

Initial Environmental Examination

PUBLIC

Document Stage: Addendum
Project Number: 51077-002
August 2024

Maldives: Greater Male Environmental
Improvement and Waste Management Project

Outer Island Waste Management Improvements:
Guraidhoo, South Male' Atoll

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I. BACKGROUND

1. The Greater Malé Environmental Improvement and Waste Management Project (GMEIWMP) will establish an integrated solid waste management system in Greater Malé and support Island Waste Management Centers (IWMCs) on 32 further inhabited islands in zone 3 which comprises the atolls of Alifu Alifu, Alifu Dhaalu, Kaafu, and Vaavu. Areas in which improvements will be introduced including collection, transfer, treatment using advanced waste-to-energy technology, disposal, recycling, dumpsite closure and remediation, and public awareness in reduce-reuse-recycle (3R), as well as institutional capacities for service delivery and environmental monitoring. The project will further improve climate change resilience and disaster risk management and contribute to reduced emissions into the environment.
2. The Initial Environment Examination (IEE) has been prepared for the proposed Integrated Solid Waste Management Centre (ISWMC) in Guraidhoo in February 2021. This centre will be used to manage the waste produced in the island before it is transferred to the regional waste management centre at Thilafushi.
3. This addendum has been prepared due to a shift in the proposed location for the waste management site.

II. PROJECT DESCRIPTION

4. A detailed description of the project is provided in the February 2021 IEE for the project (Chapter 2). A summary of this section as well as details regarding the shift in proposed location is provided below.

A. Justification for the Project and Change in Proposed Location

5. At present waste is managed by open burning at the island dumpsite. Household waste collection is undertaken by a private party under a contract from Island Council. Households that are registered pay a fee and door to door collection is undertaken. Additionally, there are collection points where bins are placed. Registered households can dump their waste into these bins, and they are regularly transferred to the dumpsite on the island. An open truck is used to transfer waste from households and collection points to waste dumpsite.
6. The initially proposed location for the IWMC was the site used as the island dumpsite. However, The Island Council of Guraidhoo has requested a shift in the location towards the south-western reclaimed area of the island. The new proposed location has been approved in the Land Use Plan (Attached in Appendix 1) for the island as a waste management site. The proposed location is 26m x 34m, the same dimensions as the initially proposed site. Figure 1 below shows the proposed location and Figure 2 below shows the aerial view of the site.



Figure 1: Proposed location of ISWMC

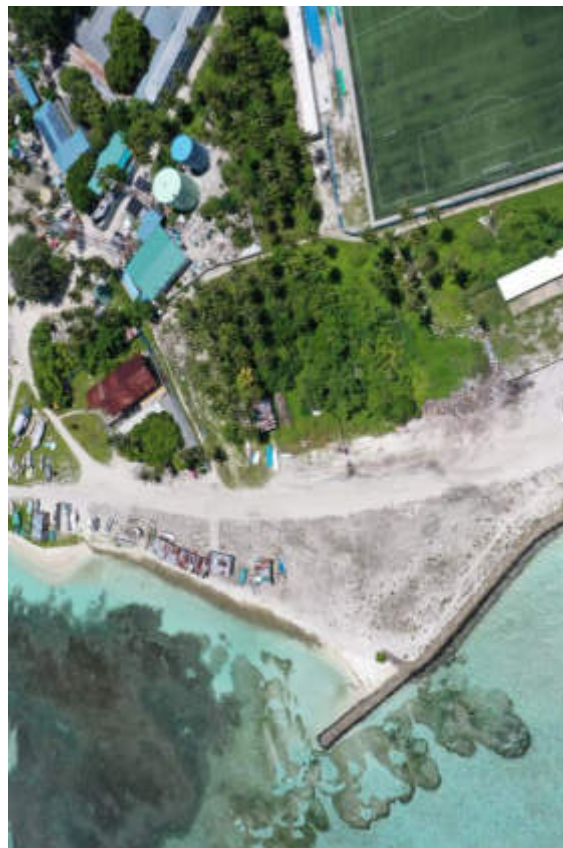


Figure 2: Aerial view of the proposed site

7. The new site is a reclaimed area with no significant vegetation. Adjacent sites include sheds used for boat repairs.
8. The approved Land Use Plan for the island indicates that areas near the proposed site

will be reserved for future non-residential uses / used for storage or warehousing purposes.

9. Appendix 2 provides the assessment of compliance of the proposed new site for the IWMC in Guraidhoo with subproject selection criteria.

10. The updated Rapid Environmental Assessment Checklist based on the new site of the IWMC is provided in Appendix 3.

11. Decision statement for the proposed new site has been issued by EPA on 7th March 2022. EPA was consulted regarding EIA requirement for the new site and it was informed that a new EIA will not be required. Emails exchanged with EPA are included in Appendix 4.

12. During a meeting with Guraidhoo Island Council on 20th February 2024 it was requested by the Council that the IWMC be relocated to the site selected in the LUP for the island. The LUP is prepared after consultation with the island community. The Project Management Unit met with the president of the Island Council on the 18th of April during a site visit to discuss the proposed relocation. A letter with the new location was shared by the Island Council on 3rd March 2024 (Appendix 5).

B. Project Components

13. Project components remain the same as initially proposed. The ISWMC proposed for Guraidhoo will have the following components.

- (i) Office for administration of the ISWMC
- (ii) Concrete platform for handling waste
- (iii) Dedicated areas for the conditioning of recyclables (plastics, cans, P&C): Baler facilities
- (iv) Dedicated areas to keep glass crusher
- (v) Dedicated area for temporary storage of residual waste and storage of bin
- (vi) Dedicated area for household hazardous waste
- (vii) Paved area for maneuvering vehicles
- (viii) Water tank for storage of rainwater/water from the island
- (ix) Utility provision: water supply/storage/handwashing, sewerage (soak pit), electricity (light poles, electrical plugs)

14. The layout for the IWMC remains the same as initially proposed and is given in Figure 3 below.



Figure 3: ISWMC concept of Guraidhoo island

15. The proposed ISWMC has 2 main areas as described below.

16. Pavement area: This area will be paved using interlocking concrete blocks and mainly used for manoeuvring of vehicles and parking. Total size of the area will be of 92.6m². Waste will not be handled or kept in the floor of this area as leachate can seep into ground in case of rain. Bins can be placed in this area for individual waste disposal services.

17. Concrete platform: In addition to the pavement area a concrete platform of the size of 227.6m² will be constructed. This area has a roof and is protected from rain. Major waste handling will be undertaken in this area. Waste will be segregated in this area and compacted/crushed using bailers and crushers. This area has 3 separate provisions of 7.5m² each, for inorganic wastes. Waste such as plastic, metal and glass will be stored separately in the allocated area. 125.6m² area of the concrete platform is allocated to store organic waste or to practice composting. Concrete platform is levelled so that water from the platform used for cleaning or other purposes will be collected in the perimeter trench of the platform. This will mainly be of leachate. Leachate will be managed using a septic tank.

