> Describe the pollution control equipment and design features of the proposed development for prevention and minimization of contamination of groundwater resources. | |
| <u>Natural Environment</u> | |
| <ul style="list-style-type: none"> The proximity of the facility to any sensitive areas shall be described. Describe measures to be taken to avoid and minimize potential adverse impacts of the proposal on sensitive terrestrial and aquatic environments. Describe potential issues relevant to sensitive areas, or areas which may have low resilience to environmental change arising from the construction, operation of the project including clearing, salvaging or removal of vegetation. Areas of special sensitivity include coral reefs, marine protected areas and communities. The capacity of the environment to assimilate discharges/emissions shall be assessed. Short-term and long-term effects shall be considered with comment on whether the impacts are reversible or irreversible. The discussion shall cover all likely direct and indirect environmental harm due to the project on flora and fauna particularly sensitive areas. If construction and operation of the project are likely to cause adverse impacts on sensitive areas or areas which may have low resilience to environmental change describe environmental offsets that would counterbalance the impact on these values. | |
| <u>Noise Amenity,</u> | |
| <ul style="list-style-type: none"> Describe the impacts of noise generated during the construction and operation of the proposed facility on nearest and adjacent islands. An analysis of noise impacts shall include the estimated noise levels generated by the proposed development assessed against typical background levels on the islands, and the impact of noise at all potentially sensitive receivers compared with an acceptable international standard. If noise is likely to cause an adverse impact propose measures to minimize or eliminate these effects, including details of any screening, lining, enclosing or bunding of facilities, or timing schedules for construction and operations. | |
| <u>Socio-cultural:</u> | |

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| <ul style="list-style-type: none"> • Describe the impacts of the proposed development on the natural features and landscapes of the project site which may have socio - cultural significance. Use sketches, diagrams, elevation drawings to portray the near views and far views of the completed structures and their surroundings from visually sensitive locations. • Describe measures to be taken to avoid and minimize potential adverse impacts of the proposal on visual amenity. Justify the proposed development with particular reference to potential for visual amenity. • Describe the impact of the proposed development on any structures which may have cultural or religious significance. Describe measures to be taken to avoid, manage or mitigate potential impacts on these structures during construction and operation of the proposed development. • The methods used to identify the significance of the impacts shall be outlined. One or more of the following methods shall be utilized in determining impacts; checklists, matrices, overlays, networks, expert systems and professional judgment. Justification shall be provided to the selected methodologies. The report shall outline the uncertainties in impact prediction and also outline all positive and negative/short and long-term impacts. Identify impacts that are cumulative and unavoidable. | |
| <p>Task 5. Alternatives to proposed project — Describe alternatives including the "no action option" should be presented. Determine the best practical environmental options. Alternatives examined for the proposed project that would achieve the same objective including the "no action alternative" which represents current conditions.</p> <p>This section shall include a comparison of the technologies and methods for management and control of contaminants which may potentially impact on the environment including alternatives for ash disposal. All alternatives shall be compared according to international standards and commonly accepted standards as much as possible. Mitigation options shall be specified for each component of the proposed project.</p> <p>A cost benefit analysis needs to be presented in this section for the different alternative methods of waste management proposed. Analysis from environmental, social and economic perspective needs to be presented.</p> | <p>Compliance in Section IV</p> |
| <p>Task 6. Environmental Management Plan (mitigation 'monitoring) — The Project's environmental management plan (EMP) shall consists of a set of mitigation, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. In cases where impacts are unavoidable</p> | <p>Compliance in Section IX. However, specific details on institutional arrangements are yet to be agreed upon between ADB and the</p> |