18. Hazardous waste storage area: Hazardous waste container of the size 4m².

19. Office building: For the staff small office of approximately 12m² will be constructed. This building will have 2 office rooms, a rest room and 2 toilets.

20. Design considers storage of waste for 1-2 weeks before being transferred to Regional Waste Management Facility (RWMF). Projects aims to have regular waste collection from outer islands at least once a week.

21. Guraidhoo is a fast-developing island and with development waste generation will also

increase. To accommodate the waste management in the future, extension area is allocated inside the ISWMC perimeter. Total area of 257.6m² will be allocated for future extension. This will be a concrete platform extension allowing to handle waste in this area.

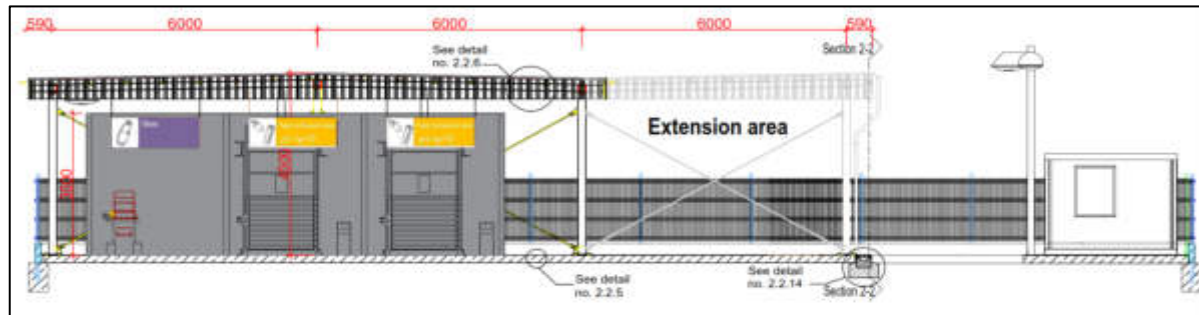


Figure 4: Cross section view of the ISWMC proposed in Guraidhoo

C. Access Road and Temporary Site Setup

22. Regular transferring waste to the regional waste management center in Thilafushi is a major part of this project. Heavy machineries and trucks will be utilized to transfer waste from ISWMC to the harbour area of the island. The main access road used for this purpose is identified in the diagram below. This road is away from the main residential area of the island.



Figure 5: Proposed Road to be used to transport waste from ISWMC to harbour area

23. The proposed project is a very small-scale construction project. Hence this project does not require an additional large area to set up the temporary site. Materials used for construction can be managed inside the proposed site. In the case of Guraidhoo, there are vacant areas near the project site to store the construction materials and machineries if additional area is required. The workers can be managed in rented houses in the island as the project does not require a large workforce.

24. Existing utility network of the island will be used for the ISWMC. Guraidhoo has an existing sewerage and water network in the island. The leachate collected from the concrete floor,

where the waste will be handled, will be collected in a trench, and treated in a septic tank before being diverted into the sewer network. Leachate will be treated by means of settlement tank and anaerobic filter as shown in the figure below.

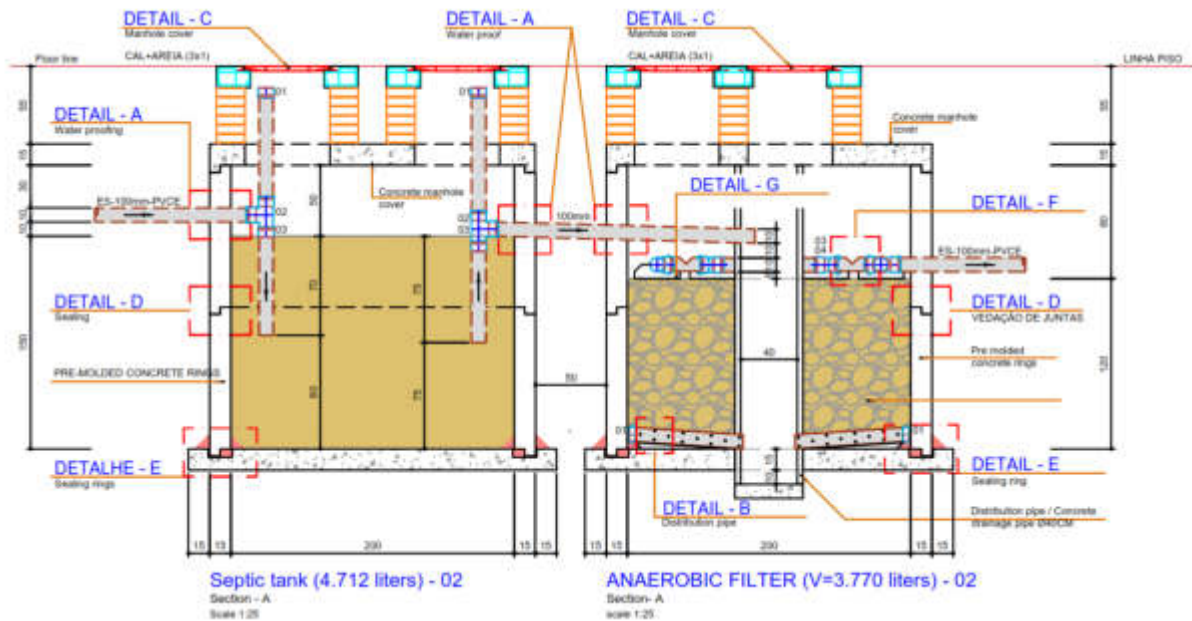


Figure 6: Septic tank proposed in the ISWMC

III. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

25. A detailed description of anticipated Environmental Impacts and Mitigation Measures are provided in the February 2021 IEE (Chapter 5).

26. The main impact related to shifting of the proposed site is the proximity to the shoreline. The new proposed site is ~20m from the shoreline from the south west corner and ~28m from the south east corner. The Land Use Plan for Guraidhoo has been approved and a 20m green zone is provided in between the shoreline and any infrastructure. A revetment has been constructed towards the south east of the proposed site for shore protection.

27. Shifting of the initially proposed site also has associated positive impacts. While the initial site was adjacent to the football ground, the new site is further away from areas used by the community. The new site is also closer to the island harbor, which will enable easier transportation of waste.

IV. ENVIRONMENT MANAGEMENT PLAN

28. The detailed Environmental Management Plan is provided in the initial IEE (Chapter 9). Table 1 below summarises the revised EMP.

Table 1: Environmental Management Plan

| Impacts | Location | Mitigation Measures | Source of Funds | Responsibility for Implementation | Responsibility for Supervision |
|--|--------------------------|--|------------------------|--|---------------------------------------|
| Pre-Construction Stage | | | | | |
| Environmental degradation due to poor project planning | IWMC site | Preparation of SEMP/CEMP including H&S plan and approval by PMU prior to start of construction activities. EMP included in the IEE can be used for this purpose with the approval of ADB and PMU. | Project funds | Contractor | MoCCEE |
| Effects on surrounding seawater and marine ecosystems | Sea surrounding the IWMC | (i) ensuring that waste enters and leaves the IWMC on the landward side of the facility (ii) detailed design to include both a system for collecting and containing leachate from piled household waste awaiting collection and from composting and (iii) site security and management to be ensured by the island council. The measures must ensure no deterioration of water quality in the vicinity of the IWMC | Project funds | Island Council | MoCCEE |
| Odour and attraction to pests | Nearest residential area | (i) ensuring security, regular cleaning operations and maintenance takes place and (ii) planning of further developments of the reclaimed land such that receptors such as dwellings are not placed close to the facility, and preferably separated by a belt of trees or open space. | Island council | Island council | MoCCEE |

| Impacts | Location | Mitigation Measures | Source of Funds | Responsibility for Implementation | Responsibility for Supervision |
|-----------------------------------|--------------------------|--|-------------------|-----------------------------------|--------------------------------|
| Design stage | Design of IWMC | (i) ensure that designs are done according to the regulations of Maldives and (ii) design should be done after discussion with Island council as well as community and government stakeholders. | Project funds | MoCCEE | MoCCEE |
| Construction stage impacts | | | | | |
| Noise pollution and vibration | Nearest residential area | Identifying potentially affected households, providing information on operations, limiting construction activities to daylight hours, adhering to schedule, maintenance of construction equipment and vehicles in good operable order. | Construction Cost | Contractor | MoCCEE |

| Impacts | Location | Mitigation Measures | Source of Funds | Responsibility for Implementation | Responsibility for Supervision |
|--------------------|------------------------|--|-------------------|-----------------------------------|--------------------------------|
| Construction waste | IWMC area | <p>All solid waste must be disposed of at the RWEMF/Thilafushi.</p> <p>Importation of any materials rated as hazardous under the Globally Harmonized System of Classification and Labelling of Chemicals to be subject to approval by PMDSC, which will be conditional on stating adequate arrangements for disposal.</p> <p>Prohibit burning of construction and/or domestic waste.</p> <p>Construction waste must be stored carefully to prevent spillage or falling of material into the sea.</p> <p>Conduct site clearance and restoration to original condition after the completion of construction works.</p> | Construction Cost | Contractor | MoCCEE |
| Release of silt | IWMC construction site | Excavated areas to be rapidly refilled on completion of works. Use of silt fences around temporary piles of excavated material. Avoid excavation in wet weather to the extent practicable. | Construction Cost | Contractor | MoCCEE |

| Impacts | Location | Mitigation Measures | Source of Funds | Responsibility for Implementation | Responsibility for Supervision |
|--|--|--|-------------------|-----------------------------------|--------------------------------|
| Water pollution | IWMC construction site | <p>Vehicles and plant are to be maintained in sound operable condition, free of leaks. The condition of vehicles and equipment will be periodically checked.</p> <p>Contractor to prepare and submit a plan for spill management, including provision of spill kits, training/briefing of workers on procedures on handling spills and allocation of responsibility within the contractor's team for ensuring that spill kits are available and that workers know how to use them.</p> | Construction Cost | Contractor | MoCCEE |
| Community health and safety hazards | IWMC construction site and immediate surrounds | Restriction of access to work site, warning notices to the public on hazards, barriers when warranted. | Construction Cost | Contractor | MoCCEE |
| Occupational health and safety hazards | IWMC construction site | <p>Contractor to appoint a focal point for health and safety at site and to ensure regular briefing of construction workforce on health and safety issues.</p> <p>Adequate personal protective equipment to be provided to the workforce and use of PPE to be ensured by the site supervisor/ focal point for health and safety.</p> | Construction Cost | Contractor | MoCCEE |
| Impacts During Operation | | | | | |

| Impacts | Location | Mitigation Measures | Source of Funds | Responsibility for Implementation | Responsibility for Supervision |
|--|----------------------------------|--|-----------------|-----------------------------------|--------------------------------|
| Risks of loss of containers and contents | Dock area | O&M training to include instruction on maintenance of containers, loaders, cranes and vessels and sound operation including licensing of vehicle and plant operators and restrictions on operation during stormy weather | Training budget | Contractor | MoCCEE |
| Odour and attraction to pests | IWMC area | Maintenance of site cleanliness, minimizing storage time for putrescible waste, provision of enclosures for putrescible waste. Use of in vessel composting minimizes odor and attraction of pests. | Operation Cost | Island council | MoCCEE |
| Operator occupational health and safety | IWMC and dock area | Operators trained to recognize risks and hazards. Provision of personal protective equipment (Helmets, safety goggles etc.) Personal safety equipment issued and worn. Health and safety recognized as primary employer responsibility. Training carried out to operate equipment (balers, shredders etc.) Fire extinguishers will be provided as part of equipment. | Operation Cost | Island council | MoCCEE |
| Contamination of water resources due to effluent discharge | Groundwater or surrounding water | Effluent discharge from septic tank should comply with the local guideline 'Water Resources Conservation and Management Regulations' Septic tank must be regularly maintained and cleaned. | Operation Cost | Island council | MoCCEE |

| Impacts | Location | Mitigation Measures | Source of Funds | Responsibility for Implementation | Responsibility for Supervision |
|---|-----------|---|-----------------|-----------------------------------|--------------------------------|
| Accumulation of waste due to delayed collection | IWMC area | Proper storage of waste within containers and use of machineries and in-vessel composting to reduce the volume of waste will allow IWMC to maintain capacity for up to 4-6 weeks in the case of a delay. Inform island council of the delayed collection so impacts can be addressed early. | Operation Cost | Island council | MoCCEE |
| Community health and safety | IWMC | Fire safety measures to be put in place. Waste transfer operations to be carried out by trained personnel with minimal disturbance to the community. | Operation Cost | Island council | MoCCEE |
| Climate related impacts (storm surges, swell waves, sea level rise) | IWMC | Close monitoring of the IWMC, especially during periods of bad weather and swell waves. Additional protection measures to be taken based on findings of monitoring. | Island Council | Island council | MoCCEE |

V. ENVIRONMENTAL MONITORING

29. Environmental monitoring during construction will be the responsibility of the contractor for the project and monitoring during operations will be the responsibility of the Island Council of Guraidhoo. Environmental monitoring requirements are given in Table 2 below.