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| arrangements to compensate for the environmental effect shall be given. The plan shall include off-set measures if mitigation measures are not feasible, cost-effective, or sufficient. Specifically, the EMP shall: | Government of Maldives. |
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| <u>Mitigation and management of negative impacts</u> | |
| <ul style="list-style-type: none"> Identify and summarize all anticipated significant adverse environmental impacts (coral reef and marine environment, air and groundwater (as applicable)); Describe each mitigation measure, including the type of impact to which it relates and the conditions under which it is required, together with designs, equipment descriptions, and operating procedures, including: <ul style="list-style-type: none"> General operating procedures for managing and mitigation risks to the environment from general facility, operations including waste collection, transport, incinerator loading, hazardous waste handling, fuel, transfer and storage, litter management disposal of incinerator ash and residues, Manufacturer's operational guidelines specifically outlining safety and emission control procedures as well, as recommended maintenance practices. General operating procedures for implementing back-up measures that will act in the event of failure of primary measures to minimize the likelihood of adverse air impacts. Estimate any potential environmental impacts of these measures; Provide linkage with any other mitigation plans required for the project. | |
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| <u>Monitoring</u> | |
| <ul style="list-style-type: none"> Provide (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and (b) monitoring and reporting procedures to; <ul style="list-style-type: none"> (i) Ensure early detection of conditions that necessitate particular mitigation measures, and (ii) Furnish information on the progress and results of mitigation. Specifically, the plan shall address physical groundwater quality, air emissions, coral reef and marine environment (as applicable). | |
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| <u>Capacity Development and Training</u> | |
| Specifically, the EMP shall provide a specific description of institutional arrangements who is responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, | |

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| enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). EMP shall cover steps to strengthen environmental management capability in the agencies responsible for its implementation. | |
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| Implementation Schedule and Cost Estimates | |
| The EMP shall provide (a) an implementation schedule for measures that shall be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b) the capital and recurrent cost estimates and sources of funds for implementing the EMP. This shall be presented for mitigation, monitoring, and capacity development required for the implementation of the EMP. | |
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| <p>Task 8. Stakeholder Consultation — The stakeholder consultation process shall provide opportunities for stakeholders, community involvement and education. It may include interviews with individuals, public communication activities, interest group meetings, production of regular summary information and updates (i.e. newsletters), and other consultation mechanisms to encourage and facilitate active stakeholder consultation. Stakeholders consultation should cover Ministry of Environment and Energy, Greater Male' Investment Limited, WAMCO, EPA, STELCO, Maldives Energy Authority (MEA), Energy Department (MEE), Waste Department (MEE), nearby resorts, Male' City Council, Ministry of Housing and Infrastructure, existing businesses in Thilafushi, existing workers of the facility, NGOs and the general public shall be consulted. Stakeholder consultation processes (community engagement) for all parts of the EIA shall be integrated. Sufficient information about the development and the consultation process shall be provided to the community at an early stage and in accessible and culturally appropriate ways. Information about the development should inform the community about the benefits, disadvantages, trade-offs, potential issues and implications as required, enabling them to formulate their views. Information about the consultation processes conducted and their results shall be provided including:</p> <p>The methodology adopted, a list of stakeholders consulted during the program and how their involvement was facilitated,</p> <p>the processes conducted to date and the future consultation strategies and programs including those during the operational phase of the project,</p> <p>Recommendations on how the project might address concerns raised during public consultation.</p> <p>List of those who are consulted including their names and contacts should be provided in the EIA report,</p> | <p>Compliance in Section VII.</p> |
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| <p>Task 8. Climate Change Risk Assessment — Review of literature on climate change specific to the Maldives shall be carried out. Following this, climate change considerations shall be suggested for the project, including sea level rise, tropical cyclonic winds, storm surges, probable maximum precipitation. Climate change adaptation considerations for the design shall be discussed.</p> | <p>Compliance with this task is covered across the different sections of the EIA report, but not explicit because the assessment is yet to be undertaken through a CVRA.</p> <p>Since the project will be awarded under a DBO contract, the risks due to climate change will be integrated in the final detailed design that is to be undertaken during design phase.</p> |
| <p><u>Presentation</u>- The environmental impact assessment report, to be presented in digital format, shall be concise and focus on significant environmental issues. It shall contain the findings, conclusions and recommended actions supported by summaries of the data collected and citations of or any references used in interpreting those data. The environmental assessment report shall be organized according to, but not necessarily limited by, the outline given in the Environmental Impact Assessment Regulations, 2012 and relevant amendments.</p> <p>Timeframe for submitting the EIA report — The developer shall submit the completed EIA report within 6 months from the date of this Term of Reference.</p> | <p>Yet to be complied.</p> |