30. Compliance monitoring is required during construction, to ensure that the mitigation measures specified in the EMP is carried out to an adequate standard. Compliance monitoring is a function of the PMU and costs associated with monitoring is a part of the running cost of the PMU.

31. Compliance monitoring results will be included in the Semi-Annual Monitoring Report (SEMR) submitted to ADB by the PMU and these reports will be shared with EPA.

Table 2: Environmental Monitoring Plan

| Impact to be Monitored | Means of Monitoring | Construction Phase | | | Operation Phase | | |
|---|--|--|--------------------|------------------------|-----------------------------|--|------------------------|
| | | Frequency | Responsible Agency | Indicative Annual Cost | Frequency | Responsible Agency | Indicative Annual Cost |
| General Construction Impacts (noise, dust, increased traffic, safety, etc.) | Community Feedback | Daily | Contractor | Contract cost | To be established by MoCCEE | Island Council in collaboration with MoCCEE | Operational Cost |
| Compliance with EMP | Inspections | Daily | Contractor | Contract cost | To be established by MoCCEE | Island Council in collaboration with MoCCEE | Operational Cost |
| Occurrence of floating waste | Community Feedback | Daily | Contractor | Contract cost | To be established by MoCCEE | Island Council in collaboration with MoCCEE | Operational Cost |
| Groundwater quality | Conductivity, pH, salinity, temperature, other relevant parameters | Once before construction and once every quarter during construction | Contractor | Contract cost | To be established by MoCCEE | Island Council in collaboration with MoCCEE in | Operational Cost |
| Noise levels | Decibels (db) | Once before construction and during high-noise level generating activities | Contractor | Contract cost | To be established by MoCCEE | Island Council in collaboration with MoCCEE | Operational Cost |
| Waste generation | Amount of waste generate (tonnes) | Daily-Weekly | Contractor | Contract cost | To be established by MoCCEE | Island Council in collaboration with MoCCEE in | Operational Cost |

| Impact to be Monitored | Means of Monitoring | Construction Phase | | | Operation Phase | | |
|--|--|--|--------------------|------------------------|-----------------------------|--|------------------------|
| | | Frequency | Responsible Agency | Indicative Annual Cost | Frequency | Responsible Agency | Indicative Annual Cost |
| Accidents | No. of accidents | Daily | Contractor | Contract cost | To be established by MoCCEE | Island Council in collaboration with MoCCEE | Operational Cost |
| Marine water quality (near the project site) | Conductivity, pH, salinity, temperature, other relevant parameters | Once before construction and once every quarter during construction | Contractor | Contract cost | To be established by MoCCEE | Island Council in collaboration with MoCCEE | Operational Cost |
| Inspection of leachate collection system | Not applicable during construction phase | Not applicable during construction phase | - | - | To be established by MoCCEE | Island Council in collaboration with MoCCEE | Operational Cost |
| Inspection of septic tank/soak pit | Inspection | Weekly | Contractor | Contract cost | To be established by MoCCEE | Island Council in collaboration with MoCCEE in | Operational Cost |
| Air Quality | NOx, SO2, PM 2.5 and 10 | Once before start of work and once every quarter during construction | Contractor | Contract cost | To be established by MoCCEE | Island Council in collaboration with MoCCEE | Operational Cost |
| Presence of pests, nuisance odor | Not applicable during construction phase | Not applicable during construction phase | - | - | To be established by MoCCEE | Island Council in collaboration with MoCCEE | Operational Cost |

APPENDIX 1: LAND USE PLAN – LOCATION PROPOSED FOR THE IWMC



LEGEND :

EXISTING LAND USE

- RESIDENTIAL PLOTS
- INSTITUTIONAL AND COMMUNITY ZONE
 - 2.1 ISLAND COUNCIL OFFICE
 - 2.2 MAGISTRATE COURT
 - 3.1 SCHOOL
 - 4.1 GUAAHDHOO HEALTH CENTRE
 - 6.1 MOSQUE
 - 6.2 FRIDAY MOSQUE
 - 7.1 CLUB OFFICE
 - 8.5 HOME FOR PEOPLE WITH SPECIAL NEEDS
 - 8.9 WOMEN'S CENTRE
- SPORTS AND RECREATION
 - 13.1 FOOTBALL STADIUM
 - 13.5 FUTSAL GROUND
 - 13.6 YOUTH CENTRE
 - 14.1 DRIVING SCHOOL
 - 15.1 CHILDRENS PARK
 - 15.7 MONUMENT
- UTILITY AND MUNICIPAL SERVICE ZONE
 - 16.1 TELECOM ANTENNAE
 - 16.2 POWER HOUSE
 - 16.5 ROO PLANT
 - 17.1 CEMETERY
 - 17.5 HIRNAVAAGE
- COMMERCIAL ZONE
 - 26 THEYO FSHAARA
 - 30.2 BANKING ATM

PHYSICAL FEATURES

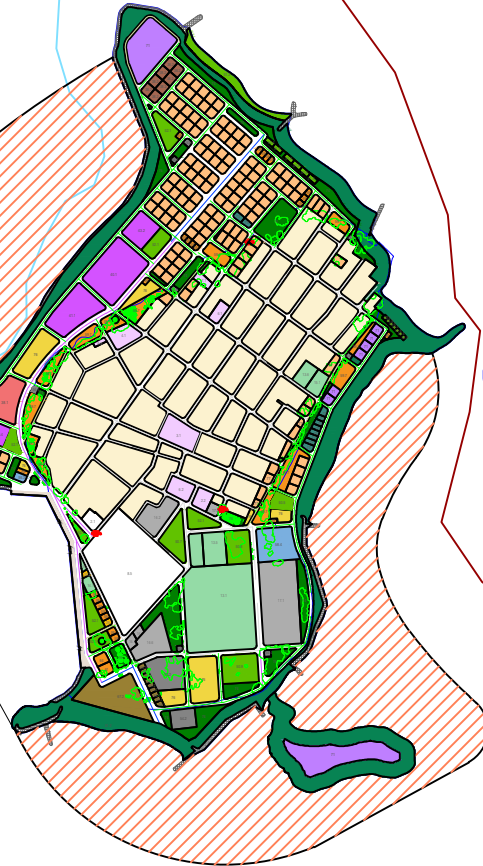
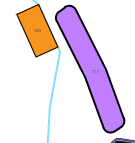
- HARBOURE BASIN
- REEF LINE
- SHORELINE
- CHANNEL
- JETTY
- SIGNIFICANT TREES
- REVEGETATION / GROVING

ROAD NETWORK

- HARBOUR LOADING AND UNLOADING
- EXISTING ROAD
 - 10M-12M PRIMARY ROAD
 - 9M-7.5M PRIMARY ROAD
 - 6M SECONDARY ROAD
 - 2M-3M PEDESTRIAN ACCESS

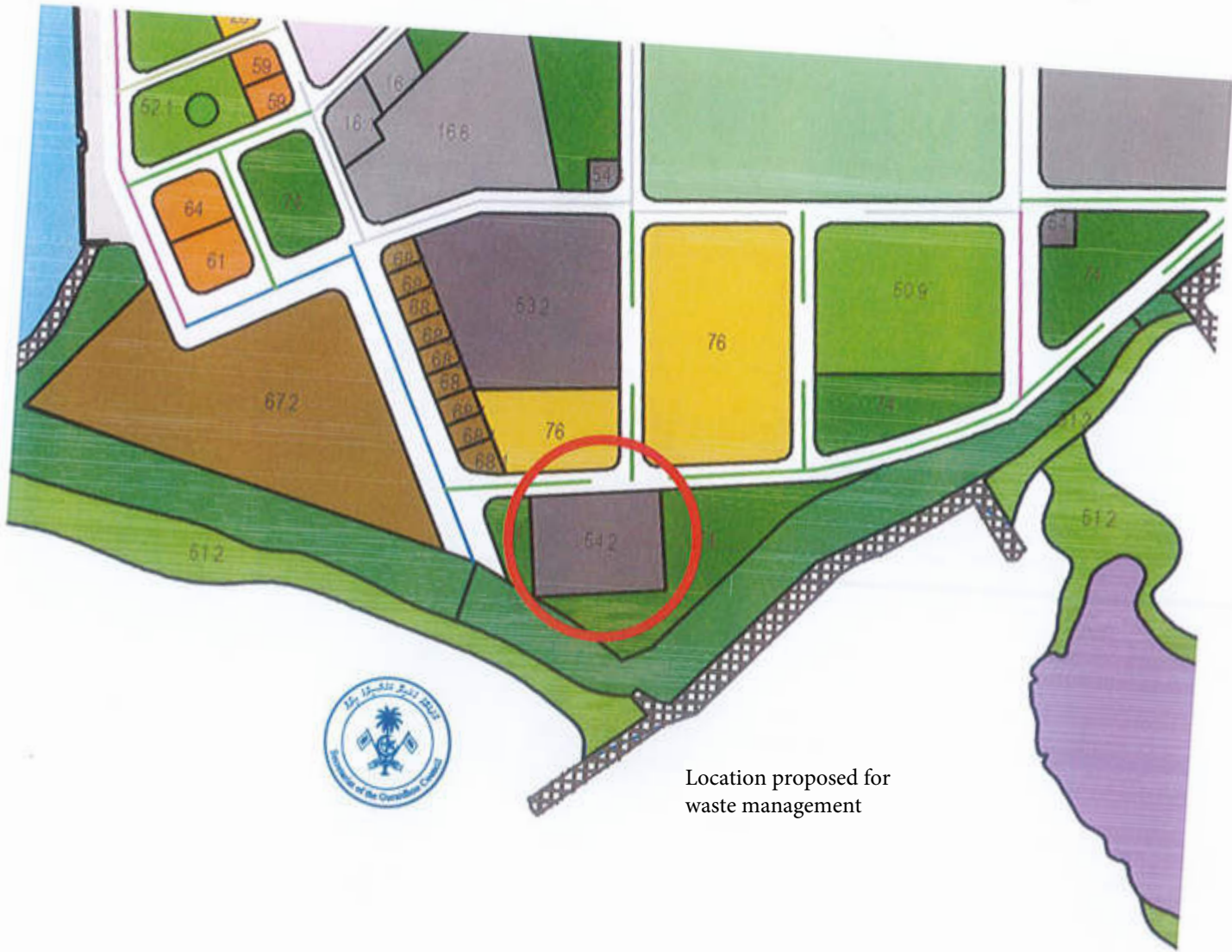
PROPOSED LAND USE

- RESIDENTIAL PLOTS
 - 77 RESERVED FOR FUTURE RESIDENTIAL USE
 - 38.1 PUBLIC HOUSING UNITS
 - 38.2 PLOTS FOR SALE
- INSTITUTIONAL AND COMMUNITY ZONE
 - 39 PUBLIC ADMINISTRATION
 - 40.1 SECONDARY SCHOOL
 - 41.1 HEALTH CENTRE
 - 43.2 FRIDAY MOSQUE
 - 46.4 ISLAND POLICE STATION
- SPORTS AND RECREATION
 - 50.5 YOUTH CENTRE / MULTIPURPOSE SPORTS CENTRE
 - 50.7 BASKET COURT
 - 50.8 HANO BALL COURT
 - 50.9 ACCOMMODATION FACILITY FOR SPORTS TOURISM
 - 51.2 BEACH
 - 51.4 WATER SPORTS
 - 52.1 CHILDRENS PARK
 - 52.2 OUTDOOR GYM
 - 52.4 PISCINE ISLAND
 - 52.5 BBQ AREA
- UTILITY AND MUNICIPAL SERVICE ZONE
 - 53.2 POWER HOUSE
 - 53.4 TRANSFORMERS
 - 54.2 WATER COLLECTION CENTRE
 - 54.4 SEWERAGE PUMP STATION
- TRANSPORTATION ZONE
 - 56.2 ISLAND FERRY TERMINAL
 - 58.4 DRIVING SITE
- COMMERCIAL ZONE
 - 59 SHOPS/CAFE/RESTAURANTS
 - 59.7 CONDITIONAL LEASE
 - 59.8 UNDERWATER RESTAURANT (CONDITIONAL APPROVAL)
 - 61 ICE PLANT
 - 64 PETROL SHED
- INDUSTRIAL ZONE
 - 67.2 DHANU EHELLAA SARAAHEDHU
 - 68.1 STORAGE / WAREHOUSE
 - 68.2 WORK SHOPS
 - 68.3 CARPENTRY
- TOURISM ZONE
 - 71.1 WATER VILLAS (CONDITIONAL APPROVAL)
 - 71.2 INTEGRATED TOURISM ZONE (CONDITIONAL APPROVAL)
- MIXED USE ZONE
 - 73 MIXED USE ZONE
- OPEN/GREEN BUFFER ZONE
 - 74 GREEN BUFFER AREA
 - 76 RESERVED FOR FUTURE NON RESIDENTIAL USE
- ENVIRONMENTAL PROTECTED ZONE (EPZ)





54.2 WASTE COLLECTION CENTER



Location proposed for
waste management



APPENDIX 2: ASSESSMENT OF COMPLIANCE WITH SELECTION CRITERIA

| Criteria | Remarks | Comments |
|--|--|---|
| Pre-requisites | | |
| (i) No subproject scope will include features that appear on schedule D of the EIA regulations (2007, updated 2012) (List of Development Proposals Requiring an Environmental Impact Assessment Study) | Development proposals on schedule D of the EIA regulations related to solid waste management are landfills, incinerators and large-scale waste storage and separation facilities | No subproject scope will include features that appear in schedule D |
| (ii) A IEE and EMP must be prepared for each subproject, which must comply with EHS Guidelines on Waste Management Facilities | PMU to seek clearance from ADB on project siting if the criterion cannot be met due to space constraints | EMP has been prepared in accordance with guidelines |
| (iii) Sites must not have any land acquisition or significant involuntary resettlement and social safeguard issues | Verify land ownership records | Land ownership has been verified with island council and no land acquisition is necessary |
| (iv) Any new facility must not be sited in an environmentally sensitive area, including all areas within 30 m of the shoreline, or within 30 m of areas such as thickly vegetated areas that are known to be habitats for bird species of conservation value | The 30 m distance should be exceeded where possible. The restriction may be reviewed depending on site availability and stakeholder consultation, and provision of design measures to prevent release of leachate into the sea or onto the vegetated area in the event of the capacity of the leachate collection tank being exceeded. | The site is approximately 25 m from the shoreline. This site has been included in the Land Use Plan for the island after consultations with stakeholders. SOP is required for cleaning of the tank on a monthly basis with the leachate to be transferred to Thilafushi for disposal. Experience with other IWMCs where a similar design is adopted shows that it prevents the tank from overflowing. The tank is also designed to prevent stormwater seepage into the tank. |
| (v) No new facility to be sited within 500 m of areas of cultural | Verification, through consulting island councils and the Ministry of Education, that no physical cultural heritage sites are situated | The site is not located within 500 m of areas of cultural significance. |

| Criteria | Remarks | Comments |
|---|---|--|
| significance, such as ancient religious artefacts | <p>within 500 m of the IWMC site. The restriction may be reviewed on the basis of site availability and consultation with stakeholders. PMU to seek clearance from ADB on project siting if the criterion cannot be met due to space constraints.</p> <p>Provide for use of “chance find” procedures in the EMP, such that any artefacts are preserved for future generations</p> | |
| (vi) Sites must have sufficient capacity to contain or handle volumes of waste projected to be generated over at least a 20-year planning horizon | To be assessed based on projections on growth in waste generation for each island | Based on population projections 10 years from now the proposed site will have a capacity well in excess of projected waste amounts, with capacity for further growth of the island |
| (vii) Sites must be at least 100m from residences, schools, clinics, or mosques | The distance restriction may be reviewed depending on site availability and stakeholder consultation. PMU to seek clearance from ADB on project siting if the criterion cannot be met due to space constraints. | The site is approximately 130 m from the nearest residences |
| (viii) Sites must be at least 100m from groundwater wells | The 100m limit is precautionary, however attention must be given in detailed design to ensure that the leachate collection tank is protected to exclude flood waters, including during storm situations, to ensure that leachate does not enter the groundwater lens. PMU to seek clearance from ADB on project siting if the criterion cannot be met due to space constraints | The new proposed site is more than 100m from the nearest groundwater well |
| (ix) Sites must not intersect with power lines, water supply pipelines or sewer lines | Where these lie across proposed sites, they must be re-aligned to avoid the site | Site does not intersect with power, water, or sewer supply lines |

| Criteria | Remarks | Comments |
|--|--|---|
| (x) For initiatives that require the use of machinery such as shredders and presses, there must be established access to technical expertise for servicing and spare parts must be regularly available in-country | | The proposed machinery is simple and can be fixed and serviced by mechanics, and spare parts can be sourced from local service providers |
| (xi) Consensus from island communities on proposed improvements. | Records of consultations, issues raised, and measures taken to address them to be summarised in IEEs | The new proposed site for IWMC development has been included in the Land Use Plan for the island which is prepared after consultations within the island. |
| (xii) No other work, including road, pipeline, or power line improvements are planned at or near the proposed site | Island Council to confirm. If such sites are planned, details must be taken account of in design to ensure adequate separation of the infrastructure. | No other works are planned at or near the proposed site. |
| (xiii) World Bank Group's Environmental, Health and Safety (EHS) Guidelines requires IWMCs to consider standard design of 110% volume and bunded for impermeable storage to avoid contaminated runoff entering the surface or groundwater. | Final detailed design to confirm capacity is 110% and bunded | The site is designed in such a way that no waste would be stored at the facility for long, as the waste will be removed from the island to the Regional Waste Management Facility. All waste handling areas will have impermeable flooring and the water collected on this platform will be collected in a trench and treated in a septic tank. |
| Preferable | | |
| (i) Where IWMCs exist, any improvements should be to the existing infrastructure, rather than replacement on new sites. | New sites may be necessary if existing site has become unsuitable due to new developments around it or there is objection from communities to rehabilitate the existing IWMCs. | No existing IWMC exists on the island, and the proposed site is at the location of the currently used waste dumpsite on the island where waste is openly burnt. |
| (ii) Removal of trees to be avoided where possible. | When mature trees (of diameter at breast height of 40cm or greater) must be removed, | There is no significant vegetation at the proposed site. |

| Criteria | Remarks | Comments |
|--|--|--|
| | new trees must be planted of a number and species agreed with the island community | |
| (iii) Where composting facilities are to be introduced or expanded, a high level of commitment from the community should be evident to ensure both cooperation in ensuring that waste to be composed is not contaminated and that compost will be purchased or used. | Evidence of commitment from the island community should be obtained, for example signed minutes from a public meeting, or signatures from household heads. | The IWMC is designed with in vessel composting to handle organic waste, and the island council has been informed of this plan. |

APPENDIX 3: RAPID ENVIRONMENTAL ASSESSMENT CHECKLIST

Rapid Environmental Assessment Checklist

Instructions:

- (i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by the Director, RSES and for approval by the Chief Compliance Officer.
- (ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.
- (iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country

Outer Island Waste Management Improvements: Guraidhoo, kaafu Atoll

/Project
Title:
Sector
Division

| Screening Questions | Yes | No | Remarks |
|--|-----|----|---|
| A. Project Siting Is the project area... | | | |
| • Densely populated? | | × | Guraidhoo has a resident population of 1,739 |
| • Heavy with development activities? | | × | Size of the island is 22.48 hecatres. Most of the island land has been used for development, mostly housing. There are 24 guest houses in the island with 350 bed capacity. Local tourism is popular in the island. |
| • Adjacent to or within any environmentally sensitive areas? | × | | Marine protected area 'K.Guraidhoo Kandulhi' is about 0.26 Km from Guraidhoo.. This area is categorized by EPA as a protected area with sustainable use which is used for diving. |
| • Cultural heritage site | | × | |
| • Protected Area | × | | Marine protected area 'K.Guraidhoo Kandulhi' is about 0.26 Km from Guraidhoo.. This area is categorized by EPA as a protected area with sustainable use which is used for diving. The project site is located on land and mitigation measures should be taken to prevent the spillage of waste into the sea. |
| • Wetland | | × | |
| • Mangrove | | × | |
| • Estuarine | | × | |

| | | | |
|---|--|---|--|
| • Buffer zone of protected area | | x | |
| • Special area for protecting biodiversity | | x | |
| • Bay | | x | |
| B. Potential Environmental Impacts Will the Project cause... | | | |

| Screening Questions | Yes | No | Remarks |
|---|-----|----|---|
| <ul style="list-style-type: none"> impacts associated with transport of wastes to the disposal site or treatment facility | × | | IWMC will consist of concrete platforms, shedded areas, segregated waste processing and storage areas, small office, and fencing. The Project will ensure island council will have the capacity to manage SWM by providing some machineries as well. |
| <ul style="list-style-type: none"> Impairment of historical/cultural monuments/areas and loss/damage to | | × | Not anticipated. No cultural or historical site near the project sites. |
| <ul style="list-style-type: none"> Degradation of aesthetic and property value loss? | | × | The subproject will improve land aesthetics because of improved waste management infrastructure |
| <ul style="list-style-type: none"> Nuisance to neighboring areas due to foul odor and influx of insects, rodents, etc.? | × | | Likely. However, the EMP ensures good housekeeping and site management measures are included to mitigate the impacts at subproject site. The site is located away from residential areas on the island. |
| <ul style="list-style-type: none"> Dislocation or involuntary resettlement of people? | | × | Not anticipated. |
| <ul style="list-style-type: none"> Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable | | × | The project will benefit all sectors in the island. |
| <ul style="list-style-type: none"> Risks and vulnerabilities related occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation? | × | | OHS risks are inherent to construction activities. However, these risks can be reduced through implementation of good construction practices and adoption of internationally recognized OHS measures on OHS on construction activities and SWM operations. These are included in the EMP. |
| <ul style="list-style-type: none"> Public health hazards from odor, smoke from fire, and diseases transmitted by flies, insects, birds and rats? | × | | Project will not allow open burning of waste, therefore impacts from smoke is not anticipated. However, odor or pests could be a problem without proper housekeeping practices. EMP includes proper mitigation measures to reduce these impacts. |
| <ul style="list-style-type: none"> Deterioration of water quality as a result of contamination of receiving waters by leachate from land disposal system? | | × | Not applicable. The subproject will not include any land disposal system. |

| Screening Questions | Yes | No | Remarks |
|---|-----|----|--|
| <ul style="list-style-type: none"> Contamination of ground and/or surface water by leachate from land disposal system? | | × | Not applicable. The subproject will not include any land disposal system. |
| <ul style="list-style-type: none"> Land use conflicts? | | × | Not anticipated. |
| <ul style="list-style-type: none"> Pollution of surface and ground water from leachate coming from sanitary landfill sites or methane gas produced from decomposition of solid wastes in the absence of air, which could enter the aquifer or escape through soil fissures at places far from the landfill site? | | × | Not applicable. The subproject will not include any landfill facility. |
| <ul style="list-style-type: none"> Inadequate buffer zone around landfill site to alleviate nuisances? | | × | Not applicable. The subproject will not include any landfill facility. There will be a boundary fence around IWMC. |
| <ul style="list-style-type: none"> Road blocking and/or increased traffic during construction of facilities? | | × | Not anticipated. Volume of traffic in the island is very low. |
| <ul style="list-style-type: none"> Noise and dust from construction activities? | × | | <p>Few receptors in vicinity, high ambient noise levels and winds. Impact of noise can be avoided by undertaking activities during daytime when background noise is high. Nighttime works is not expected. Noise suppression gadgets may also be used.</p> <p>Dust emission can be avoided with the implementation of dust control measures such as sprinkling of water on sites. No significant volumes of spoil will be generated.</p> |
| <ul style="list-style-type: none"> Temporary silt runoff due to construction? | × | | Run-off during construction will be more. However, impacts are temporary and short in duration. The EMP ensures measures are included to mitigate the impacts. |
| <ul style="list-style-type: none"> Hazards to public health due to inadequate management of landfill site caused by inadequate institutional and financial capabilities for the management of the landfill operation? | | × | Not applicable. The subproject will not include any landfill facilities. |
| <ul style="list-style-type: none"> Emission of potentially toxic volatile organics from land disposal site? | | × | Not applicable. The project will not include any landfill facilities. However, the IWMC design includes leachate collection and management. |

| Screening Questions | Yes | No | Remarks |
|--|-----|----|--|
| <ul style="list-style-type: none"> Surface and ground water pollution from leachate and methane gas migration? | | × | Not applicable. The project will not include any landfill facilities. However, the IWMC design includes leachate collection and management. |
| <ul style="list-style-type: none"> Loss of deep-rooted vegetation (e.g. trees) from landfill gas? | | × | There is no vegetation at the proposed site. |
| <ul style="list-style-type: none"> Explosion of toxic response from accumulated landfill gas in buildings? | | × | Not applicable. Landfill gas is not expected to be generated based on the quantity and type of waste. |
| <ul style="list-style-type: none"> Contamination of air quality from incineration? | | × | Not applicable. The subproject will not cover incineration. |
| <ul style="list-style-type: none"> Public health hazards from odor, smoke from fire, and diseases transmitted by flies, rodents, insects and birds, etc.? | × | | Limited public access; reduced exposure of pests to waste The operation of the IWMC will ensure community health hazards are avoided with the adoption of EHS guidelines on SWM as indicated in the EMP. |
| <ul style="list-style-type: none"> Health and safety hazards to workers from toxic gases and hazardous materials in the site? | × | | The EMP ensures occupational health and safety measures are included following relevant EHS guidelines. Fuels will be stored and handled properly as per EMP. |
| <ul style="list-style-type: none"> Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)? | | × | Due to small scale of the project, no significant increase in population of workers from overseas or off-island. Population influx due to project construction and operation is minimal. |
| <ul style="list-style-type: none"> Social conflicts if workers from other regions or countries are hired? | | × | Priority in employment will be given to local residents. |
| <ul style="list-style-type: none"> Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation? | × | | The EMP ensures community health and safety measures are included following relevant EHS guidelines on waste management. Fuels will be stored and handled properly following EHS guidelines as included in the EMP. |

| Screening Questions | Yes | No | Remarks |
|---|-----|----|--|
| <ul style="list-style-type: none"> Community safety risks due to both accidental and natural hazards, especially where the structural elements or components (e.g., landfill or incinerator) of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning? | × | | During construction and operation of IWMC, community health and safety risks will be managed by adopting the EHS guidelines as indicated in the EMP. |

A Checklist for Preliminary Climate Risk Screening

Country/Project Title:

Sector:

Subsector:

Division/Department:

| Screening Questions | | Score | Remarks ^a |
|---------------------------------------|---|-------|--|
| Location and Design of project | Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides? | 1 | Site is very close to the shoreline. |
| | Would the project design (e.g., the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)? | 1 | Design needs to consider sea level rise. |
| Materials and Maintenance | Would weather, current and likely future climate conditions (e.g., prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)? | 0 | |
| | Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)? | 0 | |
| Performance of project outputs | Would weather/climate conditions, and related extreme events likely affect the performance (e.g., annual power production) of project output(s) (e.g. hydropower generation facilities) throughout their design lifetime? | 0 | |

^a If possible, provide details on the sensitivity of project components to climate conditions, such as how climate

parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Options for answers and corresponding score are provided below:

| Response | Score |
|-------------|-------|
| Not Likely | 0 |
| Likely | 1 |
| Very Likely | 2 |

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high-risk project.

Result of Initial Screening (Low, Medium, High): Low Risk

Other

Comments:

—

Prepared by: Abdul Aleem and updated by Fathimath Yamna Mohamed

APPENDIX 4: EMAIL EXCHANGE WITH EPA




Re: EMP requirement for change in site location

From Hashim Nabeel <hashim.nabeel@epa.gov.mv>

Date Sun 28/04/2024 15:55

To Fathimath Yamna Mohamed <fathimath.yamna@environment.gov.mv>

Cc Environmental Compliance and Assessment <eca@epa.gov.mv>

 4 attachments (173 KB)

Outlook-eisv35d4.png; Outlook-v2p32bsx.png; Outlook-ha02oxlk.png; Outlook-dvjeebld.png;

Dear Yamna,

Greetings from EPA,

In regards to your request to change the K.Guraidhoo WMC. We have no objections to changing the location of the site to the proposed new location approved in the land use plan. Please proceed according to the Approved EMP.

Regards

On Sun, Apr 28, 2024, 09:01 Fathimath Yamna Mohamed

<fathimath.yamna@environment.gov.mv> wrote:

Dear Hashim,

Following up on the Guraidhoo waste site change issue mentioned in the previous email.

Thank you,
Yamna

Fathimath Yamna Mohamed
Social and Environmental Safeguard Specialist
Greater Malé Environmental Improvement & Waste Management Project
Ministry of Climate Change, Environment and Energy
Republic of Maldives,
Phone. +960 9995153
mymaldiveshome.environment.gov.mv

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From: Fathimath Yamna Mohamed <fathimath.yamna@environment.gov.mv>
Sent: 24 April 2024 10:19
To: eca@epa.gov.mv <eca@epa.gov.mv>; hashim.nabeel@epa.gov.mv <hashim.nabeel@epa.gov.mv>
Subject: Re: EMP requirement for change in site location

Dear Hashim,

Please find attached an image with the approximate site location marked. At this stage the site boundary has not been marked and we are unable to get the exact location. However, it will definitely be on the vacant land area.

Best Regards,
Yamna

From: Fathimath Yamna Mohamed <fathimath.yamna@environment.gov.mv>
Sent: 24 April 2024 08:21
To: eca@epa.gov.mv <eca@epa.gov.mv>; hashim.nabeel@epa.gov.mv <hashim.nabeel@epa.gov.mv>
Subject: EMP requirement for change in site location

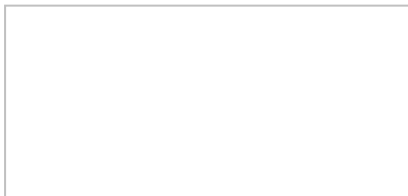
Dear Hashim,

As mentioned on our call yesterday, there has been a shift in the location proposed for the development of the Island Solid Waste Management Center in K.Guraidhoo. Could you please advise whether this would require an EMP update or a new EMP and how we should proceed.

Aerial photos of the site as well as the LUP and EMP have been attached for your reference. We would greatly appreciate if you could provide a response today as we plan on visiting the site tomorrow.

Thank you and best regards,
Yamna

Fathimath Yamna Mohamed
Social and Environmental Safeguard Specialist
Greater Malé Environmental Improvement & Waste Management Project
Ministry of Climate Change, Environment and Energy
Republic of Maldives,
Phone. +960 9995153
mymaldiveshome.environment.gov.mv



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Green Building, 3rd Floor, Handhuvaree Hingun, Maafannu,
Male', 20392, Republic of Maldives
+960 303 8800 +960 333 5949 | secretariat@epa.gov.mv | www.epa.gov.mv

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**APPENDIX 5: LETTER FROM ISLAND COUNCIL SHARING THE
PROPOSED LOCATION**



ދިވެހިރާއްޖޭގެ ޖުމްހޫރިއްޔާ ގެ ސަރުކާރުގެ ގެޒެޓް ގައި ބަޔާންކުރި ގަވާއިދުގެ ދަށުން

SECRETARIAT OF THE GURAIIDHOO COUNCIL, SOUTH MALE' ATOLL
K.Guraidhoo, Rep of Maldives



ނަންބަރު: 338-ESMS/438/2024/3

ޖިރިސެޖްޕް ގެ ގަވާއިދުގެ ތެރޭގައި، ހުށަހަޅާ ފަރާތްތަކުން ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި

އިތުރު ފަންނު

ފޯމް ފުރިހަމަކުރުމަށް ފަށަލައެވެ.

ޖިރިސެޖްޕް ގެ ގަވާއިދުގެ ނަންބަރު: 438-WMPC/338/2024/3 (20 ވަނަ ޖުމްހޫރިއްޔާ 2024) ސަބަބުން

ހުށަހަޅާ ފަންނު.

ފޯމްތަކުން ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި (ޖުމްހޫރިއްޔާގެ) ފޯމްތަކުން ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި

ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި

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• ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި

• ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި

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• ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި

• ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި

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ފޯމް ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި

ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި

ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި

22 ވަނަ ޖުމްހޫރިއްޔާ 1445

03 ޖުމްހޫރިއްޔާ 2024

Handwritten signature and name of the official.



ޖިރިސެޖްޕް ގެ ގަވާއިދުގެ ތެރޭގައި، ހުށަހަޅާ ފަރާތްތަކުން ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި

ހުށަހަޅާ ގަވާއިދުގެ ތެރޭގައި.



AREA : 889.46 SQM



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|-----------------------------------|-------------------|
| PROPOSED WASTE MANAGEMENT CENTER | |
| SECRETARIAT OF GABRIELDO COUNCIL, | |
| K. GABRIELDO | |
| PAPER : 80 FULL BLEED A4 | DATE : 20/02/2024 |
| NOTES : | |
| - UNITS IN METERS | |